TROUBRIDGE SHOAL No1

Rept.Bk.No. 693
G.S. 2677
S.R. 11/5/95
Pal. Rep. 7/63

DEPARTMENT OF MINES
SOUTH AUSTRALIA

GEOLOGICAL SURVEY
PALAEONTOLOGY SECTION

BEACH PETROLEUM N.L.

TROUBRIDGE SHOAL NO.1 STRATIGRAPHIC WELL

SUBSURFACE STRATIGRAPHY

by

N. H. Ludbrook
Senior Palaeontologist

S.R. 11/5/95

30th July, 1963.

St VINCENT (63 July 30th)

R3 693

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ABSTRACT

Beach Petroleum Troubridge Shoal No. 1 Stratigraphic Well, drilled to a depth of 1600 feet intersected Recent, Subrecent and Tertiary sediments to 850 feet below which 750 feet of Lower Permian glacial marine rocks were intersected. The Tertiary sediments from 90 to 850 feet consisted of Pliocene Hallett Cove Sandstone, Miocene Port Willunga Beds, Upper Eocene to Lower Oligocene Blanche Point Marls and Upper Eocene Tortachilla Limestone. The Lower Permian glacigenes correspond closely to those intersected in Stansbury No. 1 Well. Drilling ceased in the Permian.

1. INTRODUCTION

Beach Petroleum Troubridge Shoal No. 1 was drilled on Troubridge Shoal in the south west of St. Vincent Gulf 4 miles ESE of Edithburg on southern Yorke Peninsula. The well was spudded in on 19th May and completed on 7th June 1963.

The present report records data from micropalaeontological examination of cuttings taken every 10 feet and of 2 cores taken at 1490-1500 feet and 1590-1600 feet.

As the samples are considerably contaminated in drilling no attempt was made at a detailed study of the foraminifera and only significant species have been recorded.

A correlation has been made with Stansbury No. 1 Stratigraphic well as shown in the plan (63-646).

2. GENERAL STRATIGRAPHY

The following stratigraphic units were intersected in the well:

Stratigraphic unit	Age	depth (feet)	thickness (feet)
Beach sand	Recent	0-20	20
Calcareous shelly sand	Sub-Recent	20-90	70
Hallett Cove Sandstone	Pliocene	90-190	100
Port Willunga Beds	Lower Miocene	190-610	420
Blanche Point Marls	Lower Oligocene to Upper Eocene	610-750	140
Tortachilla Limestone	Upper Eocene	750-850	100
Glacial marine rocks	Lower Permian	850-1600	750 +
			1600

3. RECENT BEACH SAND (Thickness 20 feet)

From surface to 20 feet the well passed through grey white calcareous quartz sand with abundant foraminifera, ostracoda, and mollusca.

4. SUBRECENT SHELLY SAND (Thickness 70 feet)

Below 20 feet and continuing to 90 feet there occurred the sequence of calcareous sands, quartzose in part and also kunkarized in part, which was intersected in Port Vincent No. 1 Well. Marginopora vertebralis and abundant mollusca are characteristic of the interval.

5. HALLETT COVE SANDSTONE - PLIOCENE (Thickness 100 feet)

Cream crystalline and recalcified limestone with quartz grains, molluscan moulds and abundant Marginopora vertebralis occurring from 90 to 190 feet is the Hallett Cove Sandstone, which is unusually thick in this well.

6. PORT WILLUNGA BEDS - LOWER MIOCENE (Thickness 610 feet)

Between 190 feet and 380 feet the well intersected cream recrystallized bryozoal limestone which are at present included within the Port Willunga Beds, although they do not occur in the type section of the Port Willunga Beds.

The interval 190 to 280 feet is nowhere exposed and

cannot be correlated with any known outcrops; the interval 280 to 380 feet, containing abundant Lepidocyclina howchini from 280 to 310 feet, is to be correlated with the limestone occurring at Myponga and the Melton Limestone of Batesfordian age. From 380 feet to 610 feet occur Port Willunga Beds with Crespinella sp. nov., Sherbornina atkinsoni, and abundant Fibularia gregata. The bottom 20 feet from 590 to 610 feet is marly. In this interval the Port Willunga Beds are of Longfordian (Lower Miocene) age.

