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ENVELOPE N° 573.

WELL COMPLETION REPORT

AMERADA McDILLS NO.1

by

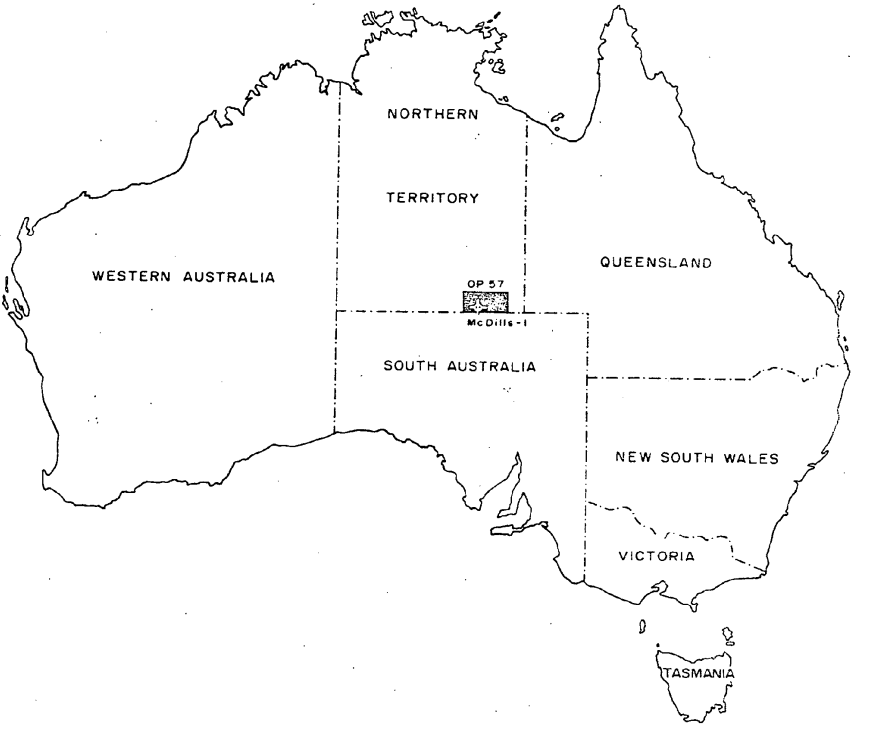
AMERADA PETROLEUM CORPORATION

OF AUSTRALIA LIMITED

November, 1965

CONTENTS

2



LOCATION MAP

Figure 1

I. SUMMARY

The McDills No.1 well was drilled by Amerada Petroleum Corporation of Australia Limited approximately 194 miles southeast of Alice Springs in the southwestern part of the Simpson Desert. The well was based on geophysical data and located on the highest part of a closed Permian structure.

The well was drilled by the Australian Drilling Company Pty. Ltd. Technical control at the well site was by personnel of Amerada Petroleum Corporation of Australia Limited. Gas detection and mud logging was carried out by Core Laboratories Inc. and electrical logging was provided by Welex.

Drilling operations were carried out from May 27, 1965 to September 5, 1965 at which time the well was completed as a water well from the De Souza sandstone.

A normal sequence of Mesozoic sediments were found in the McDills well. Surface sands which cover the Simpson Desert were drilled to 101'. At this depth the well entered the Lower Cretaceous Rumbalara shale and penetrated 1335' of this formation. The Transition beds were encountered at 1436' and the Jurassic De Souza sandstone was entered at 1518'.

The Permian Crown Point formation was found at 2352' and was drilled to 2987'. The Permian was apparently thin on the structure by onlap.

A thick sequence of Upper Devonian-Carboniferous continental fill beds were drilled from 2987-7090'. This sequence has been named the Finke Group to the west of the well and this name adequately covers this sequence in the McDills well.

At 7090' the well entered a sandstone sequence closely resembling the Mereenie sandstone. The well entered the Lower Cambrian dolomite at 9024' and was still in this formation at total depth of 10,515'.

No shows of hydrocarbons were found in the well and porosity was limited to the Mereenie sandstone and younger beds.

The McDills well was a significant deep test of the Simpson Desert area in that it established the presence of Lower Palcozoic sediments within this area.

14

II. INTRODUCTION

As a result of gravity work during 1962, and reflection seismic surveys in 1963 and 1964 by Geosurveys of Australia Pty. Ltd., a large anticlinal structure was found in the southwestern part of Oil Permit 57, Northern Territory. This structure was named the McDills anticline.

Under an agreement with Beach Petroleum, Amerada became operator of Oil Permit 57 and it was decided to test this structure by drilling the McDills No.1.

The McDills No.1 was located within a Permian closure on the anticline and was drilled to test the potential for reservoir rocks and hydrocarbons of the Permian and pre-Permian beds. It was expected that Lower Paleozoic sediments would be present under the known Permian rocks. The presence of Lower Cambrian carbonates was verified during drilling operations, but younger Cambrian and Ordovician rocks appear to be missing from the structure by erosion.

III. WELL HISTORY

1. GENERAL DATA

Well Name and Number:

McDills No.1

Location:

Latitude	Longitude
25° 43' 50" South	135° 47' 25" East

Elevation:

Ground Level	Rotary Table	Kelly Bushing
396'	410'	412'

Name and Address of Tenement Holder:

Beach Petroleum No Liability
68 Grenfell Street
Adelaide
South Australia

Amerada Petroleum Corporation of Australia Limited
380 Queen Street
Brisbane
Queensland

Name and Address of Operator:

Amerada Petroleum Corporation of Australia Limited
380 Queen Street
Brisbane
Queensland

Details of Petroleum Tenement:

Northern Territory Oil Permit No.57

Total Depth:

10,515' (-10,103')

Date Drilling Commenced:

May 27, 1965

6

Date Drilling Completed:

September 2, 1965

Date Well Abandoned:

September 5, 1965

Date Rig Released:

September 5, 1965

Drilling Time in Days to Total Depth:

99 days

Status:

Well abandoned below 2965' and completed as water well through $9\frac{5}{8}$" OD casing perf. 1950-1955'.

Total Cost:

See subsidy claim and statement of costs.

2. DRILLING DATA

Name and Address of Drilling Contractor:

Australian Drilling Company Pty. Ltd.
Guardian Building
380 Queen Street
Brisbane
Queensland

Details of Rig, Plant and Equipment:

Drilling Plant:

Make:	National
Type:	N-55
Rated Capacity:	10,000' with $4\frac{1}{2}$" OD drill pipe
Motors:	3 superiors, type PTD 6, BHP 325, Total 975

Mast/Derrick:

Make:	Lee C. Moore
Type:	Cantilever
Rated capacity:	550,000 lbs.

Pumps:

Make:	National	Gardner Denver
Type:	C-350	F X Q
Size:	600	300

Pump motors same as drilling plant motors.

Blow-out Preventer Equipment:

Make:	Hydrill	Cameron
Model:	G.K.	W.S.
Size:	12" series 900	12" series 900
Working pressure:	3,000 P.S.I.	3,000 P.S.I.

Hole Sizes and Depths:

(1) 30" hole from K.B. to 34'
(2) 17½"hole from 34' to 1201'
(3) 12¼"hole from 1201'to 3041'
(4) 8¾" hole from 3041'to 10,515'

Casing and Cementing Details:

Size:	20"	13⅜"	9⅝"
Weight:	-	48 lbs.	36 lbs.
Grade:	-	H-40 Jap.	J-55 Jap.
Setting Depth:	34'	1196'	3015'
Cement used:	4lsks.	700 sks.	175 sks.
Cemented to:	surface	Surface	2350' Est.
Method used:		Plug	Plug
Collars:		Howco 1163'	Howco 2983'
Shoes:		Howco 1196'	Howco 3015'
Plugs:		Howco 1162'	Howco 2982'
Centralizers:		12 Howcos on 12 Bottom Joints	15 Howcos on 15 Bottom Joints
Scratchers:		No scratchers used	

Drilling Fluids:

Type:	Water base bentonite
Average weight:	9.7 lbs/U.S. Gal.
Treatment:	Spersene, XP-20 and caustic were added daily below 5000' to T.D. to maintain good mud properties.
	A fresh water flow was shut off by increasing the mud weight to 10.0 lbs/U.S. Gal. at 2375'. No abnormal mud or hole problems were encountered while drilling the well.

Mud Additives Used:

The following quantities of mud additives were used in the McDills No.1 well:

Gel	- 101,300 lbs.
Caustic	- 9,510 lbs.

8

Spersene	-	28,000 lbs.
XP-20	-	12,700 lbs.
Barites	-	111,104 lbs.
Sodium Bicarb.	-	560 lbs.
Driscose	-	450 lbs.

Total weight of mud material used was 263,624 lbs.

Water Supply:

Water was hauled by two trucks from Dakota Bore in the Northern Territory twenty miles south of McDills No.1. After reaching a depth of 5556' and setting 3015' of 9⅝" casing, water was obtained between the 9⅝" and 13⅜" casing annulus from the De Souza formation to total depth.

Perforation and Shooting Record:

Welex perforated 9⅝" casing at 1950' to 1955' using Super Dyna charge, 4 holes per foot, .56" diameter.

Plugging:

In plugging the well three abandonment plugs were set at depth intervals listed below:

Plug No.	Depth	Sacks cement
1	7050'-7150'	50
2	3300'-3900'	200
3	2965'-3065'	50

Forty sacks of cement were pumped down the annulus between 13⅜" and 9⅝" casing. A total of 340 sacks of cement were used in plugging McDills No.1.

A metal plate was welded over the 9⅝" casing with a 2" outlet nipple and valve to control the water flow.

Fishing Operations:

A sledge hammer was dropped down the 13⅜" casing while installing BOPs, recovered same first trip with Globe junk basket at 1162'. Stuck drill pipe at 7556', spotted diesel oil and water around drill collars and worked pipe free.

3. LOGGING AND TESTING

Ditch Cuttings:

Samples were collected at 10 feet intervals, and at closer intervals where lithology warranted it. Cuts were distributed to Bureau of Mineral Resources, and Mines Branch, Northern Territory.

Examination of the cuttings as they were collected over the shaker was maintained on a 24 hour-a-day basis. Drilling breaks were circulated up and bottom hole circulation samples were obtained before trips where warranted.

Coring:

The first core was cut at 2375'. Routine coring was done at convenient bit change depths to give a coring interval of approximately 300 feet between any two consecutive cores. Cores were extended to 500' with the lithology being uniform by agreement with the Bureau of Mineral Resources.

Coring equipment consisted of a Reed 15' type SK barrel and Reed Roller Co. conventional hard formation core-heads cutting a $4\frac{15}{16}$" diameter core, also a 50' Denton and Spencer core-barrel with $6\frac{1}{8}$" diamond core heads.

Samples of 4" length from the top foot and 4" from every succeeding two foot interval of each core were sent to the Bureau of Mineral Resources, Fyshwick, A.C.T. The remaining core was deposited with the Northern Territory Administration, Mines Branch, Alice Springs.

The following cores were taken:

Core #	Core Depth	Cored	Rec.	% Rec.
1	2375'-2390'	15'	13'	86.7
2	2690'-2697'	7'	$4\frac{1}{2}$'	64.3
3	2697'-2740'	43'	9'	20.9
4	2959'-2973'	14'	$13\frac{1}{2}$'	96.4
5	2973'-2983'	10'	1'	10
6	3126'-3138'	12'	12'	100
7	3361'-3376'	15'	14'	93.3
8	3645'-3660'	15'	15'	100
9	3822'-3837'	15'	2'	13.3
10	3837'-3850'	13'	8'	61.5
11	4152'-4167'	15'	15'	100
12	4469'-4484'	15'	$8\frac{1}{2}$'	56.7
13	4784'-4796'	12'	12'	100
14	5102'-5117'	15'	15'	100
15	5252'-5267'	15'	$10\frac{1}{2}$'	70
16	5544'-5556'	12'	11'	91.7
17	5815'-5825'	10'	5'	50
18	6325'-6335'	10'	6'	60
19	6592'-6597'	5'	5'	100
20	7050'-7060'	10'	8'	80
21	7079'-7089'	10'	9'	90
22	7608'-7622'	14'	14'	100
23	8108'-8114'	6'	6'	100
24	8114'-8119'	5'	5'	100

Core #	Core Depth	Cored	Rec.	% Rec.
25	8314'-8320'	6'	4½'	75
26	8740'-8741'	1'	0'	0
27	8915'-8925'	10'	10'	100
28	9043'-9053'	10'	7'	70
29	9354'-9364'	10'	9'	90
30	9632'-9642'	10'	10'	100
31	10,058'-10,068'	10'	9'	90
32	10,505'-10,515'	10'	10'	100

Total footage cored: 380'
Total footage recovered: 281½'
% recovered: 74.1%

Electrical and Other Logs:

Welex Induction - Electric Logs

Run No.1: 50' - 1195'

Run No.2: 1197' - 1433'

Run No.3: 1400' - 5551'

Run No.4: 5500' - 7615'

Run No.5: 7500' - 10,498'

Welex Acoustic Velocity - Gamma Ray

Run No.1: 1192' - 5549'

Run No.2: 5500' - 7611'

Run No.3: 7500' - 10,498'

Welex ForXo - Caliper

Run No.1: 1192' - 5554'

Run No.2: 5500' - 7615'

Run No.3: 7500' - 10,501'

Welex Dipmeter

Run No.1: 3015' - 10,498'

Penetration Rate Log

A geolograph and a Core Laboratories Australia Limited drilling rate recorder were used for recording the penetration rate. See Composite Log.

11

Gas Log

Core Laboratories Australia Limited gas detection and analysing equipment (hot wire detector and programmed hydrocarbon detector) were used for the preparation of a hydrocarbon log. See Composite Log.

Formation Testing:

No drill stem tests were taken.

Deviation Surveys:

Deviation surveys were run before trips using a Lane Wells instrument dropped down the drill pipe and recovered during bit changes to a depth of 9299'. A Totco survey barrel was used for the remainder of the well.

Depth	Deviation from Vertical
60'	0°
159'	¼°
258'	¾°
379'	1°
470'	¾°
586'	½°
710'	1°
835'	⅜°
950'	1°
1170'	1°
1465'	½°
1950'	1°
2690'	1°
2959'	¼°
3100'	⅜°
3361'	1°
3490'	1°
3700'	1°
3822'	¾°
4460'	¾°
4784'	¾°
5102'	¾°
5252'	1°
5800'	2°
5815'	2°
6020'	2¼°
6123'	1¾°
6164'	3°
6193'	4¼°
6325'	4°
6385'	3½°
6528'	4°
6592'	3¾°

Depth	Deviation from Vertical
6615'	No reading
6688'	3½°
7050'	4°
7079'	3¾°
7240'	3⅝°
7608'	3½°
7867'	No reading
8022'	4¼°
8108'	4°
8160'	4°
8314'	3½°
8572'	3¾°
8740'	3°
8800'	4°
8915'	5°
9019'	4°
9043'	4°
9152'	No reading
9226'	5¾°
9354'	6½°
9403'	7°
9450'	8°
9500'	8°
9587'	10°
9632'	8°
9799'	10°
9875'	12°
9932'	12°
10,058'	14°
10,194'	15°
10,301'	16°
10,370'	16°
10,431'	16°
10,505'	16¼°

Temperature Surveys:

No temperature surveys were run.

Velocity Surveys:

Austral Geo Prospectors Pty. Limited in conjunction with Welex, conducted velocity surveys. These appear as a separate Appendix (V).

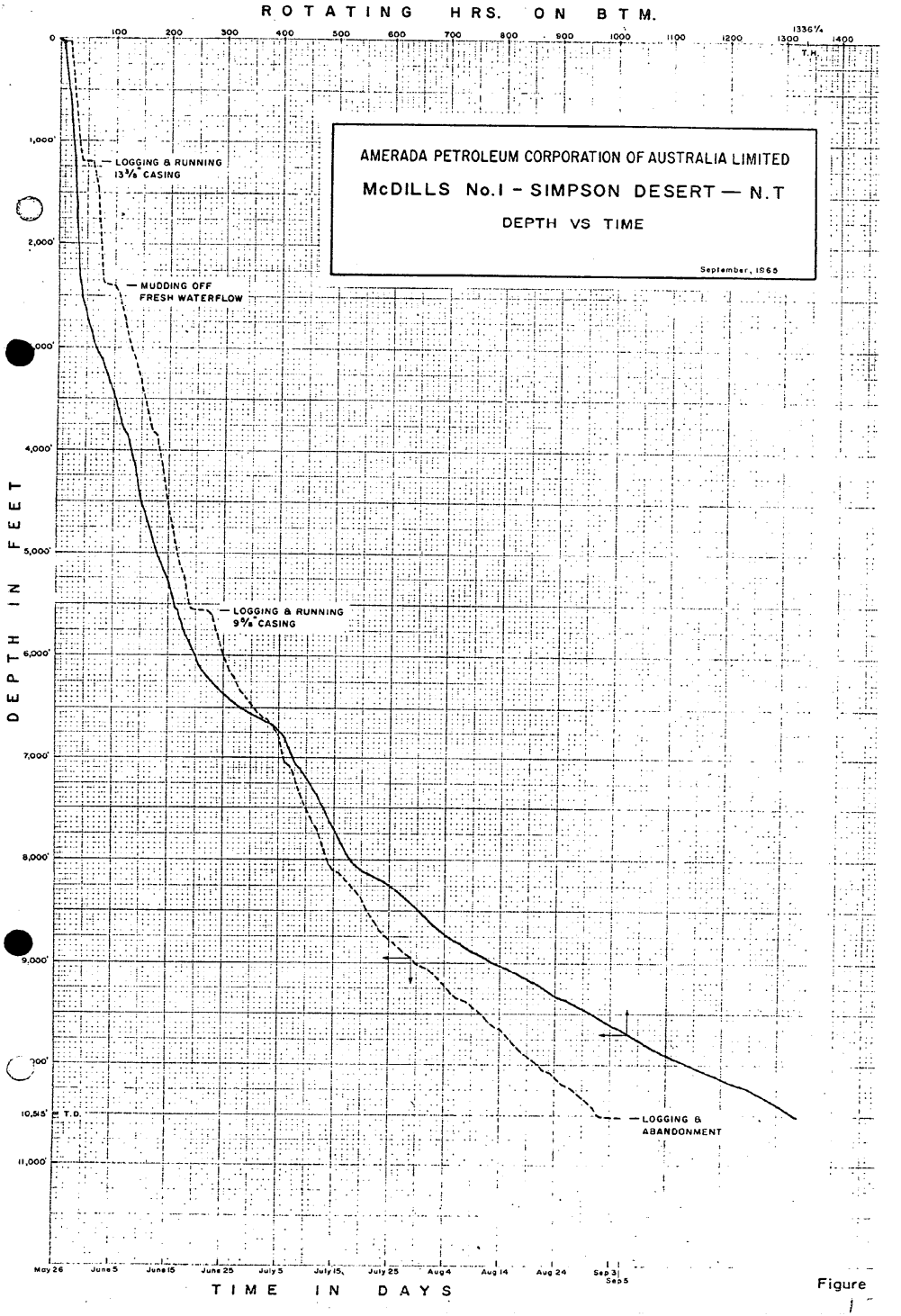
Production Testing:

The well was completed as a water well with perforations from 1950' to 1955' flowing an estimated 50 barrels per hour from the De Souza sandstone.

Drilling Observation:

A total of 1336¼ rotating hours on bottom were required to drill the McDills No.1 well, resulting in an average drilling rate of 7.87 feet per hour. Sixtyseven bits were used plus 20 conventional and 3 diamond core heads to core 380'.

For details refer to Figures 2 and 6.