7. BLANCHE POINT MARLS - LOWER OLIGOCENE TO UPPER EOCENE (Thickness 140 feet)

The sequence of dark grey carbonaceous marl, quartz sand and silt with Turritella aldingae, Corbula pixidata are equivalent to the Blanche Point Marls. They occur between 610 and 750 feet.

8. TORTACHILLA LIMESTONE - UPPER EOCENE (Thickness 100 feet)

Below 750 feet cream crystalline glauconitic limestone, Tortachilla Limestone, extends to 850 feet and contains Pseudopolymorphina sp., Gyroidina octocamerata and Lamarckina airensis. This formation is unusually thick in this well.

9. GLACIAL MARINE ROCKS - LOWER PERMIAN (Thickness 750 + feet)

At 850 feet the well entered grey sandy claystones and clayey sandstones, calcareous in part, with grains of granite, slate, quartzite, abundant garnet, and some pyrite. These are glacigenes. Foraminifera occur sporadically and indicate a marine origin for the sediments, which by correlation with similar sediments, are of Lower Sakmarian age.

10. COMMENT ON THE SEQUENCE

There are several features of the sequence which are worthy of comment: first, the relative thickness of the later Lower Miocene (Batesfordian - Balcombian) sediments with

Lepidocyclina howchini in the lower part; secondly, the thickness of the Tortachilla Limestone; thirdly, the absence of the Maslin Sands in the section and fourthly the good correlation of the Permian section with that in Stansbury No. 1 Well. The correspondence of foraminiferal zones within the Permian is good for the two wells.

11. DETAILS OF THE SAMPLES

Depth (feet)	
0 - 20	Grey-white calcareous quartzose beach sand with abundant foraminifera; mollusca and ostracodes common.
20 - 30	Grey-white calcified quartz sand, kunkarized in part, with abundant mollusca.
30 - 40	As above, with subrounded quartz coated with calcite.
40 - 90	Grey-white calcareous sand with worn molluscan fragments.
90 - 140	Cream recrystallized and recalcified limestone with quartz grains, bryozoa, molluscan fragments.
140 - 190	As above, with Marginopora, Elphidium, Peneroplis.
190 - 200	Cream recrystallized bryozoal limestone, with Ditrupa and Marginopora.
200 - 220	As above, with Operculina, bryozoa, echinoids.
220 - 230	As above, with abundant bryozoa.
230 - 250	With abundant Fibularia gregata.
250 - 280	As above, with Operculina, Amphistegina, Crespinella sp. nov.
280 - 290	Somewhat chalky bryozoal limestone with Lepidocyclina howchini, Amphistegina, Operculina, Fibularia, brachiopods.
290 - 310	As above, with abundant Lepidocyclina, Mopsea tenisoni.
310 - 360	With Calcarina verriculata; Operculina and echinoids common.
360 - 370	Mopsea common.
370 - 380	With Mopsea and Fibularia, Notorotalia howchini.
380 - 390	Cream-white crystalline limestone, rich in Fibularia
390 - 410	Cream white crystalline limestone, with Fibularia, brachiopods, Crespinella sp. nov.