ROTATING HRS. ON BTM.
100
200
300
400
500
600
700
800
900
1000
1100
1200
1336¼
1300
1400
T.H.
AMERADA PETROLEUM CORPORATION OF AUSTRALIA LIMITED
McDILLS No.1 - SIMPSON DESERT — N.T
DEPTH VS TIME
September, 1965
— LOGGING & RUNNING 13⅜ CASING
— MUDDING OFF FRESH WATERFLOW
— LOGGING & RUNNING 9⅝ CASING
— LOGGING & ABANDONMENT
DEPTH IN FEET
0
1,000'
2,000'
4,000'
5,000'
6,000'
7,000'
8,000'
9,000'
10,545' T.D.
11,000'
May 26
June 5
June 15
June 25
July 5
July 15
July 25
Aug 4
Aug 14
Aug 24
Sep 3
Sep 5
TIME IN DAYS

Figure

TIME ANALYSIS

OPERATIONS	TIME - HRS	TIME - DAYS	PERCENTAGE
Drilling (Rotating on Btm)	1216.25	50.6771	50.07
Tripping	511.50	21.3125	21.06
Coring	120	5.0000	4.94
Surveying	15.25	.6354	.63
Logging	70.25	2.9271	2.89
Reaming	41.75	1.7396	1.72
Reaming undergauge hole	58.50	2.4375	2.41
Casing & Cementing	41.75	1.7396	1.72
W.O.C.	46.75	1.9479	1.93
W.O. Welex	10	.4167	.41
W.O. Water	11.75	.4896	.48
W.O. Wgt Material & Mixing Mud	59.25	2.4687	2.44
Working Stuck Pipe & Fishing	19.25	.8021	.79
Circ. & Cond. Hole	46	1.9167	1.90
Slip & Cut D.L.	20.25	.8437	.83
Nippling up & down	23	.9583	.95
Spotting Abandonment Plugs	3	.1250	.12
Perf. for Water Well	2	.0833	.08
Installing Well Head Equipment	2	.0833	.08
Flowing and Testing Water Well	9	.3750	.37
Rig Maintenance	61.25	2.5521	2.52
Rig Repairs	40.25	1.6771	1.66
TOTAL:-	2429	101.2083	100.00

SUMMARY	TIME - HRS	PERCENTAGE
Drilling (incl. Reaming, Trips & Surveys)	1843.25	75.89
Hole Evaluation (Coring, Logging & Testing)	199.25	8.20
Lost Time (Rig Repairs)	40.25	1.66
Dead Time (Stuck Pipe, Fishing & W.O. Water etc.)	100.25	4.12
Other (Rig Maintenance, csg., cemt., aband. etc.)	246.00	10.13
TOTAL:-	2429.00	100.00

OPERATIONS: From spud date May 27, 1965 @ 12 noon to date rig released September 5, 1965 @ 5.00 pm equals a total of 101 days and 5 hours.

Figure 6

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BIT RECORD

SHEET 1 OF 1

COUNTY	FIELD	STATE	SECTION	TOWNSHIP	RANGE	SPUD	US	UNDER INTER	SET SAND STRING
AUSTRALIA	W.C.	QUEENSLAND				5-27-65			

CONTRACTOR	RIG NO.	LEASE	WELL NO.	COMPANY	TOOL PUSHER
AUSTRALIAN DRILLING CO PTY LTD		M & DILLS	No 1	AMERADA PETE CORP	SHELLWOOD

MAKE RIG	TYPE	RIG POWER	PUMP POWER	BOILERS — No.	RATED HP	PUMP NO. 1	PUMP NO. 2
NATIONAL	N-55	3-SUPERIOR PTD 6	SAME			NAT'L. C-350 6½ x 18	G.D. FXQ 6½ x 16

DRILL PIPE	TOOL JOINT TYPE	DRILL COLLARS O.D.	I.D.	LENGTH	MUD TYPE	SALESMAN
4½ OD	4½ IF	6"	2⅞	30	SPERSENE	

RUN NO.	SIZE	MAKE	TYPE	JET SIZE	SERIAL	DEPTH FROM	DEPTH TO	FEET	HOURS	FEET PER HOUR	WEIGHT 1000 POUNDS	RPM	VERTICAL DEV.	PUMP PRESSURE	PUMP OPER-ATION	NO. 1 SPM	NO. 1 LINER	NO. 2 SPM	NO. 2 LINER	MUD WT.	MUD VIS.	REMARKS
1	12¼	REED	YT3A-J	3-⅜"	N-44304	84	1201	1117	19½	57.85	10/15	60	0	500		42	6½	-	-	WATER		
2	8¾	SEC	S-3	REG	167521	1201	1465	264	3	88.00	15/20	75	½	500		58	6½	-	-	WATER		
3	8¾	SEC	S-6-J	3-⅜"	660097	1465	2101	636	5½	115.64	20	75	1°	700		55	6½	-	-	WATER		
4	8¾	SEC	S-6-J	3-⅜"	604261	2101	2375	274	2¾	99.64	20	75	1°	800		58	6½	-	-	WATER		
1-C	6⅛	CHRIS	DIA	-	5218C	2375	2390	15	1	15.00	8	40		600		48	6½	-	-	WATER		Rec - 13'
5	8¾	SEC	S-6-J	3-⅜"	660093	2390	2690	300	6½	46.15	20	75	1°	9000		55	6½	-	-	10	56	
1-C	6⅛	CHRIS	DIA	-	5218C	2690	2697	7	1	7.00	8/10	40		800		48	6½	-	-	10	50	Rec - 4½'
1-C	6⅛	CHRIS	DIA	-	5218C	2697	2740	43	5	8.60	8/10	40		800		48	6½	-	-	10	48	Rec - 9'
6	8¾	SEC	M4N-J	3-½"	667798	2740	2959	219	9¼	23.68	25	75	½°	1000		58	6½	-	-	10.2	55	
2-C	7⅞	REED	HFCH	-	7443	2959	2973	14	3	4.66	8	40		800		45	6½	-	-	10	55	Rec - 13½'
3-C	7⅞	REED	HFCH	-	7430	2973	2983	10	4½	2.22	8	40		800		45	6½	-	-	10	50	Rec - 1'
7	8¾	SEC	M4N-J	3-⅜"	667791	2983	3126	143	9¼	15.46	25	75	½°	1000		60	6½	-	-	10.4	60	
4-C	7⅞	REED	HFCH	-	7431	3126	3138	12	3¼	3.69	8	40		900		48	6½	-	-	10	53	Rec - 12'
8	8¾	SEC	M4N-J	3-½	667813	3138	3239	101	5¾	17.67	25	75	1°	1000		55	6½	-	-	10.2	55	
9	8¾	SEC	M4-L	REG	660478	3239	3361	122	8½	14.35	25	75	1°	1000		56	6½	-	-	10.1	56	
5-C	7⅞	REED	HFCH	-	7445	3361	3376	15	1¾	8.57	8/10	40		900		45	6½	-	-	10.2	55	Rec - 14' CORE 7
10	8¾	SEC	M4N-J	3-½"	667814	3376	3510	134	6¼	21.44	25/30	75	1°	1000		56	6½	-	-	10.3	56	
11	8¾	SEC	M4-L	REG	660873	3510	3645	135	6½	20.77	30	75	1°	1000		58	6½	-	-	10.3	55	
6-C	7⅞	REED	HFCH	-	7441	3645	3660	15	2	7.50	8	40		800		50	6½	-	-	10.2	52	Rec - 15' 8
12	8¾	SEC	M4-L	REG	660867	3660	3799	139	6¼	22.24	30	75	1°	1000		58	6½	-	-	10.3	56	
13	8¾	SEC	M4-L	REG	660759	3799	3822	23	1¾	13.14	30	75	1°	1000		59	6½	-	-	10.2	52	
7-C	7⅞	REED	HFCH	-	7438	3822	3837	15	3	5.00	8	40		800		45	6½	-	-	10.3	50	Rec - 2' 9
8-C	7⅞	REED	HFCH	-	5417	3837	3850	13	2	6.50	8	40	¾°	800		48	6½	-	-	10.2	54	Rec - 8' "
14	8¾	SEC	M4-L	REG	660772	3850	4152	302	13½	22.37	30	75		1000		56	6½	-	-	10.4	65	

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BIT RECORD

SHEET 1 OF 2

COUNTRY	FIELD	STATE	SECTION	TOWNSHIP	RANGE	SPUD	US	UNDER INTER	SET SAND STRING
AUSTRALIA	W.C.	QUEENSLAND				5-27-65			

CONTRACTOR	RIG NO.	LEASE	WELL NO.	COMPANY	TOOL PUSHER
AUSTRALIAN DRILLING CO PTY LTD		M & DILLS	No 1	AMERADA PETR. CORP.	SHERWOOD

MAKE RIG	TYPE	RIG POWER	PUMP POWER	BOILERS — No.	RATED HP	PUMP No. 1	PUMP No. 2
NATIONAL	N-55	3- SUPERIOR PTD-6	SAME			NATL C-350 6½" x 18"	G.D. FXB 6½" x 16"

DRILL PIPE	TOOL JOINT TYPE	DRILL COLLARS O.D.	I.D.	LENGTH	MUD TYPE	SALESMAN
4½ .00	4½ IF	6"	2 7/8"	30	SPERSENE	

RUN NO.	SIZE	MAKE	TYPE	JET SIZE	SERIAL	DEPTH FROM	DEPTH TO	FEET	HOURS	FEET PER HOUR	WEIGHT 1000 POUNDS	RPM	VERTICAL DEV.	PUMP PRESSURE	PUMP OPER. ATION	NO. 1 SPM	NO. 1 LINER	NO. 2 SPM	NO. 2 LINER	MUD WT.	MUD VIS.	REMARKS	
9-C	7 7/8	REED	HFCH	-	731	4152	4167	15	1¼	12 x	8	40		800		45	6½	-	-	10.2	50	REC - 15'	11
15	8¾	SEC	M4-L	REG	660459	4167	4469	302	8¾	34.51	30	75	¾°	1000		55	6½	-	-	10.1	54		
9-C RR	7 7/8	REED	HFCH	-	731	4469	4484	15	2½	6.0 x	8	40		800		45	6½	-	-	10.3	52	REC - 8½'	12
16	8¾	SEC	M4-L	REG	660475	4484	4634	150	8	18.75	30	75	¾°	1000		54	6½	-	-	10.0	51		
17	8¾	SEC	M4-L	REG	660480	4634	4784	150	7½	20.00	30	75	¾°	1000		55	6½	-	-	10	50		
9-C RR	7 7/8	REED	HFCH	-	5417	4784	4796	12	1¾	6.86 x	8	40		800		46	6½	-	-	10.1	52	REC - 12'	13
18	8¾	SEC	M4-L	REG	660758	4796	5102	306	17½	17.49	30	70	¼°	1000		56	6½	-	-	10.1	48		
10-C	7 7/8	REED	HFCH	-	5416	5102	5117	15	2½	6 x	8	40		800		45	6½	-	-	10	50	REC - 15'	14
19	8¾	SEC	M4-L	REG	660466	5117	5252	135	10	13.50	30	65	1°	1000		58	6½	-	-	10.1	54		
11-C	7 7/8	REED	HFCH	-	7454	5252	5267	15	2¼	6.66 x	8	40		800		46	6½	-	-	10	52	REC - 10½'	15
20	8¾	SEC	M4-L	REG	608563	5267	5544	277	13	21.31	30	65	1°	1000		58	6½	-	-	10.2	56		
12-C	7 7/8	REED	HFCH	-	7456	5544	5556	12	3	4.00 x	8	40		800		45	6½	-	-	10.1	54	REC - 11'	16
21	8¾	SEC	M4-L	REG	660438	5556	5802	246	10½	23.43	30	60		1200		52	6½	-	-	10.0	48		
22	8¾	SEC	M4-L	REG	660454	5802	5815	13	2	6.5	30	55	2°	1200		48	6½	-	-	9.8	40		
13-C	6⅛	CHRIS	DIA	-	TY85041	5815	5825	10	8½	1.18 x	10	40		800		42	6½	-	-	9.4	38	REC 5'	
23	8¾	REED	YHGJ	2-9/16 1-½	D43962	5825	6047	222	12	18.50	20	52	2¼°	1200		48	6½	-	-	9.5	42		
24	8¾	REED	YHWG-J	3-½"	V41834	6047	6123	76	8	9.5	30	50		1200		46	6½	-	-	9.5	42		
25	8¾	REED	YHG-J	2-9/16 1-½	D43358	6123	6164	41	7	5.86	20	60		1200		48	6½	-	-	9.5	43		
26	8¾	REED	YHG-J	2-7/16 1-½	D44225	6164	6193	29	4¼	6.82	20	60	3¾°	1200		50	6½	-	-	9.5	42		
27	8¾	SEC	H-10	3-½	S25682	6193	6325	132	23¾	5.55	20	45		1200		52	6½	-	-	9.4	40		
14-C	7 7/8	REED	HFCH	-	7442	6325	6335	10	3¼	3.08 x	10	40		1200		40	6½	-	-	9.6	45	REC - 6'	
28	8¾	REED	YHG-J	3-½"	D44548	6335	6391	56	9	6.22	20	50	3½°	1200		48	6½	-	-	9.6	43		
29	8¾	REED	YCG-J	3-½"	V44504	6391	6475	84	20½	4.10	20	45		1200		50	6½	-	-	9.4	40		
30	8¾	REED	YHG-J	3-½	D42447	6475	6528	53	16½	3.24	20	65	4°	1200		48	6½	-	-	9.6	46		

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SHEET 1 OF 3

COUNTRY	FIELD	STATE	SECTION	TOWNSHIP	RANGE	SPUD	US	UNDER INTER	SECOND STRING
AUSTRALIA	W.C.	QUEENSLAND				5-27-65			

CONTRACTOR	RIG NO.	LEASE	WELL NO.	COMPANY	TOOL PUSHER
AUSTRALIAN DRILLING CO PTY LTD	2	Mc DILLS	1	AMERADA PETE CORP	SHERWOOD

MAKE RIG	TYPE	RIG POWER	PUMP POWER	BOILERS — No.	RATED HP	PUMP No. 1	PUMP No. 2
NATIONAL	N-55	2-SUPERIOR PTD 6	SAME			NAT'L C-350 6½"x18"	G.D. FXQ 6½"x16"

DRILL PIPE	TOOL JOINT TYPE	DRILL COLLARS O.D.	I.D.	LENGTH	MUD TYPE	SALESMAN
4½ OD	4½ IF	6	2 2/8	30	SPERSENE	

RUN NO.	SIZE	MAKE	TYPE	JET SIZE	SERIAL	DEPTH FROM	DEPTH TO	FEET	HOURS	FEET PER HOUR	WEIGHT 1000 POUNDS	R.P.M.	VERTICAL DEV.	PUMP PRESSURE	PUMP OPER-ATION	NO. 1 SPM	NO. 1 LINER	NO. 2 SPM	NO. 2 LINER	MUD WT.	MUD VIS.	REMARKS
31	8¾	REED	YHG-J	3-½"	D44549	6528	6592	64	20½	3.12	20	65	3¾°	1200		48	6½	–	–	9.6	46	
15-C	7⅞	REED	HFCH	–	5418	6592	6597	5	3	1.66×	10	40		1000		45	6½	–	–	9.6	46	REC 5'
32	8¾	REED	YHG-J	3-½	D42450	6597	6616	19	5	3.80	20	65		1200		49	6½	–	–	9.6	46	
33RR	8¾	REED	YCG-J	3-½	V44594	6616	6688	72	21½	3.35	30	40	3½°	1200		52	6½	–	–	9.4	48	
34	8¾	REED	YCG-J	2-3/8 1-½	Y44956	6688	7050	362	57½	6.65	30	40	4°	1200		50	6½	–	–	9.3	43	
16-C	7⅞	REED	HFCH	–	5414	7050	7060	10	4	2.50×	10	40		1000		46	6½	–	–	9.3	42	REC 8'
35	8¾	REED	YHG-J	2-3/8 1-½	D44276	7060	7079	19	2½	7.6	20	65	3¾°	1350		52	6½	–	–	9.3	43	
17-C	7⅞	REED	HFCH	–	5410	7079	7089	10	4	2.5×	8	40		1350		50	6½	–	–	9.3	43	REC 9'
36RR	8¾	REED	YHG-J	2-3/8 1-½	D44276	7089	7240	151	17	8.88	30	45	3½°	1350		52	6½	–	–	9.4	44	
37	8¾	REED	YHG-J	2-3/8 1-½	D44545	7240	7608	368	32½	11.32	30	45	3½°	1350		50	6½	–	–	9.6	50	
18-C	7⅞	REED	HFCH	–	733	7608	7622	14	2¼	6.22×	10	40		1000		46	6½	–	–	9.6	50	REC 14' CORE #22.
38	8¾	REED	YHG-J	2-3/8 1-½	D43931	7622	7867	245	22¼	11.01	30	50		1350		52	6½	–	–	9.4	52	
39	8¾	REED	YHWG-J	3-3/16	D43890	7867	8022	155	19	8.16	30	48	4½°	1350		54	6½	–	–	9.3	51	
40	8¾	REED	YHWG-J	3-½	V41825	8022	8108	86	18¾	4.59	30	55	4°	1300		52	6½	–	–	9.3	47	
19-C	7⅞	REED	HFCH	–	7419	8103	8114	6	3½	1.71×	10	40		1000		44	6½	–	–	9.4	50	REC 6'
20-C	7⅞	REED	HFCH	–	7421	8114	8119	5	3¾	1.33×	10	40		1000		44	6½	–	–	9.4	50	REC 5'
41	8¾	REED	YHWG-J	3-½	D43892	8119	8165	46	12¼	3.76	30	48	4°	1300		48	6½	–	–	9.3	47	
42	8¾	SEC	H-10	3-½	825804	8165	8314	149	44	3.39	30	45		1300		50	6½	–	–	9.3	54	
21C	7⅞	REED	HFCH	–	7316	8314	8320	6	4	1.50×	10	40		1000		54	6½	–	–	9.3	48	REC 4½'
43	8¾	SEC	H-10	2-½ 1-½	820322	8320	8572	252	47½	5.31	30	45	3¾°	1400		56	6½	–	–	9.6	54	
44	8¾	SEC	H-10	3-3/8	821848	8572	8740	168	36¾	4.57	30	40		1400		54	6½	–	–	9.4	50	
22-C	7⅞	REED	HFCH	–	734	8740	8741	1	2	.5	10	40		1000		44	6½	–	–	9.6	47	No Rec.
45	8¾	REED	YCG-J	3-3/16	V44591	8741	8803'	62	20½	3.02	30	45		1400		52	6½	–	–	9.7	54	
46	8¾	SEC	H-10	3-3/16	821129	8803	8915	112	31	3.61	30	40		1400		56	6½	–	–	9.3	55	

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SHEET 1 OF 4

COUNTRY	FIELD	STATE	SECTION	TOWNSHIP	RANGE	SPUD	US	UNDER INTER	S. AND STRING
AUSTRALIA	W.C.	N.T.				5-27-65			

CONTRACTOR	RIG NO.	LEASE	WELL NO.	COMPANY	TOOL PUSHER
AUSTRALIAN DRILLING CO PTY LTD		MC DILLS	No 1	AMERADA PETR. CORP.	SHERWOOD

MAKE RIG	TYPE	RIG POWER	PUMP POWER	BOILERS — No.	RATED HP	PUMP NO. 1	PUMP NO. 2
NATIONAL	N-55	2- SUPERIOR PTDL	SAME			NATL. C-350 5½ X 10	G.D. EXP 5½ X 16

DRILL PIPE	TOOL JOINT TYPE	DRILL COLLARS O.D.	I.D.	LENGTH	MUD TYPE	SALESMAN
4½" OD	4½ IF	6"	2⅞	30	SPECIFIC	

RUN NO.	SIZE	MAKE	TYPE	JET SIZE	SERIAL	DEPTH FROM	DEPTH TO	FEET	HOURS	FEET PER HOUR	WEIGHT 1000 POUNDS	R.P.M.	VERTICAL DEV.	PUMP PRESSURE	PUMP OPER. ATION	NO. 1 SPM	NO. 1 LINER	NO. 2 SPM	NO. 2 LINER	MUD WT.	MUD VIS.	REMARKS
23-C	6⅛	CHRIS	DIA	-	5119C	8915	8925	10	9¼	1.08	8	40		1000		46	5½	-	-	9.3	55	REC 10'
47	8¾	SEC	H-10	3-⅜	827987	8925	9019	94	29½	3.19	30	40	4°	1400		56	5½	-	-	9.4	53	
48	8¾	SEC	H-10	3-⅜	845474	9019	9043	24	10¾	2.23	30	40		1400		53	5½	-	-	9.3	54	
24-CPR	6⅛	CHRIS	DIA	-	5119C	9043	9053	10	5¾	1.74	8	40		1000		45	5½	-	-	9.3	54	REC 7'
49	8¾	REED	YHWG-J	3-⅜	V41289	9053	9102	49	12¾	3.84	30	40		1400		58	5½	-	-	9.3	48	
50	8¾	REED	YHWG-J	R26	931116	9102	9152	50	17¾	2.81	20	58		1000		54	5½	-	-	9.3	47	
51	8¾	REED	YH-J	3-⅜	084536	9152	9226	74	29½	2.51	30	60	5¾	1200		56	5½	-	-	9.4	48	
52	8¾	SEC	MAN-J	3-7/16	667605	9226	9299	73	21	3.48	20	60		1200		58	5½	-	-	9.5	54	
53	8¾	SEC	S-6-J	3-7/16	609452	9299	9354	55	13¼	4.15	25/20	60	6½	1000		55	5½	-	-	9.5	50	
25-CPR	6⅛	CHRIS	DIA	-	5119C	9354	9364	10	12	.83	8	40		1000		52	5½	-	-	9.5	50	REC 9'
54	8¾	REED	YH-J	3-7/16	733145	9364	9403	39	14½	2.69	30	60	7°	1200		55	5½	-	-	9.5	51	
55	8¾	SEC	MAN-R	-	608914	9403	9450	47	16¼	2.89	30	60	8°	1200		55	5½	-	-	9.5	50	
56	8¾	SEC	MA-L	REC	660460	9450	9500	50	17¼	2.90	30	60		1200		55	5½	-	-	9.6	55	
57	8¾	SEC	MAN-J	3-7/16	667137	9500	9587	87	24	3.63	30	60	10°	1150		55	5½	-	-	9.6	52	
58	8¾	SEC	MAN-J	3-7/16	667159	9587	9632	45	15	3.00	30	60		1150		53	5½	-	-	9.5	56	
26-CPR	6⅛	CHRIS	DIA	-	5119C	9632	9642	10	5¾	1.74	10	40		1000		48	5½	-	-	9.6	54	REC 10'
59	8¾	REED	YH-J	3-7/16	733135	9642	9700	58	22¼	2.61	30	55	11°	1200		55	5½	-	-	9.6	55	
60	8¾	SEC	MAN-J	3-7/16	667133	9700	9799	99	30	3.30	30	60	10°	1200		55	5½	-	-	9.6	55	
61	8¾	SEC	MAN-J	3-7/16	667155	9799	9875	76	25¼	2.95	30	60		1200		55	5½	-	-	9.7	51	
62	8¾	REED	YHWG-R	R26	931115	9875	9932	57	22	2.59	30	60	12°	1000		56	5½	-	-	9.7	50	
63	8¾	REED	YHWG-R	R26	931117	9932	9968	36	15¼	2.36	30	60		1000		57	5½	-	-	9.7	55	
64PR	6⅛	SEC	H-10-J	3-⅜	845474	9968	10,058	90	37½	2.40	30	40	14°	1400		56	5½	-	-	9.7	60	
27-CPR	6⅛	CHRIS	DIA	-	5119-C	10,058	10,068	10	4½	2.22	10	40		1000		46	5½	-	-	9.7	55	REC 9'
65	8¾	SEC	H-10-J	3-⅜	845475	10,068	10,194	126	51¼	2.46	30	40	15°	1400		57	5½	-	-	9.5	51	

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SHEET 1 OF 5

COUNTRY	FIELD	STATE	SECTION	TOWNSHIP	RANGE	SPUD	US	UNDER INTER	SET AND STRING
AUSTRALIA	W.C.	N.T				5-27-65			

CONTRACTOR	RIG NO.	LEASE	WELL NO:	COMPANY	TOOL PUSHER
AUSTRALIAN DRILLING Co PTY LTD	2	Mt DILLS No1		AMERADA PETR. CORP OF AUSTRALIA LTD	SUTHERWOOD

MAKE RIG	TYPE	RIG POWER	PUMP POWER	BOILERS — No.	RATED HP	PUMP No. 1	PUMP No. 2
NATIONAL	N-55	3-SUPERIOR PTD-6	SAME			NAT'L C-350 5½" x 12"	G.D. FXB 6½" x 16"

DRILL PIPE	TOOL JOINT TYPE	DRILL COLLARS	O.D.	I.D.	LENGTH	MUD TYPE	SALESMAN
4½" OD	4½ IF		6"	2⅜	30	SPERSENE	

RUN NO.	SIZE	MAKE	TYPE	JET SIZE	SERIAL	DEPTH FROM	DEPTH TO	FEET	HOURS	FEET PER HOUR	WEIGHT 1000 POUNDS	R.P.M.	VERTICAL DEV.	PUMP PRESSURE	PUMP OPERATION	NO. 1 SPM	NO. 1 LINER	NO. 2 SPM	NO. 2 LINER	MUD WT.	MUD VIS.	REMARKS
66	8¾	SEC	H-10-J	3-⅜	845707	10,194	10,245	51	50¾	1.66	30	45		1200		56	5½	–	–	9.6	55	
67	8¾	REED	YH-J	3-7/16	034594	10,245	10,301	56	17½	3.20	30	60	16°	1250		54	5½	–	–	9.7	58	
68	8¾	REED	YH-J	3-7/16	733188	10,301	10,371	70	25	2.80	30	60		1200		56	5½	–	–	9.7	60	
69	8¾	SEC	M4L	REG	608752	10,371	10,431	60	19	3.16	30	60		1000		58	5½	–	–	9.7	55	
70	8¾	SEC	M4L-J	3-7/16	617525	10,431	10,505	74	19¾	3.75	30	60	16°	1200		58	5½	–	–	9.6	52	
28-CR	6⅛	CHRIS	DIA	–	5119-C	10,505	10,515	10	4½	2.22	10	40		1000		46	5½	–	–	9.7	50	REC-10'

IV. GEOLOGY

1. SUMMARY OF PREVIOUS WORK

Prior to the drilling of the McDills well, exploration work on O.P.57 was by geophysical methods. A geological report written by R.C. Sprigg, "Geology and Petroleum Prospects of the Simpson Desert", speculated on the stratigraphic section to be found in this area.

In 1962 an aeromagnetic survey of the Simpson Desert Area was conducted by the Bureau of Mineral Resources, and a gravity survey covering most of O.P.57 was conducted by Geosurveys of Australia Pty. Ltd. A number of anomalous trends were defined and one, the McDills anomaly, was investigated by seismic surveys.

The seismic program was initiated in the Andado area in October of 1963 and was extended into the Anacoora area during the first part of 1964; into the Hale River Floodout area during June and July of 1964 and into the Dakota Bore area during August and September of 1964.

In neighbouring permits seismic surveys have been conducted by Australian Aquitaine Pty. Ltd. in O.P.36, and by the French Petroleum Company Pty. Ltd. in O.E.L. 20 and 21.

2. SUMMARY OF REGIONAL GEOLOGY

Northern Territory Oil Permit 57 lies within the Simpson Desert, an area in the western part of the Great Artesian Basin characterized by northwest-southeast trending stabilized sand ridges that reach a maximum height of about 60 feet and are often separated by intervening clay pans.

Sediments considered to be of Mesozoic age are exposed in two outcrop areas in the Simpson Desert, one the Hale River area about 30 miles northeast of Andado #2 Bore and the other in the Hay River area. Mesozoic sediments are known in the subsurface from water bores that penetrate the Rumbalara shale and produce water from the De Souza sandstone.

Permian sediments were previously known from the Witchetie and Purni wells drilled by the French Petroleum Company to the south of O.P.57, and from Malcolm's Bore located just to the north of O.P.57. Permian sediments were found, as expected, in the McDills well. There is a major unconformity at the base of the Permian, and the overlying Jurassic De Souza sandstone is disconformable with the Permian.

A thick sequence of continental beds, the Finke Group, underlie the Permian. The thickness and extent of these

beds vary widely. They are expected to act as regional fill material with the thickest sequences found in the regionally low areas.

The Mereenie sandstone, a sequence of fluvial clastics, was present in the McDills well and has a widespread regional distribution.

A sequence of highly indurated sandstones encountered below the Mereenie cannot be dated at the present time. This section could be part of the Mereenie sequence, or may eventually correlate with the Upper Ordovician Stairway sandstone.

The dolomite sequence found in the bottom of the McDills well has been dated as Lower Cambrian Todd River dolomite on the basis of the brachiopods found in Core No.30. These brachiopods have been identified as "Micromitra" etheridgei and "Misusia" compta. The range of these brachiopods limit this section to the Lower Cambrian.

STRATIGRAPHIC INTERPRETATION AFTER DRILLING

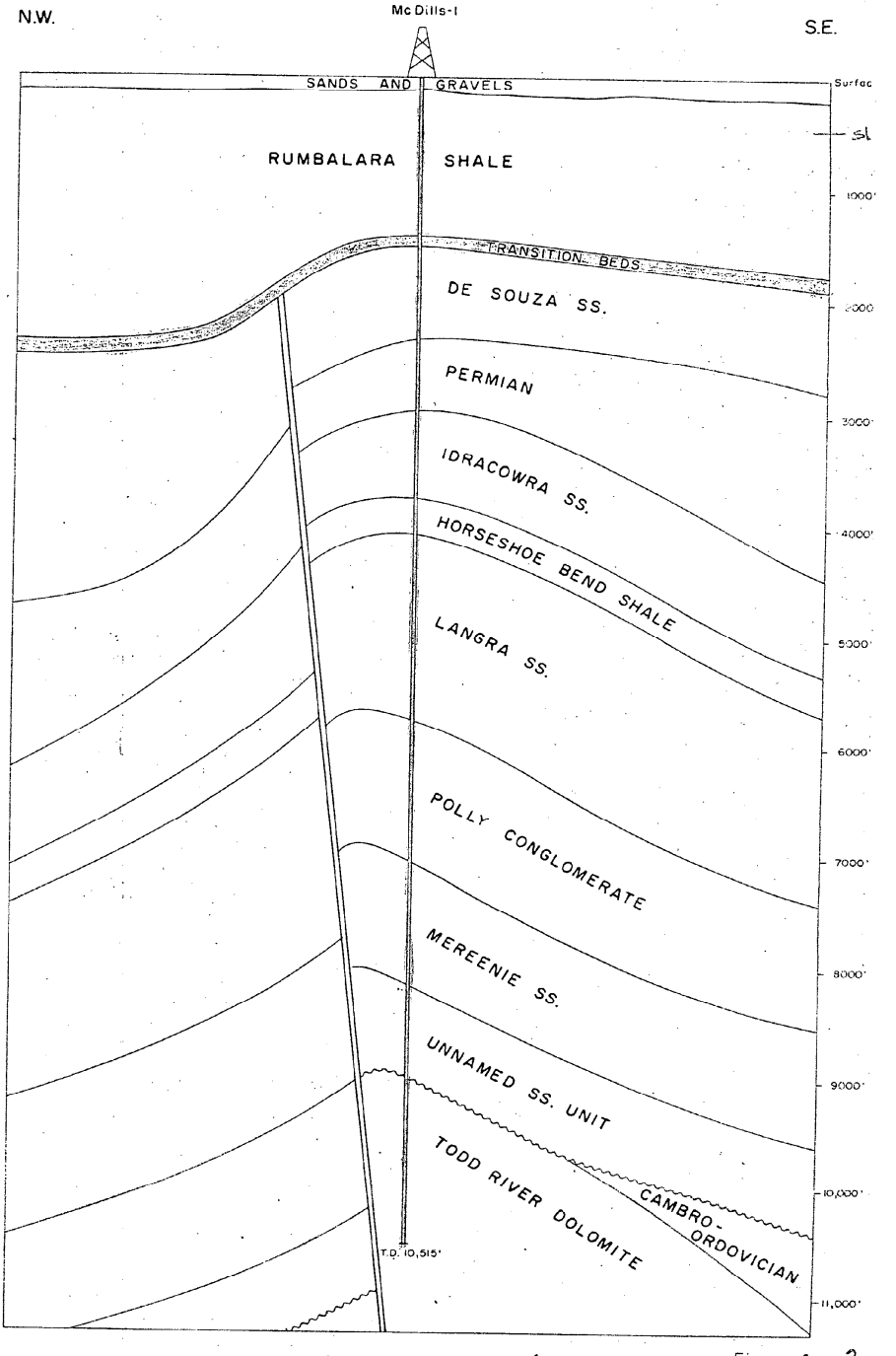


Figure 4.

STRATIGRAPHIC INTERPRETATION BEFORE DRILLING

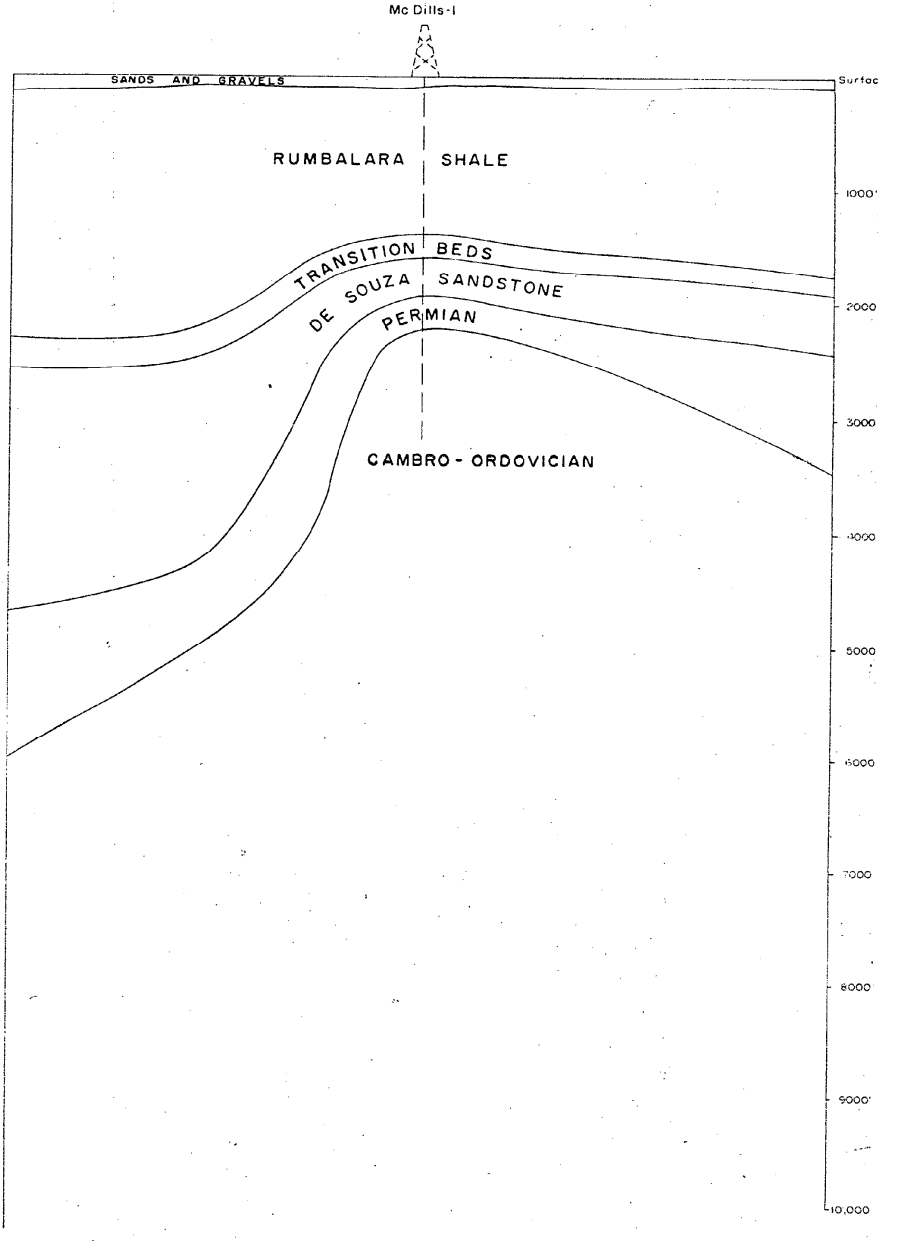


Figure 3.

3. STRATIGRAPHIC TABLE

AGE	GROUP	FORMATION	DEPTH	SUB SEA ELEVATION K.B.	THICK-NESS
QUATERNARY			SURFACE	+412	101
LOWER CRETACEOUS	— — —	Rumbalara Shale	101	+311	1335
		Transition Beds	1436	-1024	82
JURASSIC		De Souza Sandstone	1518	-1106	834
PERMIAN		Purni + Crown Point	2352	-1940	~~635~~ 868
UPPER DEVONIAN to CARBONIFEROUS	Finke	Idracowra Sandstone	~~2987~~ 3220	~~-2575~~ 2808	~~803~~ 570
		Horseshoe Bend Shale	3790	-3378	280
		Langra Sandstone	4070	-3658	1730
		Polly Conglomerate	5800	-5388	1290
DEVONIAN?		Mereenie Sandstone	7090	-6678	1120
		Unnamed Unit	8210	-7798	814
LOWER CAMBRIAN		Todd River Dolomite	9024	-8612	+1491
		Total Depth	10,515	-10,103	

KB = 412'

4. STRATIGRAPHY

The stratigraphic succession penetrated in the Amerada McDills No.1 is described below:

Quaternary. Surface to 101'

Sandstone, red brown, fine grained, rounded, frosted, grading to tan, coarse to very coarse with granules and pebbles, mostly unconsolidated.

Lower Cretaceous. Rumbalara Shale 101-1436' 1335'

Mudstone, dark grey, partly laminated with dark grey siltstone, locally glauconitic, scattered Inoceramus prisms, limonite inclusions, interbedded stringers of tan, cryptocrystalline limestone in lower part.

Transition Beds (Aptian-Neocomian). 1436-1518' 82'

Sandstone, fine to very fine grained, subangular, white clay matrix, interbedded dark grey mudstone and siltstone, trace of very coarse quartz grains in lower part.

Jurassic De Souza Sandstone. 1518-2352' 834'

Sandstone, clear quartz grains, fine to very coarse grained, subangular, unconsolidated, becoming pyritic towards base, good porosity.

Permian Crown Point. 2352-2987' (3220)
Thickness = 668'
2352 - 2504' = Upper Permi (152')
2504 - 2764' = Middle " (260')
2764 - 2987' = Lower " (223')
2987 - 3220 = Crown Point (233')

Sandstone, white to clear, locally grey, fine to medium - locally very coarse grained, trace white clay matrix, mostly porous, very pyritic in part, becoming conglomeratic in lower part.

Upper part contains lignite stringers. Grey shale and siltstone interbedded with the sandstone throughout.

Upper Devonian-Carboniferous Finke Group. 2987-7090' (3220):

Idracowra Sandstone. 2987-3790' (3220) 570' = 174 m

BMR Bull #100 pages this unit in Cr. Pt.

Sandstone, varicolored, locally white to light grey, very fine to coarse grained, mostly well rounded grains, calcareous in part, fairly porous. Interbedded grey conglomeratic shale and grey siltstone.

Horseshoe Bend Shale. 3790-4070' 280' = 85 m

Shale, red, green, maroon and grey, slightly micaceous, interbedded with red and green siltstone. Lower part contains some white, very fine grained, calcareous sandstone.

2.

Langra Sandstone. 4070-5800' 1730' = 528 m

Sandstone, orange, red, locally white to grey, fine to coarse grained, subangular to well rounded, cross-bedded, slightly calcareous in upper part, conglomeratic in lower part, mostly porous, interbeds of grey to green shale and silty shale. Interval from 4469-4484' very pyritic.

Polly Conglomerate. 5800-7090' 1290' = 394 m

Conglomerate with varicolored pebbles of quartzite, chert, granite and shale in matrix of white to buff and orange to red, fine to coarse grained, subangular sandstone. Some interbedded red to white, fine to medium grained sandstone and varicolored shale.

Devonian? Mereenie Sandstone. 7090-8210'

Sandstone, red brown to reddish orange, trace white, fine to coarse grained, subangular to subrounded, friable, fairly porous, locally slightly calcareous, cross-bedded, trace varicolored shale.

Unnamed Unit. 8210-9024' Ordov?

Sandstone, white, pink, red brown, fine grained in upper part - fine to coarse grained in lower part, subangular to well rounded, very indurated and tight, locally gypsiferous? and hematitic, trace red and green shale.