Depth (feet)	
410 - 430	With Crespinella sp. nov., Notorotalia howchini, brachiopods, Fibularia.
430 - 450	As above, with Sherbornina, Cibicides umbonifer; large Cibicides pseudoungerianus.
450 - 510	Bryozoal limestone, somewhat chalky and saccharoidal, with small grains of pale green glauconite.
510 - 520	Hard bryozoal limestone.
520 - 540	Chalky glauconitic bryozoal limestone; saccharoidal.
540 - 550	As above, with Sherbornina atkinsoni.
550 - 610	Greenish-cream marly limestone with bryozoa and Cibicides umbonifer.
610 - 630	Dark grey carbonaceous marl and sand with fine angular quartz, abundant shell fragments, silt material, occasional pyrite.
630 - 640	As above, with Turritella aldingae and other mollusca, bryozoa, corals, sponge spicules.
640 - 660	With Turritella aldingae, Sherbornina atkinsoni, Cibicides umbonifer.
660 - 670	As above, with abundant carbonaceous material.
670 - 690	Carbonacecus silt and marl with pale green glauconite, large Lenticulina.
690 - 700	With Globigerina linaperta.
700 - 720	With sponge spicules, Corbula pixidata.
720 - 730	Glauconitic marl, with Nuculana (Saccella) sp.
730 - 740	With Turritella, Cibicides pseudoconvexus.
740 - 750	Grey glauconitic marl with abundant green glauconite pellets.
763	Bit sample. Glauconitic crystalline limestone.
750 - 790	Cream crystalline limestone, with pale green glauconite in pellets and infilling foraminifera etc.
790 - 810	As above, with occasional pink garnet grain.
810 - 830	As above, with Pseudopolymorphina sp.
830 - 840	Pinkish bryozoal limestone.
840 - 850	Ferruginized limestone with limonite pellets, dark green glauconite, quartz grains, brachiopods, Pseudopolymorphina sp.
850 - 860	Grey sandy claystone and clayey sandstone, with angular to subrounded quartz, pyrite, carbonaceous clay material, pink garnet.
860 - 990	Claystones and sandstones as above, with grains of granite, slate, garnet, pyrite, chlorite, subrounded to angular quartz.

Depth (feet)	
990 - 1010	Chips of quartz grains in calcareous matrix.
1010 - 1020	First foraminifer; garnet crystals
1020 - 1130	Grey sandy claystone with patches of white calcareous fine sand.
1130 - 1140	As above, with Ammodiscus.
1140 - 1180	Claystone and sandstone as above, with small pebbles of various kinds.
1180 - 1250	Grey clayey sandstone, pyritic, with small pebbles of granite, felspar, etc.
1250 - 1380	Light grey claystone with scattered quartz grains.
1380 - 1440	As above, with abundant garnet at 1380 - 1390'.
1440 - 1490	As above, with abundant pyrite - clay aggregates.
1490 - 1500	Core 1 Recovered 14"
	11" Light grey loosely consolidated sandstone with medium coarse fairly well sorted subangular to subrounded quartz, loosely cemented with very little white clay; abundant pink garnet. 3" Grey quartzite boulder.
1500 - 1590	Sandstone as Core 1 with small pebbles of various origins; Hyperammina.
1590 - 1600	Core 2 Recovered 5 feet
	12½" Grey quartzite boulder. 12" Grey clayey sandstone. 5½" Grey quartzite boulder. 30" Grey clayey sandstone consisting mostly of subrounded quartz, grey metamorphic rocks, garnet, light grey clay. Breaks down readily in water.