Lower Cambrian Todd River Dolomite. 9024-10,515'

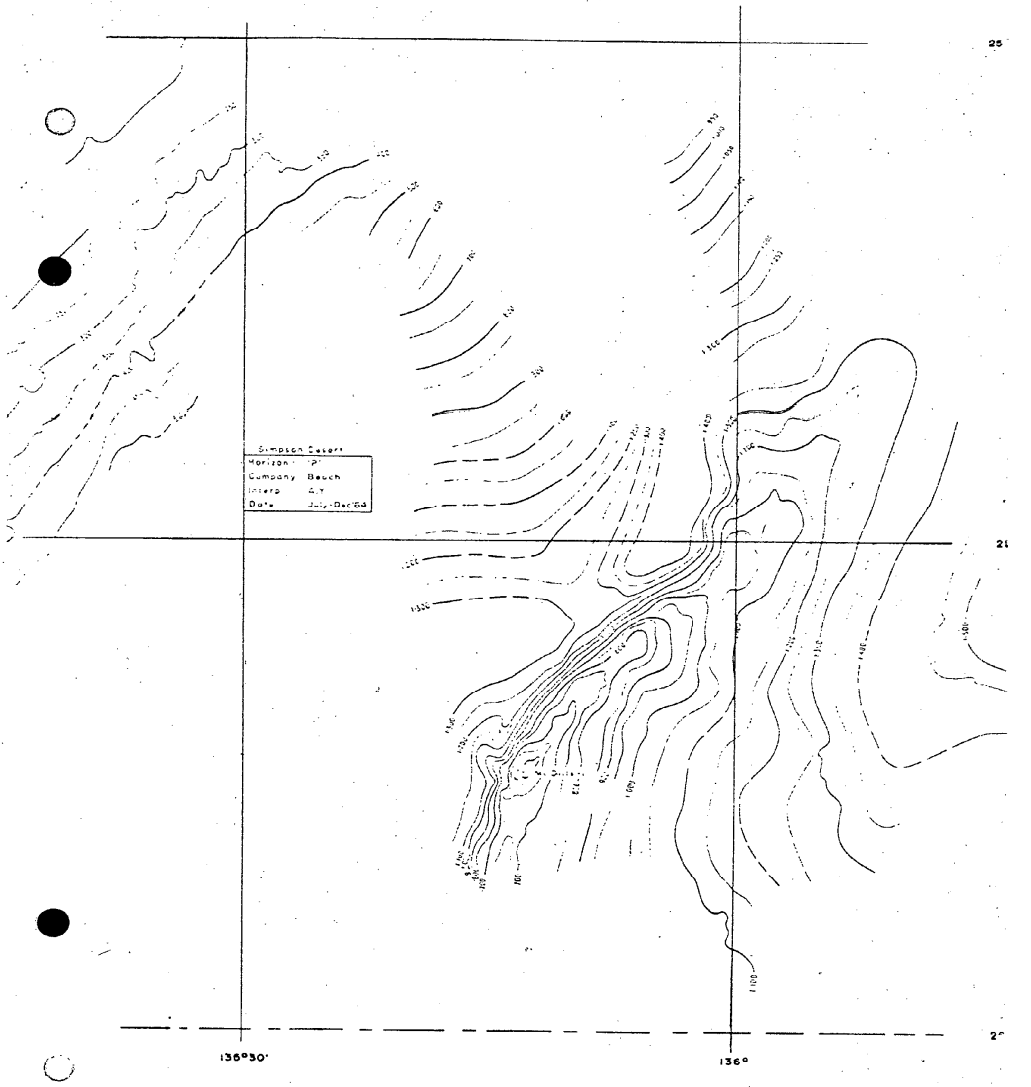
Dolomite, dark grey, microcrystalline, very dense, argillaceous, thin bands of light to medium grey, microcrystalline limestone, dark shale partings, anhydrite filling in fractures, upper part glauconitic, dips indicated from 20° - 30°.

Note: Brachiopods found in Core No.30 9632'-9642' identified as "Micromitra" etheridgei and "Nisusia" compta indicate a Lower Cambrian age for this formation.

Fauna Assemblage 2 of Tridy (1956)

5. STRUCTURE

The McDills structure is a northeast-southwest trending anticline delineated first by gravity work and detailed by seismic surveys. This structure has no surface expression due to the sand dune cover of the Simpson Desert. It has an indicated length of over



REFLECTION SEISMOGRAPH SURVEY

MC DILLS ANTICLINE

by

Geosurveys of Australia Pty. Ltd.

Horizon - Permian C.I. - 05 ms.

Figure 5

45 miles and is about 5 miles wide, but it has not been completely defined by seismic work at the present time. The indicated closure on the Permian horizon was about 360' at the McDills well.

The west flank of the structure at Permian level is much steeper than the east flank and is presumed to represent faulting. The upper reflector ("C" horizon) appears to originate from the De Souza sandstone. Structure is still indicated at this horizon - although to a lesser degree than at Permian level.

No worthwhile dip information was derived from cores above 8200' due to well developed cross-bedding in the sandstones. Dips found in cores of the Todd River dolomite were 20° - 30°. Dipmeter results are in agreement with the dips found in cores of the Todd River dolomite, and are indicated as being in a southeasterly direction.

6. RELEVANCE TO OCCURRENCE OF PETROLEUM

In the Mesozoic sequence present in the Simpson Desert portion of the Great Artesian Basin the Rumbalara shale is of marine origin, and the De Souza sandstone was deposited under non-marine conditions. The Rumbalara shale is likely source material, but the well-washed De Souza sandstone aquifer does not appear to offer sufficient trapping mechanisms for hydrocarbon accumulation.

The Permian sequence offers both good source material and reservoir sands within the area. The Permian shales are rich in organic material and there are numerous beds of lignite present in the upper part of the Permian. The Permian sands are generally porous and permeable except where they are partly filled by clay material or by excessive amounts of pyrite.

The Finke Group has an abundance of reservoir rock within its predominantly sandstone lithology - but does not have any source material.

The Mereenie sandstone contains good reservoir sands and could easily obtain hydrocarbons from the underlying Lower Paleozoic marine sediments. The Todd River dolomite was totally lacking in porosity, but this formation is a minor part of the Lower Paleozoic sequence which should be found within the area. The Todd River dolomite was very argillaceous and appears to be a possible source rock.

The well was almost totally devoid of shows. A gas show was logged from 1365-1380' in the lower part of the Rumbalara shale. An induction log was run to

check the lithology for reservoir potential with negative results.

7. POROSITY AND PERMEABILITY

Good porosity was found in sandstones of the De Souza, Permian, Finke Group and the Mereenie. Average porosities for clean sands taken from the Gamma Ray - Acoustic Velocity log are listed below:

De Souza sandstone	:	25 - 35%
Permian	:	15 - 25%
Finke Group	:	20 - 25%
Mereenie	:	10 - 15%

No core was analyzed due to the lack of hydrocarbons.

8. CONTRIBUTION TO GEOLOGICAL CONCEPTS

The Mesozoic stratigraphy was fairly well known in this area prior to the drilling of the McDills well and little new information was gained concerning this sequence. Numerous water bores marginal to the well provided information on the Mesozoic rocks and the Jurassic aquifer.

The Permian sequence was also known in a general way from wells in the surrounding area. The Permian sequence of sandstones, shales and lignitic beds is confined to the Lower Permian and is similar to the Permian section drilled at the French Petroleum Company's Purni #1 well.

The Finke Beds were similar lithologically to descriptions of these beds to the west and south, but were much thicker than expected. The 4103' assigned to this interval is considerably thicker than found at the French Petroleum Company's Witcherie #1 well to the south or in outcrop areas to the west.

The Mereenie sandstone is 1120' thick in the McDills well - which represents a much thinner section than is found in the outcrop sections to the north. In both the Steeles Gap and Todd River outcrop sections the Mereenie is in excess of 2000' thick. The Mereenie is absent to the south in the French Petroleum Company's Witcherie and Purni wells, and to the west in the Transoil Mt. Charlotte well. This would seem to indicate that the Mereenie is thinning from north to south across the Simpson Desert. The unnamed sandstone section below the Mereenie from 8210' - 9024' cannot be correlated at the present time, but could belong in the Lower Mereenie or possibly equate with the Stairway sandstone.

The carbonate sequence drilled from 9024' to total depth was placed in the Todd River dolomite on the basis of the brachiopods "Micromitra" etheridgei and "Nisusia" compta. These fossils are found in the Todd River dolomite at the Todd River outcrop section to the north; in the Lower Cambrian Ajax limestone at the Mt. Scott section to the south, and in the Wilkawillina limestone in the Lake Frome area. This section was not completely penetrated and is of unknown thickness in this area. It is presumed that the Cambrian section at this location is incomplete due to truncation, and that younger Cambrian sediments and perhaps Ordovician rocks were deposited in this area.

V. REFERENCES

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French Petroleum Company	Witcherie No.1
	Purni No.1

Seismic Surveys:

Beach Petroleum N.L. Dakota Bore Seismic Survey

APPENDIX I

CORE DESCRIPTIONS

Thirty-two cores were cut for stratigraphic information. Of 380' of formation cored, 281½' or 74.1% were recovered.

In the following sheets a graphic representation of each core is made as well as a detailed description.

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 4, 1965 — CORE NO. 1

WELL McDills No.1 — INTERVAL 2375-2390'

COMPANY Amerada — RECOVERY 13 ft or 86.7%

LOCATION 25°43'50"S; 135°47'25"E — FORMATION ~~Crown Point~~ U PURNI

ELEVATION G.L. 396'; K.B. 412' — GEOLOGIST H.M. Hughes

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
2375		3	2375 -2377½ Mudstone, grey, silty with lignite stringers
2376		2.5	
2377		2	2377½-2378½ Sandstone, fine grained, subangular, micaceous, clay matrix, fairly porous, laminations of black lignite and siltstone
2378		3	2378½-2380½ Lignite, black, pyrite nodules, interbedded grey mudstone and siltstone
2379		4	
2380		3	2380½-2381 Shale, dark grey, fissile, lignite inclusions
2381		1	2381-2382½ Siltstone, light grey with grey shale laminations
2382		2	2382½-2384 Sandstone, light grey, fine grained, subangular micaceous, clay matrix, fair porosity, shale laminations
2383		2.5	
2384		3	2384 - 2385 Sandstone, light grey, fine to medium grained, subangular fair porosity, dark grey shale and siltstone laminae
2385			

2C

CORE DESCRIPTION

DATE June 4, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION G.L. 396'; KB 412'

CORE NO. 1
INTERVAL 2375-2390
RECOVERY 13 ft. or 86.7%
FORMATION U PURNI Crown Point
GEOLOGIST H.M. Hughes

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
2385		5	2385 - 2386 Siltstone, dark grey, subangular, shale laminations and pyrite nodules.
2386		2	2386 - 2387 Siltstone with lignite inclusions.
2387		2	2387 - 2387½ Sandstone, light grey, subangular, micaceous, clay matrix, porous. 2387½ - 2388 Sandstone, as above, grading in to grey, fissile shale with leaf impressions.
2388		2	2388 - 2390 No recovery.
2389		3	
2390			

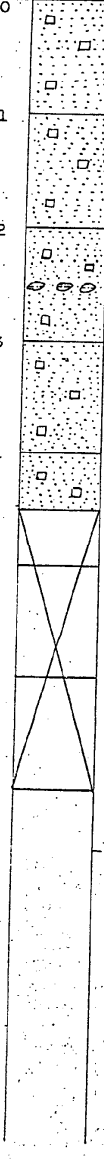
AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 1

CORE DESCRIPTION

DATE June 6, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396'; KB 412'

CORE NO. 2
INTERVAL 2690-2697
RECOVERY 4½ ft. or 64.3%
FORMATION ~~Crown Point~~ M. BURNI
GEOLOGIST H.M. Hughes

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
2690			2690 - 2694½
		6.5	Sandstone, white-light grey, fine grained, subangular, poorly cemented, excellent porosity, trace white clay matrix, pyrite nodules throughout. Mudstone nodules at 2692½ ft.
2691		6	
2692		7	
2693		5	
2694		8.5	2694½ - 2697 No recovery.
2695		10	
2696		20	
2697			



37

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 7, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396'; KB 412'

CORE NO. 3
INTERVAL 2697-2740
RECOVERY 9ft. or 20.9%
FORMATION ~~Crown Point~~ M Purni
GEOLOGIST H.M. Hughes

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
2697		5	2697 - 2706 Sandstone, white-light grey, fine grained, subangular, poorly cemented, excellent porosity, trace white clay matrix, pyrite nodules throughout. Lignite at 2698'6" at 2698'10"
2698		11	
2699		11	
2700		10.5	
2701		11	
2702		5.5	
2703		6.5	
2704		5	
2705		4.5	
2706			2706 - 2707 No recovery
		9.5	
2707			

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 7, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396'; KB 412'

CORE NO. 3
INTERVAL 2697-2740
RECOVERY 9ft. or 20.9%
FORMATION ~~Crown Point~~ M PUKNI
GEOLOGIST H.M. Hughes

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
2707		13	2707 - 2717 No recovery
2708		6	
2709		3	
2710		3	
2711		7	
2712		11	
2713		5	
2714		6.5	
2715		15	
2716		4.5	
2717			

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 7, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396'; KB 412'

CORE NO. 3
INTERVAL 2697-2740
RECOVERY 9ft or 20.9%
FORMATION ~~Crown Point~~ M PURNI
GEOLOGIST H.M. Hughes

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
2717		4	2717 - 2727 No recovery
2718		5	
2719		7	
2720		8.5	
2721		8	
2722		5	
2723		6	
2724		16	
2725		4.5	
2726		5.5.	
2727			

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AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 7, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396'; KB 412'

CORE NO. 3
INTERVAL 2697-2740
RECOVERY 9ft. or 20.9%
FORMATION ~~Crown Point~~ M Pubni
GEOLOGIST H.M. Hughes

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
2727			
		3.5	2727-2737 No recovery
2728			
		3.5	
2729			
		5	
2730			
		5	
2731			
		3	
2732			
		3	
2733			
		5	
2734			
		15	
2735			
		4	
2736			
		7	
2737			

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 7, 1965

WELL McDills No.1

COMPANY Amerada

LOCATION 25°43'50"S; 135°47'25"E

ELEVATION GL 396': KB 412'

CORE NO. 3

INTERVAL 2697-2740

RECOVERY 9ft. or 20.9%

FORMATION ~~Crown~~ M PURNI Point

GEOLOGIST H.M. Hughes

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
2737		7	2737 - 2740 No recovery
2738		3	
2739		2	
2740			

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 8, 1965 — CORE NO. 4

WELL McDills No.1 — INTERVAL 2959-2973

COMPANY Amerada — RECOVERY 13.5ft. or 96.4%

LOCATION 25°43'50"S; 135°47'25"E — FORMATION ~~Crown Point~~ BURNI

ELEVATION GL 396'; KB 412' — GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
2959			
		8.5	2959 - 2963 Shale, medium grey, very arenaceous, medium to large quartz grains, scattered very large quartz and siltstone pebbles ¼" to 1" in size.
2960			
		10	
2961			
		7.5	
2962			
		12	
2963			2963 - 2964½ Sandstone, white to light grey, fine to medium grained, calcareous, scattered dark grey to black
		16	fragments (phosphate?). No porosity no show.
2964			
		10	2964½ - 2972 Shale, medium grey, very arenaceous, medium to large quartz grains, scattered very large quartz
2965			and siltstone pebbles ¼" to 1" in size.
		11.5	
2966			
		11.5	
2967			
		12	
2968			
		20	
2969			

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 8, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396'; KB 412'

CORE NO. 4
INTERVAL 2959-2973
RECOVERY 13.5ft. or 96.4%
FORMATION ~~Crown Point~~ PURNI
GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
2969			
		10.5	
2970			
		12.5	
2971			
		14	
2972			2972 - 2973 Shale, medium - dark grey, slightly arenaceous.
		18	
2973			

HH

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 1

CORE DESCRIPTION

DATE June 8, 1965 CORE NO. 5

WELL McDills No.1 INTERVAL 2973-2983

COMPANY Amerada RECOVERY 1ft. or 10%

LOCATION 25°43'50"S; 135°47'25"E FORMATION L PURNI Crown Point

ELEVATION GL 396'; KB 412' GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
2973			2973 - 2974
		20	Shale, medium to dark grey, fissile, brittle, no quartz grains or mica.
2974			2974 - 2983
		12	No recovery
2975			
		19	
2976			
		15	
2977			
		15	
2978			
		23	
2979			
		22	
2980			
		28	
2981			
		41	
2982			
		54	
2983			

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 2

CORE DESCRIPTION

DATE June 9, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396'; KB 412'

CORE NO. 6
INTERVAL 3126-3138
RECOVERY 12 ft. or 100%
FORMATION ~~Idracowra Sandstone~~ CROWN POINT
GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
3126		18	3126 - 3132 Shale, medium to dark grey, very arenaceous, many pebbles of chert and some metamorphics.
3127		6.5	
3128		8	
3129		9.5	
3130		10	
3131		16	
3132		18	3132 - 3137 Shale, dark grey, highly banded with slickensides, soft, very little quartz grains or other material.
3133		22.5	
3134		23	
3135		22	
3136			

111

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 9, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396'; KB 412'

CORE NO. 6
INTERVAL 3126-3138
RECOVERY 12ft. or 100%
FORMATION ?Cr. Point Igracowra Sandstor
GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
3136		9	
3137		16	3137 - 3138 Shale, dark grey, very arenaceous and grading to pebble size.
3138			

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 2

CORE DESCRIPTION

DATE June 10, 1965 CORE NO. 7

WELL McDills No.1 INTERVAL 3361-3376

COMPANY Amerada RECOVERY 14ft. or 93.3%

LOCATION 25°43'50"S; 135°47'25"E C. Pt. in BMR Bull #100 FORMATION Idracowra Sandstone

ELEVATION GL 396'; KB 412' GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
3361			
		7	3361 - 3375 Sandstone, light grey, very fine to coarse grained, subangular with occasional streaks of conglomeratic sand and pyrite, generally soft.
3362		8	
3363		8	
3364		6	
3365		7	
3366		7.5	
3367		7	
3368		5.5	
3369		6	
3370		6	
3371			

48

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 10, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396'; KB 412'

CORE NO. 7
INTERVAL 3361-3376
RECOVERY 14ft. or 93.3%
FORMATION Idracowra Sandstone
GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
3371			
		7	
3372			
		5	
3373			
		5	
3374			
		10	
3375			3375 - 3376 No recovery.
		10	
3376			

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 11, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°42'25"E
ELEVATION GL 396'; KB 412'

CORE NO. 8
INTERVAL 3645-3660
RECOVERY 15ft or 100%
FORMATION Toracowra Sandstone
GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
3645			3645 - 3646
		16	Sandstone, white, fine grained, well rounded, calcareous, friable.
3646			3646 - 3651
		11	Siltstone, grey interbedded with sandstone as above. Dip 5°?
3647			
		6	
3648			
		8	
3649			
		6	
3650			
		8.5	
3651			3651 - 3652
		6	Sandstone, white, very fine grained, very calcareous, very hard, tight.
3652			3652 - 3659
		13	Sandstone, white, fine to medium grained, well rounded, calcareous, interbedded with grey siltstone, horizontal to approximately 5° dip.
3653			
		6	
3654			
		6	
3655			

50

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 11, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396'; KB 412'

CORE NO. 8
INTERVAL 3645-3660
RECOVERY 15ft. or 100%
FORMATION Idracowra Sandstone
GEOLOGIST E.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
3655		6	
3656		6	
3657		6	
3658		9	
3659		6	3659 - 3660 Sandstone, white, fine to coarse grained, well rounded, very coarse grained, calcareous.
3660			

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 2

CORE DESCRIPTION

DATE June 12, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396'; KB 412'

CORE NO. 9
INTERVAL 3822-3837
RECOVERY 2ft. or 13.3%
FORMATION Horseshoe Bend shale
GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
3822		11	3822 - 3824 Shale, red, green, fissile.
3823		21	
3824			3824 - 3837 No recovery.
		17	
3825		21.5	
3826		19.	
3827		12	
3828		12	
3829		29	
3830		19	
3831		7	
3832			

52

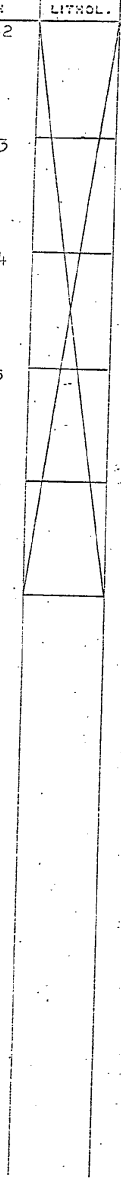
AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 12, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION 396'GL; KB 412'

CORE NO. 9
INTERVAL 3822-3837
RECOVERY 2ft or 13.3%
FORMATION Horseshoe Bend Shale
GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
3832			
		3	
3833			
		2.5	
3834			
		3.5	
3835			
		3.5	
3836			
		3	
3837			



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AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 2

CORE DESCRIPTION

DATE June 13, 1965 CORE NO. 10

WELL McDills No.1 INTERVAL 3837-3850

COMPANY Amerada RECOVERY 8ft. or 61.5%

LOCATION 25°43'50"S; 135°47'25"E FORMATION Horseshoe Bond Shale

ELEVATION GL 396'; KB 412' GEOLOGIST P.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
3837		5.5	3837 - 3845 Shale, red and green, fissile, interbedded with red and green siltstone which locally graded into fine grained, very calcareous sandstone.
3838		8.5	
3839		4.5	
3840		11	
3841		13	
3842		12.5	
3843		8.5	
3844		8	
3845			3845 - 3850 No recovery.
3846		5	
3847		7	

54

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 13, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396'; KB 412'

CORE NO. 10
INTERVAL 3837-3850
RECOVERY 8ft. or 61.5%
FORMATION Horseshoe Bend Shale
GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
3847		8.5	
3848		5	
3849		7	
3850			

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 2

CORE DESCRIPTION

DATE June 14, 1965 CORE NO. 11

WELL McDills No.1 INTERVAL 4152-4167

COMPANY Amerada RECOVERY 15ft. or 100%

LOCATION 25°43'50"S; 135°47'25"E FORMATION Langra Sandstone

ELEVATION GL 396'; KB 412' GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
4152		3	4152 - 4167 Sandstone, white with reddish tint, very fine to coarse grained, subangular to well rounded, slightly calcareous, poorly cemented, very soft and friable, excellent porosity, no show, cross bedding 4152-4160.
4153		3	
4154		4	
4155		5	
4156		4	
4157		4	
4158		5	
4159		3	
4160		3	
4161		3	
4162			

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 14, 1965
CORE NO. 11
WELL McDills No.1
INTERVAL 4152-4167
COMPANY Amerada
RECOVERY 15ft. or 100%
LOCATION 25°43'50"S; 135°47'25"E
FORMATION Langra Sandstone
ELEVATION GL 396'; KB 412'
GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
4162			
		2	
4163			
		2	
4164			
		10	
4165			
		6	
4166			
		3	
4167			

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 2

CORE DESCRIPTION

DATE June 15, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396'; KB 412'

CORE NO. 12
INTERVAL 4469-4484
RECOVERY 8½ft. or 56.7%
FORMATION Langra Sandstone
GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate in./Ft.	DESCRIPTION
4469		10	4469 - 4477½ Sandstone, white, fine to coarse grained, very soft and porous, scattered orange to red orange, rounded, quartz grains.
4470		10	
4471		8	
4472		8	
4473		7	
4474		8	
4475		9	
4476		9	
4477		8.5	4477½ - 4484 No recovery.
4478		9	
4479			

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 15, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396'; KB 412'

CORE NO. 12
INTERVAL 4469-4484
RECOVERY 8½ft. or 56.7%
FORMATION Langra Sandstone
GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
4479			
		10	
4480			
		8	
4481			
		11	
4482			
		10	
4483			
		11	
4484			

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 6

CORE DESCRIPTION

DATE June 16, 1965 CORE NO. 13

WELL McDills No.1 INTERVAL 4784-4796

COMPANY Amerada RECOVERY 12ft or 100%

LOCATION 25°43'50"S; 135°47'25"E FORMATION Langra Sandstone

ELEVATION GL 396'; KB 412' GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
4784		11	4784 - 4789 Sandstone, pinkish and reddish tint, fine to coarse grained, subrounded to rounded, clear, red, orange, and milky colored grains, poorly sorted, excellent porosity, slightly kaolinitic cementing material, highly crossbedded with dips from 10° - 30°.
4785		65	
4786		9	
4787		12	
4788		8	
4789		9	4789 - 4793 Sandstone, tan to greenish tint (colors interbedded) very fine to medium grained, clear, orange, red, milky, fair porosity, crossbedded with dips of horizontal to 10°, very firm with fair porosity.
4790		7	
4791		8	
4792		8	
4793		8	4793 - 4796 Sandstone, tan to pinkish, fair to medium grained, clear, orange, red, milky, subrounded to well rounded, fair porosity, dip of less than 5° (cross beddings).
4794			

6C

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 16, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396'; KB 412'

CORE NO. 13
INTERVAL 4784-4796
RECOVERY 12ft or 100%
FORMATION Langra Sandstone
GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate in./Ft.	DESCRIPTION
4794		7.5	
4795		12	
4796			

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 17, 1965 — CORE NO. 14

WELL McDills No.1 — INTERVAL 5102-5117

COMPANY Amerada — RECOVERY 15ft. or 100%

LOCATION 25°43'50"S; 135°47'25"E — FORMATION Langra Sandstone

ELEVATION GL 396'; KB 412' — GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
5102		8	5102 - 5109 Sandstone, tan, with clear, orange, red grains, fine to coarse grained, subangular to well rounded, friable, good porosity, slightly calcareous, green shale fragments disseminated throughout, occasional green shale pebbles up to ½"in diameter.
5103		11	
5104		9	
5105		7.5	
5106		7	
5107		8	
5108		7.5	
5109		9	5109 - 5112 As above with red and green shale pebbles up to 2" in diameter.
5110		5.5	
5111		7.5	
5112			

62

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 17, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396'; KB 412'

CORE NO. 14
INTERVAL 5102 - 5117
RECOVERY 15ft. or 100%
FORMATION Langra Sandstone
GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
5112			
		7	5112 - 5117 Sandstone, tan, fine to medium grained, clear, orange and red quartz grains, subangular to well rounded, friable, fair porosity, slightly calcareous, increase in shale content, dip of 5° - 10°.
5113		8	
5114		8	
5115		7.5	
5116		7	
5117			

63

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 18, 1965 — CORE NO. 15

WELL McDills No.1 — INTERVAL 5252-5267

COMPANY Amerada — RECOVERY 10.5ft. or 70%

LOCATION 25°43'50"S; 135°47'25"E — FORMATION Langra Sandstone

ELEVATION GL 396' ; KB 412' — GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
5252		9	5252 - 5259 Sandstone, tan, fine to coarse grained, subangular to well rounded, very coarse grains, fair to good porosity, slightly calcareous, crossbedded with dips from 0° - 20°.
5253		10	
5254		8.5	
5255		6	
5256		10.5	
5257		8	
5258		10	
5259		14	5259 - 5260 Shale, red, maroon, green, hard, splintery, micaceous; conchoidal fracture, 10° dip.
5260		6	5260 - 5262½ Sandstone, buff, fine to medium grained, subangular to subrounded, slightly calcareous, friable, excellent porosity, crossbedding with dips 5° - 30°.
5261		8	
5262			

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 18, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396' ; KB 412'

CORE NO. 15
INTERVAL 5252-5267
RECOVERY 10.5ft. or 70%
FORMATION Langra Sandstone
GEOLOGIST R.O. Witten

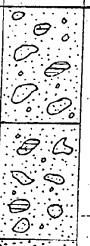
DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
5262			
		11	5262½ - 5267' No recovery.
5263		6	
5264		5	
5265		10	
5266		13	
5267			

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 2

CORE DESCRIPTION

DATE June 19, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396' ; KB 412'

CORE NO. 16
INTERVAL 5544-5556
RECOVERY 11ft. or 91.7%
FORMATION Langra Sandstone
GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
5544		13	5544 - 5546 Conglomerate, pinkish, very coarse shale and quartz pebbles cemented with very fine to coarse grained sandstone.
5545		13	
5546		12	5546 - 5549 Sandstone, dark red-brown, fine grained, subangular to subrounded, very slightly calcareous, poor porosity.
5547		17	
5548		18	
5549		10	5549 - 5550 Sandstone, pinkish, fine to coarse grained, poorly consolidated, slightly calcareous, good porosity, interbedded with small ($\frac{1}{4}$" - $\frac{1}{2}$") pebbles giving a conglomeratic appearance.
5550		14	5550 - 5555 Sandstone, dark red-brown, fine grained, subangular to subrounded, very slightly calcareous, poor porosity.
5551		8	
5552		11	
5553		15	
5554			

bb

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 19, 1965 — CORE NO. 16

WELL McDills No.1 — INTERVAL 5544-5556

COMPANY Amerada — RECOVERY 11ft. or 91.7%

LOCATION 25°43'50"S; 135°47'25"E — FORMATION Langra Sandstone

ELEVATION GL 396' ; KB 412' — GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
5554		8	
5555		10	5555 - 5556 No recovery.
5556			

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 1

CORE DESCRIPTION

DATE June 24, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396' ; KB 412'

CORE NO. 17
INTERVAL 5815-5825
RECOVERY 5ft or 50%
FORMATION Polly Conglomerate
GEOLOGIST H.M. Hughes

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
5815			
		65	5815 - 5820 Conglomerate with vari-colored pebbles of quartzite, marble and some granite, mostly to 1", locally to 3" in size and large red and green shale inclusions. Matrix is sandstone, reddish brown, fine to coarse grained, subangular to well rounded, very hard and tight.
5816		48	
5817		69	
5818		44	
5819		20	
5820			5820 - 5825 No recovery.
		42	
5821		48	
5822		44	
5823		47	
5824		57	
5825			

60

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE June 29, 1965 — CORE NO. 18

WELL McDills No.1 — INTERVAL 6325-6335

COMPANY Amerada — RECOVERY 6ft. or 60%

LOCATION 25°43'50"S; 135°47'25"E — FORMATION Polly Conglomerate

ELEVATION GL 396' ; KB 412' — GEOLOGIST H.M. Hughes

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
6325		18	6325 - 6329½ Conglomerate, buff to dull red, pebbles, to 2", of quartzite, granite, shale. Matrix of sandstone, buff, fine to clear grained, subangular, clacareous, well cemented, hard and tight.
6326		19	
6327		14	
6328		6	
6329		8	6329½ - 6330½ Sandstone, dull red brown, fine grained, subangular, very silty, slightly micaceous, tight, possible dip 15°.
6330		13	6330½ - 6331 Conglomerate, buff-red, pebbles to 1" of quartzite, granite and shale. Matrix of sandstone greenish buff, fine to coarse grained, subangular, very calcareous, hard and tight.
6331		9	6331 - 6331½ Sandstone, red brown, fine to coarse grained, locally granular, subangular, calcareous, hard and tight.
6332		7	6331½ - 6335 No recovery.
6333		11	
6334		24	
6335			

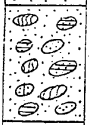
69

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 1

CORE DESCRIPTION

DATE July 2, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396' ; KB 412'

CORE NO. 19
INTERVAL 6592-6597
RECOVERY 5ft. or 100%
FORMATION Polly Conglomerate
GEOLOGIST H.M. Hughes

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
6592			
		19	6592 - 6597 Conglomerate, dull red, pebbles of sandstone and quartzite with matrix of sandstone, dull red-buff, fine to coarse grained, subangular to subrounded, well cemented, hard, tight, slightly calcareous.
6593			
		20	
6594			
		36	
6595			
		29	
6596			
		46	
6597			

70

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 1

CORE DESCRIPTION

DATE July 6, 1965 CORE NO. 20

WELL McDills No.1 INTERVAL 7050-7060

COMPANY Amerada RECOVERY 8ft. or 80%

LOCATION 25°43'50"S; 135°47'25"E FORMATION Polly Conglomerate

ELEVATION GL 396' ; KB 412' GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
7050			
		18	7050 - 7057 Conglomeratic sandstone with sandstone, red-brown, fine to coarse grained, subangular to subrounded, poor porosity with quartzite and shale pebbles imbedded up to 3" in size.
7051		32	
7052		19	
7053		22	
7054		19	
7055		20	
7056		33	
7057		28	7057 - 7058 Sandstone, red brown with orange quartz grains, medium to coarse grained, subangular to well rounded, fair porosity, slightly calcareous, no pebble inclusions, crossbedding up to 20°.
7058		18	7058 - 7060 No recovery.
7059		15	
7060			

71

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 1

CORE DESCRIPTION

DATE July 7, 1965 CORE NO. 21

WELL McDills No.1 INTERVAL 7079-7089

COMPANY Amerada RECOVERY 9ft or 90%

LOCATION 25°43'50"S; 135°47'25"E FORMATION Polly Conglomerate

ELEVATION GL 396'; KB 412' GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
7079			
		15	7079 - 7080 Sandstone, red, red-brown, fine to coarse grained, subangular to subrounded, fair porosity, friable, crossbedding 10°.
7080			
		22	7080 - 7083 Conglomerate, red, white, orange, angular to rounded, fine to coarse grained with shale pebbles, red, green, light grey, sandy in part, silty in part.
7081			
		22	
7082			
		19	
7083			
		10	7083 - 7084 Sandstone, buff, with white and orange quartz grains, subangular to well rounded, fair porosity, with scattered red-brown shale pebbles imbedded.
7084			
		18	7084 - 7086 Sandstone, red-brown, fine to coarse grained, subangular to well rounded, hard, tight, scattered red brown shale pebbles, crossbedding 10°.
7085			
		23	
7086			
		36	7086 - 7087 Conglomerate, red, white, orange, angular to rounded, fine to coarse grained with shale pebbles, red, green, light grey, sandy in part, silty in part.
7087			
		14	7087 - 7088 Sandstone, red-brown, fine to coarse grained, subangular to well rounded, hard, tight, scattered red brown shale pebbles, crossbedding 10°.
7088			7088 - 7089 No recovery.
		21	
7089			

M21

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 2

CORE DESCRIPTION

DATE July 10, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396' ; KB 412'

CORE NO. 22
INTERVAL 7608 - 7622
RECOVERY 14ft. or 100%
FORMATION Mereenie Sandstone
GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
7608		6	7608 - 7617 Sandstone, white, fine to medium grained, subrounded to rounded, good porosity, friable, scattered tints of red, crossbedding 40° - 50°.
7609		8	
7610		9	
7611		10	
7612		9	
7613		9	
7614		9	
7615		9	
7616		10	
7617		11	7617 - 7622 Sandstone, red, reddish brown, fine to medium grained, subrounded to rounded, fair porosity, friable, crossbedding 40° - 50°.
7618			

M3

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 2 OF 2

CORE DESCRIPTION

DATE July 10, 1965 CORE NO. 22

WELL McDills No.1 INTERVAL 7608 - 7622

COMPANY Amerada RECOVERY 14ft or 100%

LOCATION 25°43'50"S; 135°42'25"E FORMATION Pereenie Sandstone

ELEVATION GL 396' ; KB 412' GEOLOGIST R.O. Ritter

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
7618			
		11	
7619			
		10	
7620			
		11	
7621			
		12	
7622			

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE July 15, 1965 | CORE NO. 23

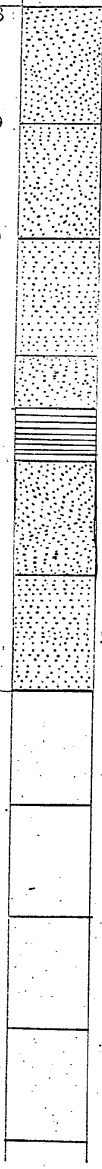
WELL McDills No.1 | INTERVAL 8108 - 8114

COMPANY Amerada | RECOVERY 6ft or 100%

LOCATION 25°43'50"S; 135°47'25"E | FORMATION Mereenie Sandstone

ELEVATION GL 396' ; KB 412' | GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
8108			
		36	8108 - 8114 Sandstone, red, pinkish-white, fine grained, subangular, hard, tight, dip up to 30°. 6" shale stringer at 8111½ to 8112.
8109			
		19	
8110			
		27	
8111			
		29	
8112			
		47	
8113			
		55	
8114			



AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 1

CORE DESCRIPTION

DATE July 15, 1965 CORE NO. 24

WELL McDills No.1 INTERVAL 8114 - 8119

COMPANY Amerada RECOVERY 5ft or 100%

LOCATION 25°43'50"S; 135°47'25"E FORMATION Mereenie Sandstone

ELEVATION GL 396' ; KB 412' GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
8114		47	8114 - 8119 Sandstone, red, pinkish and white, fine grained, subangular, hard, tight, with 2" shale stringer at 8118. Shale, green with red blotches, hard, brittle sandy in part, 30° dip.
8115		53	
8116		28	
8117		44	
8118		43	
8119			

76

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD.

CORE DESCRIPTION

DATE July 19, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396' ; KB 412'

CORE NO. 25
INTERVAL 8314 - 8320
RECOVERY 4.5ft. or 75%
FORMATION ? Ordn. Unnamed Unit
GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
8314			
		33	8314 - 8318½ Sandstone, red brown, pinkish, purple, white, trace of green, very fine to fine grained, subangular to rounded, very hard, tight, quartzitic in part, many thin ('⅛" or less) shale partings, red to green. No discernable dip.
8315			
		31	
8316			
		26	
8317			
		29	
8318			
		28	8318½ - 8320 No recovery
8319			
		63	
8320			

77

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 1

CORE DESCRIPTION

DATE July 24, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396' ; KB 412'

CORE NO. 26
INTERVAL 8740 - 8741
RECOVERY Oft. or 0%
FORMATION Unnamed Unit
GEOLOGIST H.M. Hughes

DEPTH	LITHOL.	DESCRIPTION
8740		Coring Rate Min./Ft.
		120 8740 - 8741 No recovery.
8741		

MO

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 1

CORE DESCRIPTION

DATE July 28, 1965 CORE NO. 27

WELL McDills No.1 INTERVAL 8915 - 8925

COMPANY Amerada RECOVERY 10ft or 100%

LOCATION 25°43'50"S; 135°47'25"E FORMATION ? Ordn. Unnamed Unit

ELEVATION GL 396' ; KB 412' GEOLOGIST H.M. Hughes

DEPTH	LITHOL.	Coring Rate Min./Ft	DESCRIPTION
8915			8915 - 8916
		67	Sandstone, white, fine to medium grained, poorly sorted, subangular to subrounded, otherwise quartzitic in part, highly fractured, shale partings, green, fissile, micaceous.
8916			8916 - 8918'8"
		44	Sandstone, lavender, coarse grained, rounded, well sorted, argillaceous, white clay matrix.
8917			
		31	
8918			8918'8" - 8919'9"
		53	Quartzite, white to light lavender, probably fine grained, many secondary quartz crystals, fractures all filled with siliceous material.
8919			8919'9" - 8920
		68	Shale, red-green, mottled, flow structures and slickensides, very micaceous, anhydritic.
8920			8920 - 8921'4"
		46	Shale, dull red, fissile, hematitic.
8921			8921'4" - 8923'9"
		39	Shale, dull maroon, fissile, bedded 30°, locally very arenaceous, anhydritic.
8922			
		76	
8923			8923'9" - 8925
		84	Sandstone, white to light green, fine to coarse grained, poorly sorted, subangular to rounded, white to light green, argillaceous, micaceous, matrix, hard, tight. Pebble conglomerate at 8923'10" and 8925.
8924			
		75	
8925			

79

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 1

CORE DESCRIPTION

DATE July 31, 1965 CORE NO. 28

WELL McDills No.1 INTERVAL 9043 - 9053

COMPANY Amerada RECOVERY 7ft or 70%

LOCATION 25°43'50"S; 135°47'25"E FORMATION Todd River Dolomite

ELEVATION GL 396' ; KB 412' GEOLOGIST H.M. Hughes

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
9043		30	9043 - 9050 Dolomite, dark grey, microcrystalline to very fine crystalline, very hard, tight, no joints, fractures, shale breaks, bedding planes or fossils evident from megascopic examinitation.
9044		40	
9045		40	
9046		31	
9047		30	
9048		28	
9049		30	
9050			9050 - 9053 No recovery.
9051		30	
9052		27	
9053		25	

80

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 1

CORE DESCRIPTION

DATE August 7, 1965 CORE NO. 29

WELL McDills No.1 INTERVAL 9354 - 9364

COMPANY Amerada RECOVERY 9ft or 90%

LOCATION 25°43'50"S; 135°47'25"E FORMATION Todd River Dolomite

ELEVATION GL 396' ; KB 412' GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
9354		82	9354 - 3963 Dolomite, dark brown to dark grey with light grey streaks, microcrystalline, very dense, argillaceous, very limey in light streaks, banded with 30° dips, some light streaks are anhydrite, scattered traces of glauconite and pyrite, no fossils, several shale partings with 50° dips.
9355		67	
9356		60	
9357		69	
9358		67	
9359		74	
9360		68	
9361		54	
9362		82	
9363			9363 - 9364 No recovery.
9364		78	

Q1

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 1

CORE DESCRIPTION

DATE August 13, 1965 CORE NO. 30

WELL McDills No.1 INTERVAL 9632 - 9642

COMPANY Amerada RECOVERY 10ft or 100%

LOCATION 25°43'50"S; 135°47'25"E FORMATION Todd River Dolomite

ELEVATION GL 396' ; KB 412' GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
9632		71	9632 - 9642 Limestone, light to dark grey in irregular banding, microcrystalline to very dense, light streaks are sandy in part and more limy, dark streaks are more argillaceous, scattered streaks of pyrite and anhydrite, scattered fossils, approximately 20° dip with several veins of white calcite filling joints opposite primary dip. Many very thin shale partings parallel to dip.
9633		31	
9634		31	
9635		23	
9636		34	
9637		31	
9638		35	
9639		31	
9640		30	
9641		26	
9642			

92

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 1

CORE DESCRIPTION

DATE August 22, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396'; KB 412'

CORE NO. 31
INTERVAL 10,058 - 10,068
RECOVERY 9ft or 90%
FORMATION Todd River Dolomite
GEOLOGIST H.M. Hughes

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
10,058		33	10,058 - 10,067 Dolomite, dark grey to laminated light grey, micro to very fine crystalline, hard, tight, locally with thin black shale laminae. Vertical joints (filled with clear, crystalline, anhydrite) 1/16" to ⅜" wide. 10° dip not corrected. Laminated appearance of the color is due to banding of different size crystals.
10,059		29	
10,060		23	
10,061		23	
10,062		21	
10,063		26	
10,064		27	
10,065		22	
10,066		21	
10,067			10,067 - 10,068 No recovery.
		24	
10,068			

93

AMERADA PETROLEUM CORPORATION OF AUSTRALIA LTD. PAGE 1 OF 1

CORE DESCRIPTION

DATE September 1, 1965
WELL McDills No.1
COMPANY Amerada
LOCATION 25°43'50"S; 135°47'25"E
ELEVATION GL 396' ; KB 412'

CORE NO. 32
INTERVAL 10,505 - 10,515
RECOVERY 10ft. or 100%
FORMATION Todd River Dolomite
GEOLOGIST R.O. Witten

DEPTH	LITHOL.	Coring Rate Min./Ft.	DESCRIPTION
10,505		44	10,505 - 10,515 Dolomite, grey, microcrystalline, very micaceous, no fossils.
10,506		27	
10,507		23	
10,508		27	
10,509		21	
10,510		23	
10,511		26	
10,512		27	
10,513		24	
10,514		21	
10,515			

QL

APPENDIX II

PETROLOGY

Selected intervals were examined petrologically by A.R. Turner and I.F. Scott at the Australian Mineral Development Laboratories in Parkside, South Australia, and by Dr. W. Layton, University of Queensland.