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NHL:AGK
30/7/63

S.A. DEPT. OF MINES

BEACH PETROLEUM TROUBRIDGE SHOAL No.1

MICROPALAEONTOLOGICAL LOG

TERTIARY SECTION

DEPTH IN FEET	RECENT 0 – 10	SUBRECENT 20 – 30	PLIOCENE HALLETT COVE 90 – 100	PLIOCENE HALLETT COVE 130 – 140	LOWER MIOCENE 210 – 220	LOWER MIOCENE 220 – 230	LOWER MIOCENE 250 – 260	LOWER MIOCENE 280 – 290	LOWER MIOCENE 290 – 300	LOWER MIOCENE 300 – 310	LOWER MIOCENE 320 – 330	LOWER MIOCENE 370 – 380	LOWER MIOCENE PORT WILLUNGA BEDS 380 – 390	LOWER MIOCENE PORT WILLUNGA BEDS 390 – 400	LOWER MIOCENE PORT WILLUNGA BEDS 430 – 440	LOWER MIOCENE PORT WILLUNGA BEDS 450 – 460	LOWER MIOCENE PORT WILLUNGA BEDS 490 – 500	LOWER MIOCENE PORT WILLUNGA BEDS 500 – 510	LOWER MIOCENE PORT WILLUNGA BEDS 570 – 580	LOWER MIOCENE PORT WILLUNGA BEDS 600 – 610	LOWER OLIGOCENE TO UPPER EOCENE BLANCHE POINT MARLS 610 – 620	LOWER OLIGOCENE TO UPPER EOCENE BLANCHE POINT MARLS 620 – 630	LOWER OLIGOCENE TO UPPER EOCENE BLANCHE POINT MARLS 630 – 640	LOWER OLIGOCENE TO UPPER EOCENE BLANCHE POINT MARLS 670 – 680	LOWER OLIGOCENE TO UPPER EOCENE BLANCHE POINT MARLS 700 – 710	LOWER OLIGOCENE TO UPPER EOCENE BLANCHE POINT MARLS 740 – 750	TORTEX CHILLA UPPER EOCENE 760 – 770
CRIBROBULIMINA POLYSTOMA	X	X	X																									
ELPHIDIUM MACELLUM	X																											
DISCORBIS AUSTRALIS	X																											
DISCORBIS DIMIDIATUS	X	X																										
DISCORBIS MIRA	X																											
MARGINOPORA VERTEBRALIS		X																										
ELPHIDIUM CRATICULATUM			X																									
AMMONIA BECCARII			X																									
ELPHIDIUM ROTATUM				X																								
AMMONIA TEPIDA				X																								
GYPSINA HOWCHINI					X																							
OPERCULINA VICTORIENSIS					X	X	X	X	X	–	X																	
AMPHISTEGINA LESSONI						X	X	X	X																			
ELPHIDIUM CHAPMANI							X																					
CRESPINELLA SP. NOV.							X	–	X	–	X	–	–	X															
LEPIDOCYCLINA HOWCHINI								X	X	X																		
GYPSINA GLOBULUS									X																			
CALCARINA VERRICULATA											X																	
ELPHIDIUM PARRI											X	–	–	–	X	X												
ELPHIDIUM CF. CRASSATUM												X	X															
DISCOPULVINULINA SCOPOS												X	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X
CIBICIDES PSEUDOUNGERIANUS												X	X	–	X	X	–	X	X									
NOTOROTALIA HOWCHINI												X	–	–	–	X	X											
CALCARINA VERRICULATA												X																
FRONDICULARIA LORIFERA													X															
HERONALLENA LINGULATA													X															
EPONIDES REPANDUS													X	–	–	X	X	–	X	X								
ANOMALINA GLABRATA													X															
ELPHIDIUM HOWCHINI														X														
ASTRONONION CENTROPLAX														X														
CF. NONION VICTORIENSE															X													
SHERBORNINA ATKINSONI															X	X	X	–	X	–	–	–	–	X	–	X	–	
CIBICIDES REFULGENS															X													
ELPHIDIUM CRESPINAE																	X											
CIBICIDES UMBONIFER																	X	–	X	–	–	–	X	X	–	X	X	
DOROTHIA SP.																		X										
GYROIDINOIDES SP.A																		X										
NOTOROTALIA CRASSIMURA																			X	X								
GLOBULINA SP.																			X	–	–	X						
CASSIDULINA SP.																			X	X	X							
LENTICULINA SP.																				X	X	X	X					
REUSSELLA CF. ELONGATA																				X								
NODOSARIA SOLUTA																							X					
GLOBIGERINA LINAPERTA																								X				
ALABAMINA WESTRALIENSIS																								X				
GYROIDINA OCTOCAMERATA																								X	X	X		
REUSSELLA CF. RECURVATA																								X				
CIBICIDES PSEUDOCONVEXUS																									X	–		
ASTERIGERINA SP.																									X	–		
LAMARCKINA AIRENSIS																									X	–		
ALABAMINA SP.																									X	X		
STOMATORBINA CONCENTRICA																									X	–		
PSEUDOPOLYMORPHINA SP.																										X		

LOWER PERMIAN SECTION

DEPTH IN FEET	1010-1020	1020-1030	1130-1140	1520-1530	1540-1550
CF. HYPERAMMINA SP.	X	–	–	X	–
HYPERAMMINA CF. ACICULA	X	–	X	–	X
AMMODISCUS OONAHENSIS	X	X	X	–	–
TROCHAMMINA SP.	X	–	–	–	–