THE PETROGRAPHY OF 4 ROCKS FROM THE AMERADA McDILLS NO.1 BORE HOLE CONSIDERED FOR THE PURPOSES OF AGE DETERMINATION

1. INTRODUCTION

The petrography of the following specimens has been carried out at the request of Dr. W. Compston of the Australian National University as a necessary pre-requisite for their use in age-determination investigations.

2. PETROGRAPHY

Amerada: McDills No.1: Core 23: 8111½-8112 ft: TS16268

This specimen is a fine-grained feldspathic quartzite composed of detrital fragments set in a matrix of carbonates and clay. In hand specimen the rock is a pale bluish green in colour and exhibits crudely defined, cross stratified bedding. The bluish green colouration is imparted to the rock by a clay mineral which is sometimes stained a bright reddish brown by finely disseminated haematite. They alternate, in this way imparting an incipient fissility to the rock. Secondary quartz has been deposited in an irregular network across the surfaces of the clay-rich layers.

In thin section the rock is found to be composed of numerous subrounded to subangular quartz grains which have a size distribution in the range 0.85 to 0.05 mm. The majority of the grains lie in the size range 0.30 to 0.1 mm and are well sorted, however, isolated larger grains are randomly distributed. The grains contain numerous finely disseminated inclusions of iron oxides, rare apatite grains, muscovite and tourmaline. Randomly distributed throughout the detrital fraction are grains of feldspar which have a similar habit to the quartz although they show considerably more rounding. The grains are composed of microcline and plagioclase, the later having a composition of approximately albite. Both feldspars show well defined strain features not exhibited by the quartz which suggests two distinct provenances for the detrital fraction. Randomly distributed throughout the rock, but orientated in a direction subparallel to that of the bedding; are lenses of a carbonate mineral. The remainder of the rock is composed of a clay mineral which coats each of the detrital grains in a fine veneer and forms incipiently schistose layers between the quartz and feldspar grains. The nature of the clay mineral could not be determined optically however, some of it appears to have recrystallized to sericite. The rock has been subjected to partial recrystallization accompanied by the introduction of secondary silica which forms ribs and veinlets in the clay layers.

Amerada: McDills No.1: Core 24: 8114-8119 ft: TS16269

This specimen is a quartz-feldspar-clay shale and is similar in mineral composition to the specimen from Core 23 above, however a number of structural differences were observed.

In hand specimen the rock is a bluish green colour and very finely laminated due to primary bedding. The mineral phases are more evenly distributed than in the specimen from Core 23 and there is an absence of ?hematite stained clay.

In thin section the following differences were observed:

1. Grain size - decreased to the range 0.15 to 0.02 mm and a uniform distribution
2. Marked increase in the percentage of clay minerals at the expense of detrital grains
3. Microcline common - no plagioclase was observed
4. Accessory rounded tourmaline fragments common
5. Finely disseminated iron oxide inclusions in quartz very minor
6. One grain of an emerald-green mineral, possibly glauconite or chlorite, was observed in the section cut. A large volume of the rock would have to be processed before a separation could be made to adequately determine the composition of this mineral.
7. Clay minerals have recrystallized and are orientated parallel to the bedding planes. There appears to be no way in which to decide the method of recrystallization of the clay mineral - diagenesis or metamorphism - however, the former seems the more probable.
8. Bedding is delicately defined by alternate relatively quartz-rich and relatively clay-rich laminations.

Amerada: McDills No.1: Core 27: 8917-8917½ ft: TS16270

This specimen is a ferruginous shale. The rock is coloured a deep reddish-brown in hand-specimen and exhibits well defined cross-bedding.

In thin section the rock is found to be composed of numerous, finely divided, quartz grains, recrystallized clay minerals, and abundant ferruginous material. The quartz grains are irregular in shape, rounded to subangular, and have a size distribution in the range 0.1 to 0.02 mm. Randomly

distributed throughout the detrital quartz fraction are grains of microcline which have a similar habit to that of the quartz grains. Accessory grains of green tourmaline are randomly distributed throughout the rock. A matrix to the detrital fraction is formed by chlorite, sericite, recrystallized clay minerals, micas and opaque material. The ferruginous material is present throughout the specimen but tends to be concentrated into laminations which are irregularly spaced but in the order of 2-3 mm thick. Associated with the ferruginous material are incipiently foliated, elongated laths of an unidentified mica.

Amerada: McDills No.1: Core 27: 8919-8919½, ft: TS16271

This specimen is a ferruginous shale and almost identical to that described previously from Core 27. Differences in composition and structure include the following:

1. Laminations are subparallel and more clearly defined. They alternate at approximately 1.5 to 0.25 mm.
2. Percentage of ferruginous material shows a marked decrease and is concentrated into the laminations rich in micaceous and recrystallized clay mineral components.
3. The grain size and composition of detrital particles are similar.
4. Laths of a pleochroic green biotite-like mica are present in the micaceous layers.
5. It appears probable that recrystallization is due to diagenetic processes.

nb:3/AKI

REPORT ON TWO SAMPLES SUBMITTED BY

AMERADA PETROLEUM CORPORATION

McBills No. 1
Cove 25
Sample 8314 - 16.

Sandstone composed of well sorted, relatively fine angular quartz grains. Concavo-convex structures are rarely present but some elongation of the grains does occur. Overgrowth features are present but uncommon. Fresh feldspar appears and the whole is cemented by ferruginous clayey material. Carbonates are absent.

. . . . . .

McBills No. 1
Cove 25
Sample 8318 - 18½.

Sandstone composed of rounded, well sorted quartz grains. Packing is tight and some concavo-convex characters are observed. Quartz shows undulose extinction which may be due to packing pressures. Fresh feldspar appears and pore spaces are filled with clay and sericite. No carbonates are present.

. . . . . .

W. Layton

LIMESTONES FROM McDILLS NO.1 WELL, N.T.

9355 feet: TS16390

This rock is a fine-grained, sandy, dolomitic limestone consisting of grains less than 0.13 mm in diameter. Dolomite forms more than 80% of the rock for the most part. Clastic fragments include quartz, microcline, muscovite, emerald green ?glauconite, brown ?mica, tourmaline and dusty opaques. Except for quartz these minerals are present only in accessory amounts. Lighter coloured bands in the rock are quartz-rich, the quartz forming up to 20% of the rock in places.

The dolomite is at least partly recrystallized or secondary in nature, frequently replacing parts of the clastic fragments. The concentration of dusty opaque material is proportional to the carbonate content. Consequently the quartz-rich bands are also quite poor in opaques.

9356 feet to 9357 feet: TS16391 to TS16397

These chip samples are virtually identical to TS16390. The sedimentary structures vary a little with some samples being well bedded while others exhibit irregular layering. This is partly due to the orientation of the thin section relative to the bedding.

No organic fragments were observed.

nb:1

APPENDIX III

PALEONTOLOGY

Dr. P. R. Evans of the Bureau of Mineral Resources examined cores from the Permian and underlying Finke Series and his results appear in the following text.

J. Gilbert-Tomlinson of the Bureau of Mineral Resources identified the brachiopods found in the Todd River dolomite and her results appear in this section.

Subject:— AMERADA McDILL'S NO. 1 WELL, NORTHERN TERRITORY

30th July, 1965.

ASSISTANT DIRECTOR (GEOLOGY):

A request was received from Amerada Petroleum Corporation to conduct a palynological examination of their well, McDill's No. 1. After consultation with Mr. T. Pearson of Amerada Petroleum and Mr. A. Stewart (B.M.R.), six core samples were processed. Microspores and pollens observed within the assemblages extracted from these samples are listed in the attached Table. Only the Upper Carboniferous and Lower Permian cores produced microfossils. The two cores taken from the presumed Finke Group, Core 14 and Core 18, the only cores taken from lithologies likely to yield spores, in fact were barren.

Core 1 is thought to represent the Lower Permian palynological unit P1b. It is probably older than the assemblage noticed by B.E. Balme in Malcolm's bore on Andado Station. Cores 4 and 6 are referrable to unit P1a, containing microfloras closely comparable with that previously described from shallow bore hole samples from the Crown Point Formation. Core 8 is probably of C1 or C2 age. Striate pollens appear to be absent from this core but specimens referrable to Vallatisporites sp. 37, typical of C1 and C2 are present. Unfortunately other pteridophyte spores characteristic of Unit C1 and C2 could not be found. In fact the assemblage is remarkable for its low pteridophytic spore content. No evidence of marine micro-organisms could be observed in any of the cores. Only the alga Botryococcus was present in core 8.

Although the lower limit of this Carboniferous-Permian sequence in McDill's No. 1 may be firmly fixed, its upper boundary remains undetermined. Cuttings from above core 1 will be examined in order to define the upper boundary.

(P.R. Evans)
Geologist

Attached is copy of the Palynological report to Amerada Petroleum Corporation.

92

AMERADA McDILL'S NO. 1: MICROFOSSIL DISTRIBUTION CHART

MICROFOSSIL	AGE / SAMPLE	MFP3828 C.18 6325 ft	MFP3833 C.14 5112 ft	C1-2: MFP3832 C.8 3647 ft	Pla: MFP3831 C.6 3128 ft	Pla: MFP3830 C.4 2908 ft	Plb: MFP3829 C1 2381 ft
aff. Botryococcus				+			
Punctatisporites sp.	7			+			
Apiculatisporis sp.	37			+			
Vallatisporites sp.	44			+			
Monosacciti sp.	97			+			
Calamospora sp.	4			+	+	+	
Retusotriletes diversiformis	6			+		+	
Parasaccites sp.	190			+	fc	C	C
Potonieisporites neglectus	192			+			+
Lophotriletes sp.	183				+		
Cingulati sp.	185				+	+	
Monocolpates sp.	186				+	+	
cf Granulatisporites sp.	59				+	+	+
Apiculatisporis sp.	62				+		cf
aff. Protohaploxypinus goraiensis	187				+	+	+
Parasaccites sp.	191				+	+	+
P rotohaploxypinus sp.	198				+		+
Disaccites indet.						+	
Punctatisporites gretensis	5					+	+
Kraeuselisporites sp.	35						cf
Cingulati sp.	41						+
Protohaploxypinus sp.	79						?
Protohaploxypinus sp.	80						?
Klausipollenites sp.	82						+
Granulatisporites sp.	161						+
Apiculati sp.	204						+

Microspores + Pollens

Q2

UNIT	HUGHENDEN	SPRINGSURE SHELF	DENISON TROUGH
P4	Betts Ck Beds	upper Bandanna Formation*	
P3d		lower Bandanna Formation*	
P3c		base of " " "	
		Peawaddy Formation	
			Catherine Sst.
P3b		Colinlea Sst.	Ingelara Fm.
			top few feet of Aldebaran Sst.
			Aldebaran Sst.
P2			Cattle Ck Fm.
			Sirius Shale
P1c		(?) unnamed beds with Glossopteris	"undivided freshwater sediments"
			(?) Orion Sh.
P1b	Boonderoo Beds		
P1a			
C2			
C1		Joe Joe Formation	

TABLE 1: SUMMARY OF FORMATIONS ASSOCIATED WITH PERMIAN AND CARBONIFEROUS PALYNOLOGICAL UNITS.

From Record 1964/197 "Correlation Some Deep Wells NE Eromanga Basin Qld." by Evans

* C. Mollan is proposing to re-name these upper and lower divisions of the Bandanna Formation as the "Aubrey Coal Measures" and "Black Alley Shale" respectively.

65.6725

LOWER CAMBRIAN FOSSILS IN AMERADA McDILLS NO. 1 WELL, NORTHERN TERRITORY

by

J. Gilbert-Tomlinson

Depth

The fossils occur between 9634 and 9641 feet (Core 30).

The fossiliferous part of the section is overlain by barren sandstone of uncertain age.

Lithology

The rock is a dark grey dolomitic siltstone preserving traces of lamination. It is very compact, jointed and veined, and occurs in a folded sequence.

Fossils

The fossils consist of fragmentary shells of phosphatic brachiopods referable to the South Australian species "Micromitra" etheridgei (Tate) and "Misusia" compta (Tate) (Tate, 1892; Walcott, 1912).

As indicated by the quotation marks, they are generically unrelated to the typical Micromitra Meek or Misusia Walcott of the North American Cambrian, but the names must be retained until new ones are available. A systematic revision is now being undertaken by Dr. B. Daily of the University of Adelaide.

Stratigraphic conclusions based on the known ranges of the typical Micromitra and Misusia do not apply to these species.

Correlation, age, and palaeogeography

The fossils are part of a unique indigenous brachiopod fauna found in other parts of the Northern Territory as well as in South Australia:

Northern Territory -

1. North-eastern part of Amadeus Basin (lower part of Todd River Dolomite); absent in other parts of Basin, including south-eastern part immediately north of McDills No. 1 Well.

2. South-western part of Georgina Basin (Mount Baldwin Beds); unknown elsewhere in Basin.

South Australia -

3. Known in all areas except Kulpara and Kangaroo Island (Assemblage 2 of Ajax Limestone and correlates) (Daily, 1956).

Archaeocyanthids are commonly associated or interbedded with the brachiopods but have not been found in the McDills core.

Stratigraphic context in all areas indicates a Lower Cambrian age, probably early in the latter half of the Epoch.

This new discovery is the most southerly known for the fauna in the Northern Territory. It confirms a prediction for the existence of the Lower Cambrian sea in this area made by Opik in 1956.

References

DAILY, B., 1956 – The Cambrian in South Australia in CAMBRIAN SYMPOSIUM, vol. 2. 20th Int. geol. Congr., Mexico. pp. 91–147.

" ÖPIK, A.A., 1956 – Cambrian palaeogeography of Australia. IBID., pp. 239–284.

TATE, R., 1892 – The Cambrian fossils of South Australia. Tr. roy. Soc. S. Aust., 15, pp. 183–189.

WALCOTT, C.D., 1912 – Cambrian Brachiopoda. U.S. Geol. Surv., Mon. 51.

(J. Gilbert-Tomlinson)

20.9.65

APPENDIX IV

WATER ANALYSIS

Water recovered during an artesian flow at 2375' was analyzed by the Mines Branch, Alice Springs, and is included in this Appendix.

This was the only water analyzed from the McDills well.

WATER ANALYSIS SHEET

RESIDENT GEOLOGIST'S OFFICE

Analysis by

Name of Bore: McDILLS NO.1

CLASS

4 MILE

LEASE

BORE No.

ANALYSIS

(Results in parts per million) Sample from Artesian Flow at 2375' in Permian

Date	1	2	3	4	5
Hardness Total					
" Temporary					
" Permanent					
Free Alkali					
Chloride	1120				
Sulphate	211				
Fluoride	6				
Calcium	120				
Bicarbonate	193				
Carbonate	nil				
Sodium	660				
Potassium	32				
Magnesium	85				
Nitrate	2.				
pH					
Total Salts	2423				
REACTING VALUES					
rCl					
$r(SO_4 + NO_3)$					
$r(CO_3 + HCO_3)$					
Total					
$r(Na + K)$					
rCa					
rMg					
Total					
Total Reacting Valve					
r% Cl					
$r\%\ (SO_4 + NO_3)$					
$r\%\ (CO_3 + HCO_3)$					
$r\%\ (Na + K)$					
r% Ca					
r% Mg					
Error					
Primary Salinity					
Secondary Salinity					
Primary Alkalinity					
Secondary Alkalinity					

Remarks

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COPY 65/4156

Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra

CORE ANALYSIS RESULTS

NOTE:- (i) Unless otherwise stated, the porosities and permeabilities were determined on two small plugs (V&H) cut at right angles from the core. Ruska porosimeter and permeameter were used with, air at 30 p.s.i.g. and dry nitrogene, respectively, as the saturating and flowing media. (ii) Residual oil and water saturations were determined using soxhlet type apparatus. (iii) Acetone test precipitates are recorded as nil, trace, fair, strong or very strong.

WELL NAME AND NO. McDILLS No. 1

DATE OF TEST. 18th JANUARY 1966

Core No.	Depth From:- To:-	Lithology	Average Effective Porosity from two plugs (% Bulk Vol.)	Absolute Permeability (Millidarcy)		Average Density (gm./cc.)		Fluid Saturation (% of pore space)		Acetone Test	Core Water Salinity (P.P.M. NaCl)	Solubility in 15% HCl (% Bulk vol.)	Fluorescence of freshly broken core.
				V	H	Dry Bulk	Apparent Grain	Water	Oil				
1	2384'0" 2384'3"	Sandstone pyritic	6	Nil	Nil	2.95	3.12	8	Nil	Nil	N.D.	N.D.	Bright whitish yellow
2	2692'7" 2692'11"	Sandstone	19	187	127	2.16	2.67	Nil	"	"	"	"	Nil
3	2702'0" 2702'3"	Sandstone	22	135	168	2.11	2.69	"	"	"	"	"	"
4	2963'0" 2963'4"	Siltstone & claystone	6	Nil	Nil	2.49	2.65	"	"	"	"	"	"
4	2972'1" 2972'5"	Shale	18	Nil	Nil	2.31	2.84	N.D.	N.D.	N.D.	"	"	N.D.
5	2973' 2983'	Shale	SMALL	CHIPS	ONLY	NOT	SUITABLE	FOR	ANALYSIS				
6	3132'0" 3132'4"	Shale & siltstone, pyritic	24	N.D.	N.D.	2.21	2.89	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

Remarks:-

General File No. 62/399.
Well File No. 62/436

Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra

CORE ANALYSIS RESULTS

NOTE:- (i) Unless otherwise stated, the porosities and permeabilities were determined on two small plugs (V&H) cut at right angles from the core. Ruska porosimeter and permeameter were used with, air at 30 p.s.i.g. and dry nitrogene, respectively, as the saturating and flowing media. (ii) Residual oil and water saturations were determined using soxhlet type apparatus. (iii) Acetone test precipitates are recorded as nil, trace, fair, strong or very strong.

WELL NAME AND NO. McDILLS No. 1

DATE OF TEST. 18th JANUARY 1966

Core No.	Depth From:- To:-	Lithology	Average Effective Porosity from two plugs (% Bulk Vol.)	Absolute Permeability (Millidarcy)		Average Density (gm./cc.)		Fluid Saturation (% of pore space)		Acetone Test	Core Water Salinity (P.P.M. NaCl)	Solubility in 15% HCl (% Bulk vol.)	Fluorescence of freshly broken core.
				V	H	Dry Bulk	Apparent Grain	Water	Oil				
7	3363'4" 3363'8"	Sandstone	23	650	1,400	2.07	2.68	15	Nil	Nil	N.D.	N.D.	Nil
7	3369'4" 3370'0"	Sandstone	23	31	153	2.11	2.68	N.D.	N.D.	N.D.	"	"	N.D.
8	3650'8" 3650'11"	Sandstone	22	270	329	2.08	2.66	Nil	Nil	Nil	"	"	Nil
9	3823'0" 3823'4"	Siltstone & Shale	16	N.D.	N.D.	2.28	2.70	N.D.	N.D.	N.D.	"	"	N.D.
10	3839'4" 3839'6"	Sandstone	20	Nil	Nil	2.21	2.78	12	Nil	Nil	"	"	Nil
11	4153'8" 4154'0"	Sandstone	24	1,036	1,248	2.00	2.64	N.D.	N.D.	N.D.	"	"	N.D.
11	4158'5" 4158'8"	Sandstone	23	1,250	2,500	2.04	2.66	11	Nil	Nil	"	"	Nil

Remarks:-

General File No. 62/399.
Well File No. 65/156

Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra

CORE ANALYSIS RESULTS

NOTE:- (i) Unless otherwise stated, the porosities and permeabilities were determined on two small plugs (V&H) cut at right angles from the core. Ruska porosimeter and permeameter were used with, air at 30 p.s.i.g. and dry nitrogene, respectively, as the saturating and flowing media. (ii) Residual oil and water saturations were determined using soxhlet type apparatus. (iii) Acetone test precipitates are recorded as nil, trace, fair, strong or very strong.

WELL NAME AND NO. McDILLS No. 1

DATE OF TEST. 18th JANUARY 1966

Core No.	Depth From:- To:-	Lithology	Average Effective Porosity from two plugs (% Bulk Vol.)	Absolute Permeability (Millidarcy)		Average Density (gm./cc.)		Fluid Saturation (% of pore space)		Acetone Test	Core Water Salinity (P.P.M. NaCl)	Solubility in 15% HCl (% Bulk vol.	Fluorescence of freshly broken core.
				V	H	Dry Bulk	Apparent Grain	Water	Oil				
12	4469'0" 4469'5"	Sandstone	20	528	447	2.13	2.65	2	Nil	Nil	N.D.	N.D.	Nil
12	4473'5" 4473'9"	"	20	54	426	2.12	2.65	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
13	4784'0" 4784'5"	"	22	557	818	2.07	2.65	1	Nil	Nil	N.D.	N.D.	Nil
14	5108'0" 5108'3"	"	16	82	77	2.24	2.65	Nil	Nil	Nil	N.D.	N.D.	Nil
14	5110'5" 5110'8"	"	16	206	432	2.25	2.65	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
15	5254'7" 5255'0"	"	20	298	637	2.13	2.65	Nil	Nil	Nil	N.D.	N.D.	Nil
16	5560'2" 5560'5"	"	17	26	55	2.22	2.60	3	Nil	Nil	N.D.	N.D.	Nil

Remarks:-

General File No. 62/399.
Well File No. 65/4156

101

Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra

CORE ANALYSIS RESULTS

NOTE:- (i) Unless otherwise stated, the porosities and permeabilities were determined on two small plugs (V&H) cut at right angles from the core. Ruska porosimeter and permeameter were used with, air at 30 p.s.i.g. and dry nitrogene, respectively, as the saturating and flowing media. (ii) Residual oil and water saturations were determined using soxhlet type apparatus. (iii) Acetone test precipitates are recorded as nil, trace, fair, strong or very strong.

WELL NAME AND NO. McDILLS No. 1 DATE OF TEST. 18th JANUARY 1966

Core No.	Depth From:- To:-	Lithology	Average Effective Porosity from two plugs (% Bulk Vol.)	Absolute Permeability (Millidarcy)		Average Density (gm./cc.)		Fluid Saturation (% of pore space)		Acetone Test	Core Water Salinity (P.P.M. NaCl)	Solubility in 15% HCl (% Bulk vol.)	Fluorescence of freshly broken core.
				V	H	Dry Bulk	Apparent Grain	Water	Oil				
17	5615'0" 5615'4"	Conglomerate	6	Nil	Nil	2.60	2.72	10	Nil	Nil	N.D.	N.D.	Dull glow in part
18	6325'6" 6325"10"	"	7	1	Nil	2.54	2.72	14	"	"	"	"	Nil
19	6596'8" 6597'0"	"	6	Nil	Nil	2.56	2.71	15	"	"	"	"	"
20	7054'0" 7054'4"	"	11	40	45	2.37	2.66	Nil	"	"	"	"	"
21	7079'0" 7079'4"	Sandstone	18	103	196	2.19	2.66	"	"	"	"	"	"
22	7616'7" 7616'11"	Sandstone	18	208	321	2.19	2.68	"	"	"	"	"	"
23	8100'0" 8100'4"	Siltstone & claystone	6	Nil	Nil	2.53	2.68	N.D.	N.D.	"	"	"	N.D.

Remarks:-

General File No. 62/399.
Well File No. 69/4150

1201

Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra

CORE ANALYSIS RESULTS

NOTE:- (i) Unless otherwise stated, the porosities and permeabilities were determined on two small plugs (V&H) cut at right angles from the core. Ruska porosimeter and permeameter were used with, air at 30 p.s.i.g. and dry nitrogene, respectively, as the saturating and flowing media. (ii) Residual oil and water saturations were determined using soxhlet type apparatus. (iii) Acetone test precipitates are recorded as nil, trace, fair, strong or very strong.

WELL NAME AND NO. McDILLS No. 1

DATE OF TEST. 13th JANUARY 1966

Core No.	Depth From:- To:-	Lithology	Average Effective Porosity from two plugs (% Bulk Vol.)	Absolute Permeability (Millidarcy)		Average Density (gm./cc.)		Fluid Saturation (% of pore space)		Acetone Test	Core Water Salinity (P.P.M. NaCl)	Solubility in 15% HCl (% Bulk vol.)	Fluorescence of freshly broken core.
				V	H	Dry Bulk	Apparent Grain	Water	Oil				
24	8116'7" 8116'11"	Sandstone	11	1	Nil	2.43	2.73	11	Nil	Nil	N.D.	N.D.	Nil
25	8314'0" 8314'3"	Claystone	6	Nil	Nil	2.57	2.74	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
26	8740' 8741'	CORE		RECOVERY		NIL							
27	8917'0" 8917'4"	Sandstone siliceous	4	Nil	Nil	2.56	2.68	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
28	9048'8" 9049'0"	Shale	1	"	"	2.74	2.76	"	"	"	"	"	"
29	9357'10" 9358'2"	"	1	"	"	2.72	2.74	"	"	"	"	"	"
30	9635'0" 9635'4"	"	1	"	"	2.71	2.73	"	"	"	"	"	"

Remarks:-

General File No. 62/399.
Well File No. 65/4156

103

Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra

CORE ANALYSIS RESULTS

NOTE:- (i) Unless otherwise stated, the porosities and permeabilities were determined on two small plugs (V&H) cut at right angles from the core. Ruska porosimeter and permeameter were used with, air at 30 p.s.i.g. and dry nitrogene, respectively, as the saturating and flowing media. (ii) Residual oil and water saturations were determined using soxhlet type apparatus. (iii) Acetone test precipitates are recorded as nil, trace, fair, strong or very strong.

WELL NAME AND NO. McDILLS No. 1 DATE OF TEST. 18th JANUARY 1966

Core No.	Depth From:- To:-	Litholcgy	Average Effective Porosity from two plugs (% Bulk Vol.)	Absolute Permeability (Millidarcy)		Average Density (gm./cc.)		Fluid Saturation (% of pore space)		Acetone Test	Core Water Salinity (P.P.M. NaCl)	Solubility in 15% HCl (% Bulk vol.)	Fluorescence of freshly broken core.
				V	H	Dry Bulk	Apparent Grain	Water	Oil				
31	10,062'11" 10,062'4"	Shale	1	Nil	Nil	2.70	2.73	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
32	10,511'0" 10,511'4"	"	1	"	"	2.71	2.72	"	"	"	"	"	"

Remarks:-

General File No. 62/399.
Well File No. 65/4156

APPENDIX V

Report on

WELL VELOCITY SURVEY

AMERADA PETROLEUM CORPORATION

OF AUSTRALIA, LIMITED

McDILLS NO.1

OIL PERMIT 57

NORTHERN TERRITORY, AUSTRALIA

Shot by

AUSTRAL GEO PROSPECTORS PTY. LTD.

November, 1965

WELL VELOCITY SURVEY

AMERADA McDILLS NO.1

A Velocity Survey of the Amerada McDills No.1 well, located in Oil Permit No.57 of Northern Territory at Latitude 25°43'50" South, Longitude 135°47'25" East, was conducted by Austral Geo Prospectors Pty. Ltd. on June 20, 1965 and September 3, 1965.

The Velocity Survey was conducted in two stages. The first stage, on June 20, 1965 by AGP Crew #2, was to a depth of 3500' prior to setting casing to 3000'. The second stage, on September 3, 1965, by AGP Crew #3, was conducted after the well had reached total depth at 10,515'. The holes designated "A" and "B" on the survey plat were used in the first stage. The holes designated "C" and "D" were used in the second stage.

The pressure sensitive well geophone used was supplied by Austral Geo Prospectors and lowered by Welex truck and cable. SIE PT-100 amplifiers were used to make the records. Quality of the well geophone breaks were from good to very poor, the majority being fair or poor. The trace arrangement on the Velocity Survey records is as follows:

Trace No. 1	Time break.
Trace No. 2	Uphole geophone.
Trace No. 3	Well geophone, high gain.
Trace No. 4	Well geophone, medium gain.
Trace No. 5	Well geophone, low gain.

Profile 119 on Line D of the Dakota Bore Seismic Survey was used for the reflection profile. Shot point 119 is located 1590' north-west of McDills No.1. This profile was shot by Geoseismic (Australia) Pty. Ltd., and used by courtesy of Beach Petroleum No Liability.

The reflection profile and all calculations in the Velocity Survey are corrected to a +300' datum plane. Since the well

10

geophone depths were selected from sample tops, they do not necessarily coincide with definite geological markers. Times to these geological markers may be read from the time-depth curve for reflection identification.

Respectfully submitted,

AMERADA PETROLEUM CORPORATION
OF AUSTRALIA, LIMITED

E. H. Prigmore

E.H. Prigmore, Chief Computer

J.T. Gilliam

J.T. Gilliam, Geophysical Supervisor

Enclosures:

Plate 1	Location Map
Plate 2	Layout of Shot Holes
Plate 3	Computation Sheet
Plate 4	Uphole Velocity Survey
Plate 5	Well Velocity Curves
Plate 6	Reduced Copies of Records
Plate 7	Reflection Profile

(3) STRATIGRAPHIC TABLE

AGE	GROUP	FORMATION	DEPTH	SUB SEA ELEVATION K.B.	THICK-NESS
QUATERNARY			SURFACE	+412	101
LOWER CRETACEOUS	— — —	Rumbalara Shale	101	+311	1335
		Transition Beds	1436	-1024	82
JURASSIC		De Souza Sandstone	1518	-1106	834
PERMIAN		Crown Point	2352	-1940	635
UPPER DEVONIAN to CARBONIFEROUS	Finke	Idracowra Sandstone	3220 ~~2987~~	~~-3575~~	~~803~~
		Horseshoe Bend Shale	3790	-3378	280
		Langra Sandstone	4070	-3658	1730
		Polly Conglomerate	5800	-5388	1290
DEVONIAN?		Mereenie Sandstone	7090	-6678	1120
		Unnamed Unit	8210	-7798	814
LOWER CAMBRIAN		Todd River Dolomite	9024	-8612	+1491
		Total Depth	10,515	-10,103	

AMERADA PETROLEUM
AMERADA McDILLS No 1

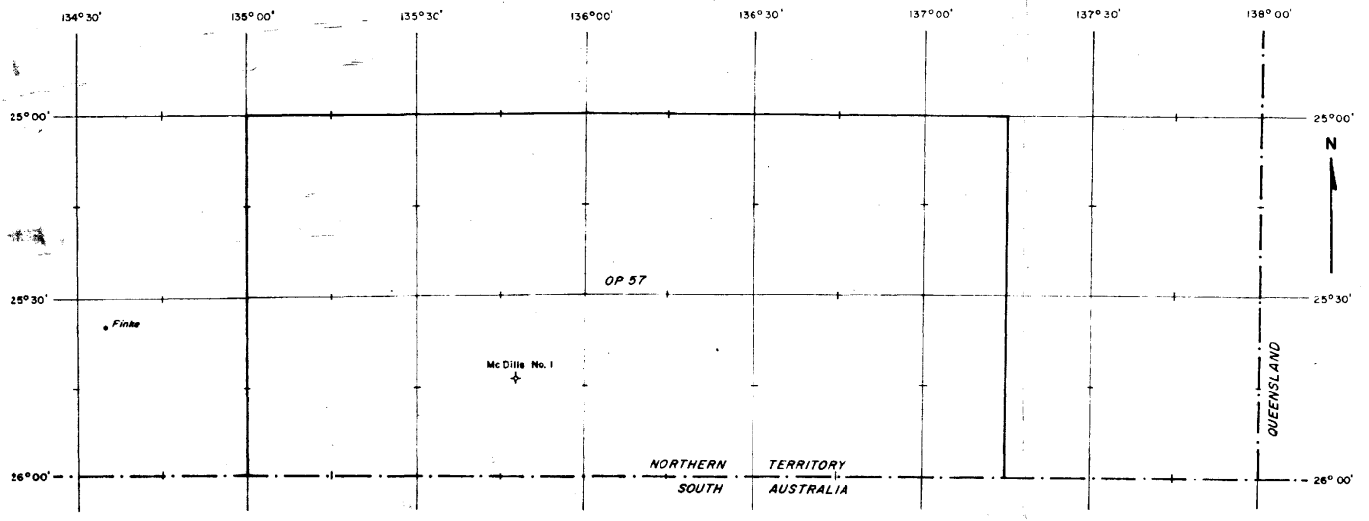
ENV 543

1	LOCATION MAP	PLATE 1
2	LAYOUT OF SHOTHOLES FOR VELOCITY SURVEY	" 2
3	SHOT HOLE RECORD	" 3
4	UP-HOLE VELOCITY SURVEY Nr McDILLS	" 4
5	VELOCITY CURVES	" 5
6	COMPOSITE WELL LOG	

MCDILLS 1
MCD-1
Pedirka Basin 25 44 s. lat. 135 47 e. long.

#	M	FT	%I-C	%O-C	%N	%H	S1	S2	TMAX	PI	HI	GP
1	308	1010	2.6	2.29	---	---	0.13	0.9	467	0.12	40	1.0
2	473	1550	4.3	2.03	---	---	0.57	1.8	467	0.24	87	2.3
3	724	2375	0.3	63.63	---	---	3.56	160.4	493	0.02	252	164.0
4	725	2379	0.6	48.93	---	---	5.47	139.0	491	0.04	284	144.5
5	726	2382	0.7	7.29	---	---	0.52	11.6	474	0.04	159	12.1
6	823	2699	0.1	0.70	---	---	bdl	bdl	ndm	---	---	---
7	905	2969	1.6	1.43	---	---	0.11	0.4	479	0.22	26	0.5
8	906	2972	1.5	1.36	---	---	bdl	0.3	476	---	25	0.4
9	1028	3371	0.5	0.82	---	---	bdl	bdl	ndm	---	---	---
10	1114	3654	1.0	0.88	---	---	0.08	0.3	471	0.23	32	0.4
11	1557	5108	5.9	0.68	---	---	bdl	bdl	ndm	---	---	---
12	2536	8317	0.7	1.10	---	---	bdl	0.5	427	---	44	0.5
13	2757	9043	55.2	0.97	---	---	bdl	0.3	479	---	32	0.3
14	2853	9358	57.6	0.61	---	---	0.07	0.5	474	0.13	80	0.6
15	2938	9635	30.5	1.06	---	---	bdl	0.2	476	---	21	0.3
16	3051	10006	38.7	1.08	---	---	bdl	bdl	ndm	---	---	---
17	3204	10508	20.3	1.37	---	---	0.08	0.9	480	0.08	66	1.0
18	3205	10514	16.2	1.56	---	---	0.06	bdl	ndm	---	---	0.2

Pyrolysis run with CDS Pyroprobe and original interface: TMAX inaccurate.
M is sample depth in meters.
FT is sample depth in feet.
%I-C is inorganic carbon as % calcium carbonate in rock.
%O-C is organic carbon as % carbon in rock.
%N is % nitrogen in rock.
%H is % hydrogen in rock.
S1 is pyrolysis free-hydrocarbon signal (mg hydrocarbons/g rock).
S2 is pyrolysis kerogen signal (mg S2 hydrocarbons/g rock).
PI is production index [S1/(S1+S2)].
TMAX is temperature at which S2 signal is maximum (deg C).
HI is hydrogen index (mg hydrocarbons/g O-C).
GP is genetic potential (kg hydrocarbons/ton rock) (S1+S2).
'bdl' means 'below detection limit'; '---' means 'not determined'.
'ndm' means 'no definitive maximum'.



LOCATION MAP

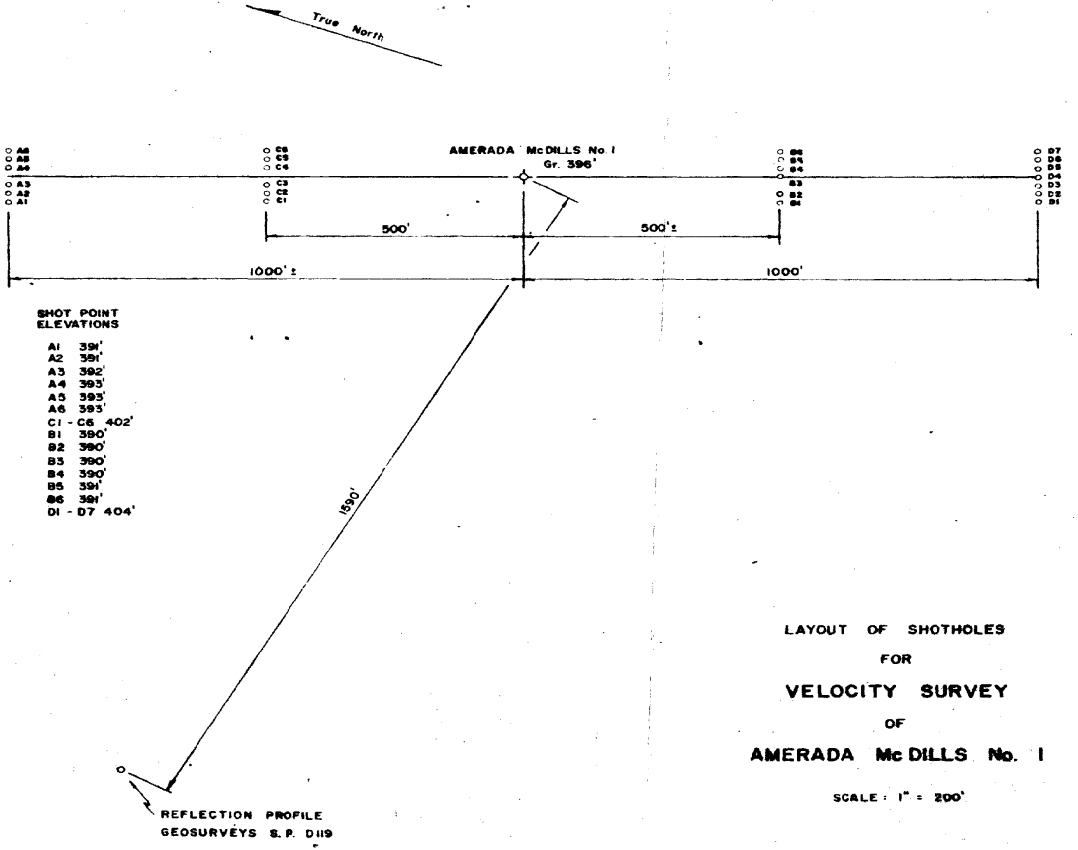
AMERADA PETROLEUM CORP. OF AUSTRALIA, LTD.