To accompany report by N.H. Ludbrook

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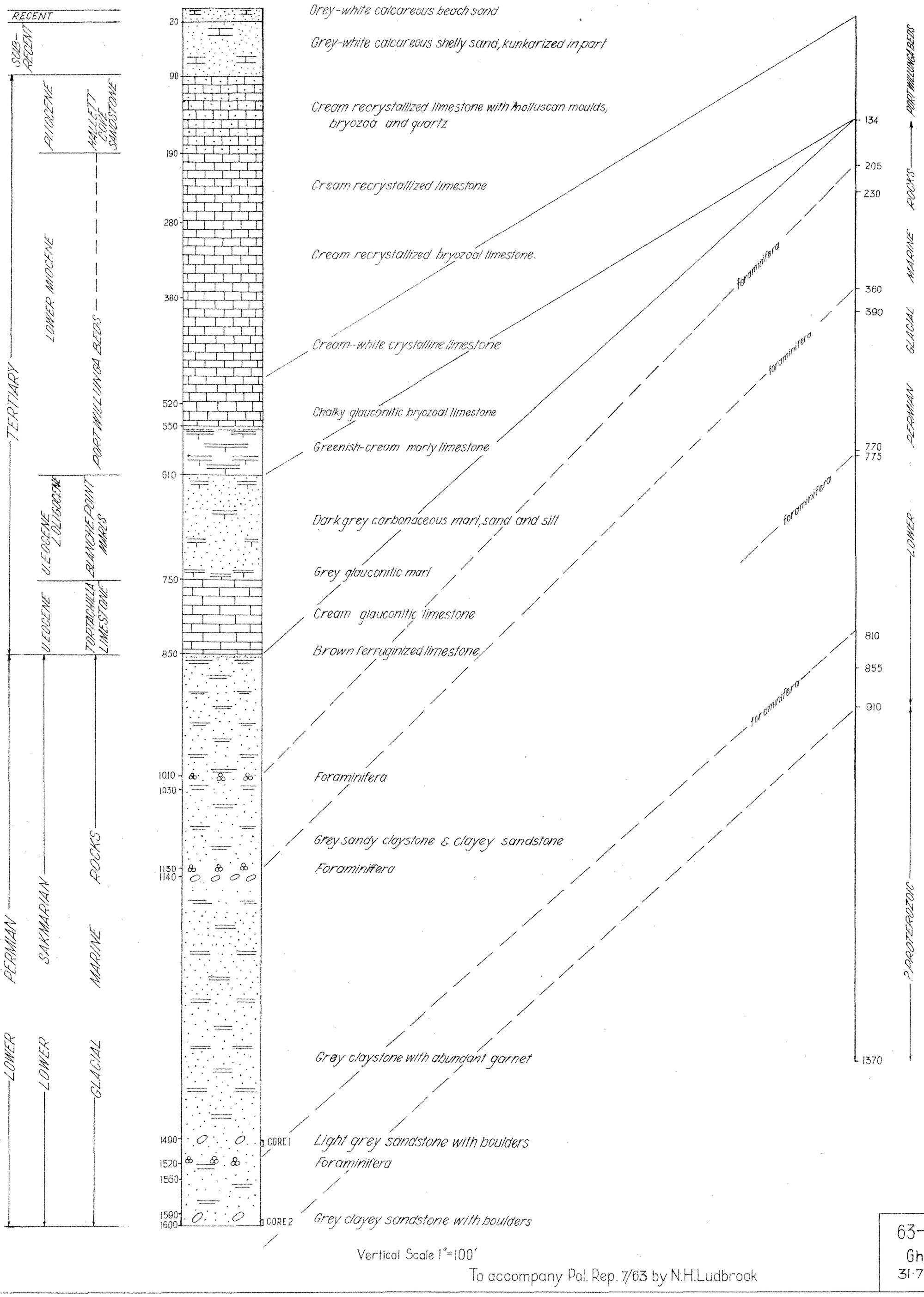
BEACH PETROLEUM

TROUBRIDGE SHOAL Nº1 STRATIGRAPHIC WELL

COLUMNAR SECTION

STANSBURY Nº1
STRATIGRAPHIC WELL



Vertical Scale 1"=100'

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