McDILLS No. 1

OP 57 NORTHERN TERRITORY

573-1

PLATE 1



LAYOUT OF SHOTHOLES

FOR

VELOCITY SURVEY

OF

AMERADA Mc DILLS No. 1

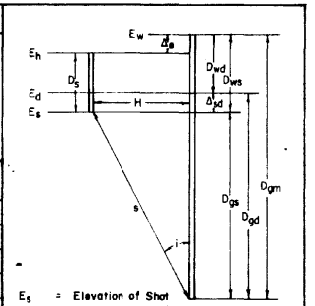
SCALE : 1" = 200'

573-2

PLATE 2

SURVEY INFORMATION		AMERADA PET. CORP. OF AUSTRALIA, LTD.	Well Elevations	Total Depth	LOCATION
Managed by	E. M. Hoffman		KB = +412'		Co-ordinates: 25° 43' 50" S Lat.
Surveyed by	A.G.P. Crews 2 & 3	Mc DILLS No. 1	Gr = +396'	10,515'	135° 47' 25" E Long.
Computed by	E. H. Prigmore				OP 57
Dates of survey	June 20, 1965 – Sept. 3, 1965		E_d = +300' D_{wd} = 112'		Northern Territory, Australia

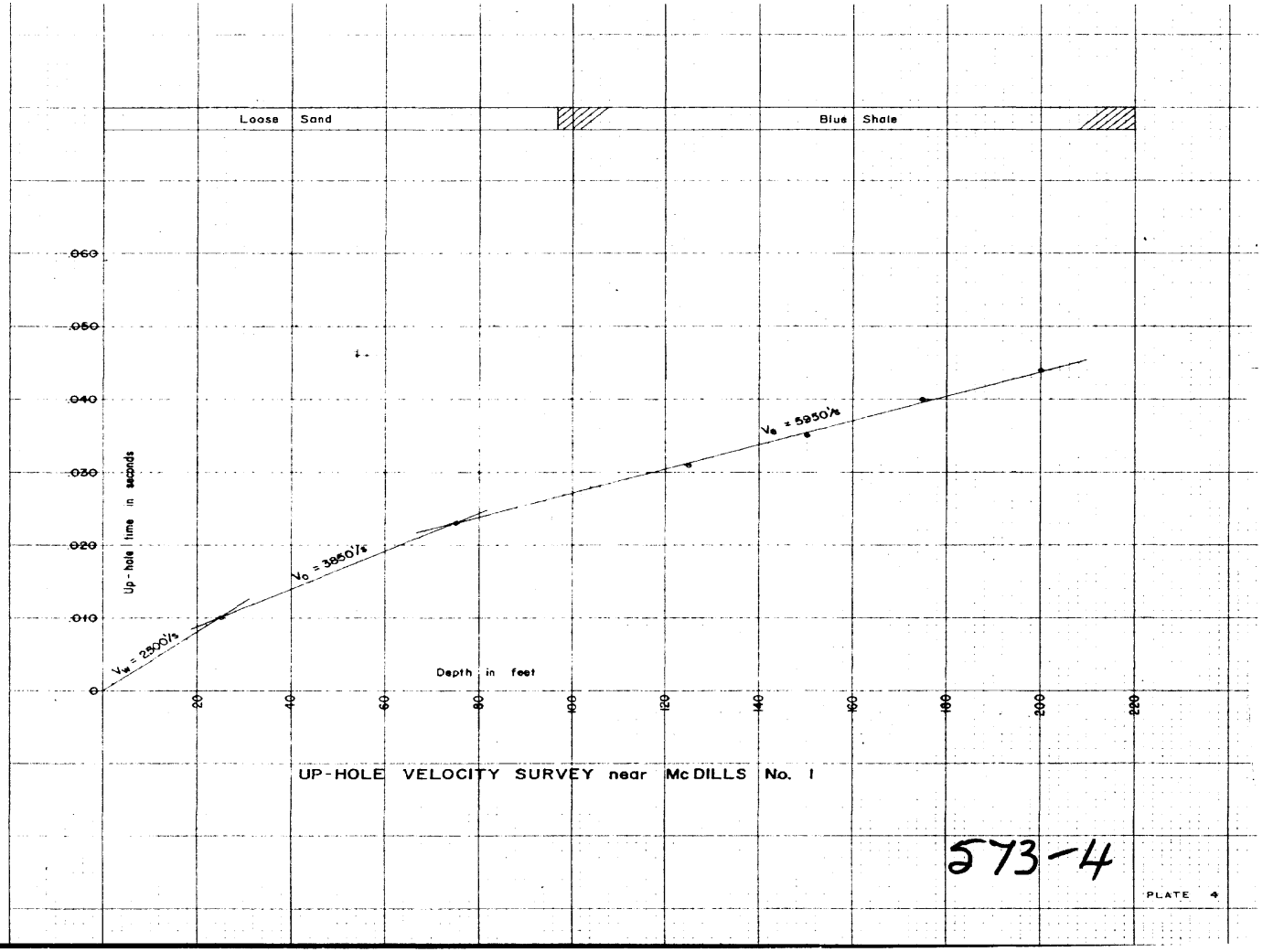
Record Nbr.	Shot Hole Nbr.	D_{gm}	t_{us}	D_s	Δ_e	Shot Hole Elev	E_s	D_{ws}	Δ_{sd}	D_{gs}	H	Cot i	Cos i	T	Grade	T_{gs}	$\frac{\Delta_{sd}}{V_R}$	T_{gd}	T_{gd} Average	D_{gd}	ΔT_{gd}	ΔD_{gd}	V_i Interval Velocity	V_o Average Velocity
1	A-6	1435	.005	20	+19	395	373	39	-73	1396	995	1.403	.814	.276	G	.2247	-.0146	.2101						
2	B-1	1435	.022	60	+22	390	330	82	-30	1353	502	2.695	.937	.232	F	.2174	-.0060	.2114						
3	B-6	1435	.020	60	+21	391	331	81	-31	1354	495	2.735	.939	.230	F	.2160	-.0062	.2098	.2104	1323				6288
																					.0601	565	9401	
4	A-5	2000	.020	60	+19	393	333	79	-33	1921	995	1.931	.888	.312	F	.2771	-.0066	.2705	.2705	1888				6980
																					.0351	335	9544	
5	A-4	2335	.020	60	+19	393	333	79	-33	2256	995	2.267	.915	.340	P	.3111	-.0066	.3045						
6	B-4	2335	.018	60	+22	390	330	82	-30	2253	495	4.552	.977	.320	VP?	.3126	-.0060	.3066	.3056	2223				7274
																					.0266	265	9962	
7	B-3	2600	.020	60	+22	390	330	82	-30	2518	497	5.066	.981	.347	VP	.3404	-.0060	.3344						
8	A-3	2600	.020	60	+20	392	332	80	-32	2520	1000	2.520	.929	.362	P	.3363	-.0064	.3299	.3322	2488				7489
																					.0374	400	10695	
9	D-1	3000	.019	60	+8	404	344	68	-44	2932	1000	2.932	.946	.400	P	.3784	-.0088	.3696	.3696	2888				7814
																					.0449	500	11136	
10	B-2	3500	.019	60	+22	390	330	82	-30	3418	500	6.836	.989	.427	G	.4223	-.0060	.4163						
11	A-2	3500	.007	28	+21	391	363	49	-63	3451	1000	3.451	.960	.448	P	.4301	-.0126	.4175						
12	D-2	3500	.021	60	+8	404	344	68	-44	3432	1000	3.432	.960	.436	F	.4186	-.0088	.4098	.4145	3388				8174
																					.0776	900	11598	
13	C-1	4400	.021	60	+10	402	342	70	-42	4330	500	8.660	.993	.504	F	.5005	-.0084	.4921	.4921	4288				8714
																					.1307	1675	12816	
14	C-2	6075	.021	60	+10	402	342	70	-42	6005	500	12.010	.997	.632	P	.6301	-.0084	.6217						
15	C-2	6075	.019	56	+10	402	346	66	-46	6009	500	12.018	.997	.635	F	.6331	-.0092	.6239	.6228	5963				9575
																					.0768	1065	13867	
16	D-5	7140	.021	60	+8	404	344	68	-44	7072	1000	7.072	.990	.718	P	.7108	-.0088	.7020						
17	C-5	7140	.020	60	+10	402	342	70	-42	7070	500	14.140	.998	.707	P	.7056	-.0084	.6972	.6996	7028				10,046
																					.1245	1878	15084	
18	C-6	9018	.020	60	+10	402	342	70	-42	8948	500	17.896	.998	.832	F	.8303	-.0084	.8219						
19	D-6	9018	.021	60	+8	404	344	68	-44	8950	1000	8.950	.994	.840	VP	.8350	-.0088	.8262	.8241	8906				10,807
																					.0875	1432	16,366	
20	D-7	10,450	.021	60	+8	404	344	68	-44	10,382	1000	10.382	.995	.925	VP	.9204	-.0088	.9116	.9116	10,338				11,341



E_s = Elevation of Shot
E_h = Elevation of Mouth of Shot Hole
E_d = Elevation of Datum Plane = +300'
E_w = Elevation of Well
D_{gm} = Well Geophone Depth measured from Well Elevation
D_{gs} = Well Geophone Depth measured from Shot Elevation
D_{gd} = Well Geophone Depth measured from Datum Elevation.
D_s = Depth of Shot
H = Horizontal Distance from Well to Shot Hole
S = Straight Line Travel Path from Shot to Well Geophone
t_{us} = Uphole Time at Shot Hole
D_{wd} = Difference in Elevation between Well and Datum Plane = $E_w - E_d$
Δ_e = Difference in Elevation between Well and Shot Hole = $E_w - E_h$
D_{ws} = $D_s + \Delta_e$
Δ_{sd} = Difference in Elevation between Datum Plane and Shot = $D_{ws} - D_{wd}$ or $E_d - E_s$
D_{gs} = $D_{gm} - D_{ws}$
Cot i = $\frac{D_{gs}}{H}$
T_{gs} = T cos i = Vertical Travel Time from Shot to Well Geophone
T_{gd} = $T_{gs} + \frac{\Delta_{sd}}{V_R}$ = Vertical Travel Time from Datum Plane to Well Geophone
D_{gd} = $D_{gm} - D_{wd} = D_{gs} + \Delta_{sd}$ = Vertical Distance from Datum Plane to Well Geophone
V_i = Interval Velocity $\frac{\Delta D_{gd}}{\Delta T_{gd}}$
V_o = Average Velocity $\frac{D_{gd}}{T_{gd}}$
V_R = Replacement Velocity = 5000'/sec.
T = Observed Time from Shot to Well Geophone

PLATE 3

573-3

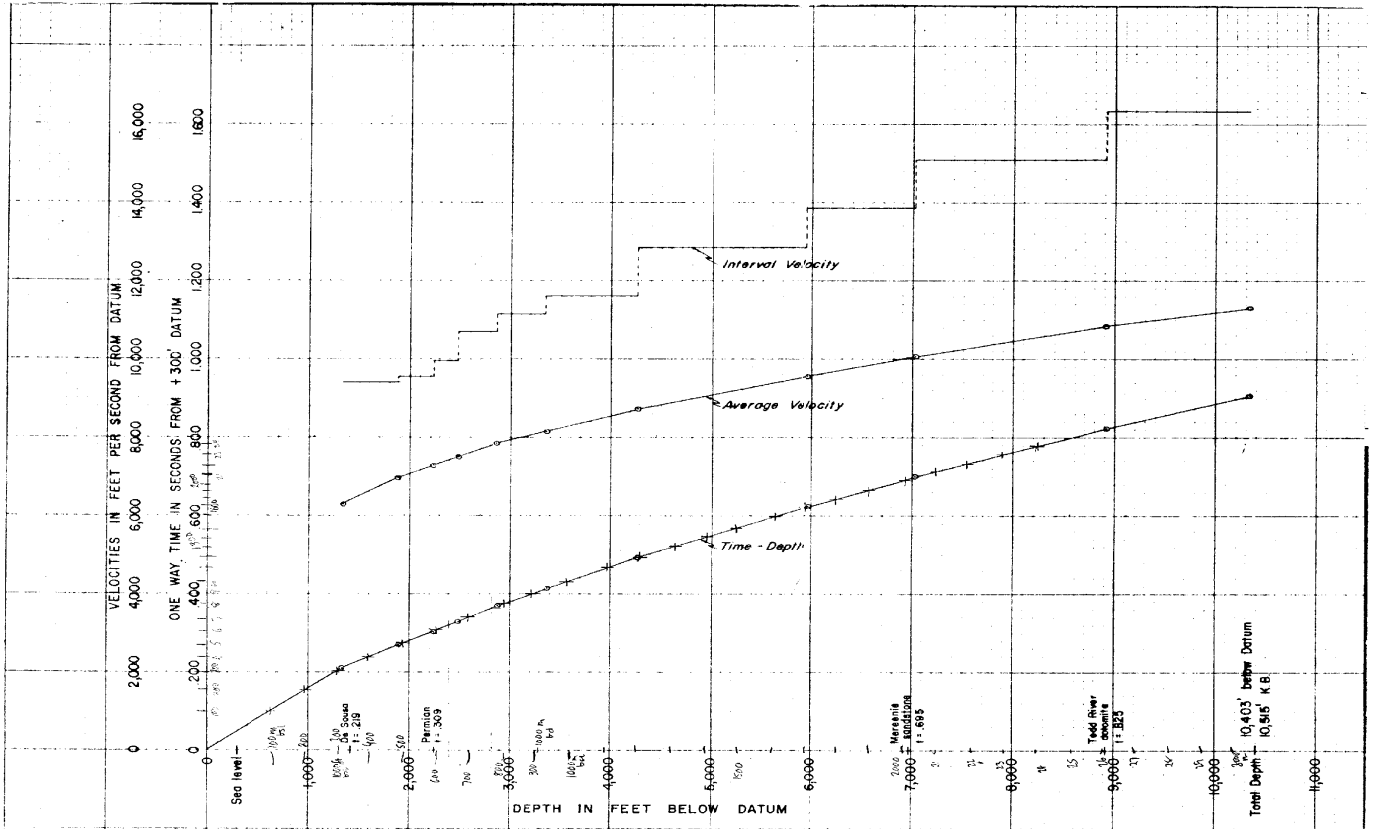


UP-HOLE VELOCITY SURVEY near McDILLS No. 1

573-4

PLATE 4

ENV 573



VELOCITY CURVES

AMERADA PET. CORP. OF AUSTRALIA, LTD.

McDILLS No. 1

OP 57 - NORTHERN TERRITORY

573-5

PLATE 5

S. P. A-6 (995' N)
15" @ 14/20'
WELL GEOPHONE @ 1455' HI
JUNE 20, 1965 MED
LOW
AMERADA MC DILLS NO. 1
BY
A. G. P.

RECORD NO. 2
S. P. B-1 (502' S)
20" @ 52/60'
WELL GEOPHONE @ 1455' HI
JUNE 20, 1965 MED
LOW
AMERADA MC DILLS NO. 1
BY
A. G. P.

RECORD NO. 3
S. P. B-6 (495' S)
20" @ 52/60'
WELL GEOPHONE @ 1455' HI
JUNE 20 1965 MED
LOW
AMERADA MC DILLS NO. 1
BY
A. G. P.

RECORD NO 4.
S. P. A-5 (995' N)
20" @ 52/60'
WELL GEOPHONE @ 2000' HI
JUNE 20, 1965 MED
LOW
AMERADA MC DILLS NO 1
BY
A. G. P.

PLATE 6a

S. P. A-4 (995' N)

20" @ 52/60'

WELL GEOPHONE @ 2595' HI

JUNE 20, 1965 MED

LOW

AMERADA MC DILLS No. 1

BY

A. G. P.

RECORD No. 6

S. P. B-4 (495' S)

20" @ 52/60'

WELL GEOPHONE @ 2595' HI

JUNE 20, 1965 MED

LOW

AMERADA MC DILLS No. 1

BY

A. G. P.

RECORD No. 7

S. P. B-3 (495' S)

20" @ 52/60'

WELL GEOPHONE @ 2600' HI

JUNE 20, 1965 MED

LOW

AMERADA MC DILLS No. 1

BY

A. G. P.

RECORD No. 8

S. P. A-3 (1000' N)

20" @ 52/60'

WELL GEOPHONE @ 2600' HI

JUNE 20, 1965 MED

LOW

AMERADA MC DILLS No. 1

BY

A. G. P.

PLATE 6b

S. P. D-1 (1000'S)

10" @ 56/60'

WELL GEOPHONE @ 3000'

High

SEPT. 3, 1965

Med

Low

AMERADA PETROLEUMS McDILLS #1

BY

A.G.P. GEOPHYSICISTS PTY. LTD.

RECORD No. 10

S. P. B-2 (500'S)

20" @ 52/60'

WELL GEOPHONE @ 3500'

HI

JUNE 20, 1965

MED

LOW

AMERADA McDILLS No. 1

BY

A. G. P.

RECORD No. 11

S. P. A-2 (1000' N)

20" @ 20/28'

WELL GEOPHONE @ 3500'

HI

JUNE 20, 1965

MED

LOW

AMERADA McDILLS No. 1

BY

A. G. P.

RECORD No. 12

S. P. D-2 (1000'S)

10" @ 56/60'

WELL GEOPHONE @ 3500'

High

SEPT. 3, 1965

Med.

Low

AMERADA PETROLEUMS McDILL #1

BY

PLATE 6c

S. P. C-5 (900' N)

10" @ 56/60'

WELL GEOPHONE @ 7140'

High

SEPT. 3, 1965

Med

Low

AMERADA PETROLEUM'S McDILL #1

by

AUSTRAL GEO PROSPECTORS PTY. LTD.

RECORD NO. 18

+.004

0 1 2 3 4 5 6 7 8 9 10

.707 P

S. P. C-6 (500' N)

10" @ 56/60'

WELL GEOPHONE @ 9018'

High

SEPT. 3, 1965

Med

Low

AMERADA PETROLEUM'S McDILL #1

by

AUSTRAL GEO PROSPECTORS PTY. LTD.

RECORD NO. 19

+.003

0 1 2 3 4 5 6 7 8 9 10

.632 P

S. P. D-6 (1000' S)

10" @ 56/60'

WELL GEOPHONE @ 9018'

High

SEPT. 3, 1965

Med

Low

AMERADA PETROLEUM'S McDILL #1

by

AUSTRAL GEO PROSPECTORS PTY. LTD.

RECORD NO. 20

+.001

0 1 2 3 4 5 6 7 8 9 10

.540 P

S. P. D-7 (1000' S)

10" @ 56/60'

WELL GEOPHONE @ 10,480

High

SEPT. 3, 1965

Med

Low

AMERADA PETROLEUM'S McDILL #1

by

.925 P

PLATE 6a

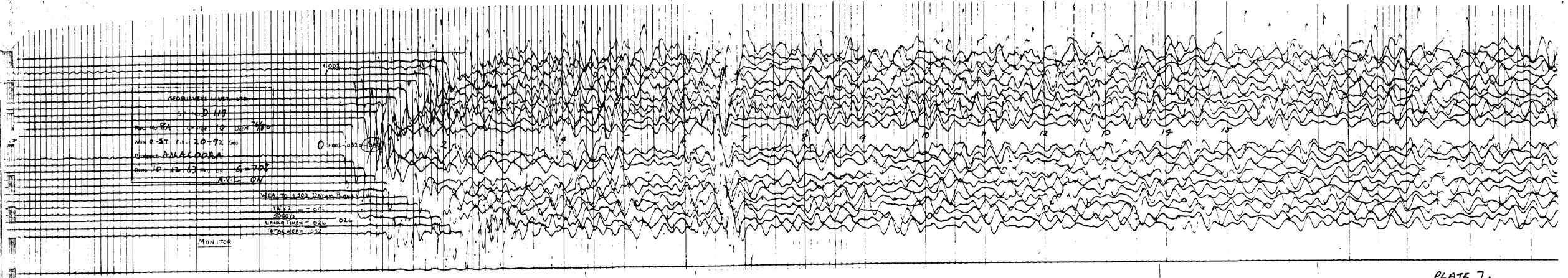
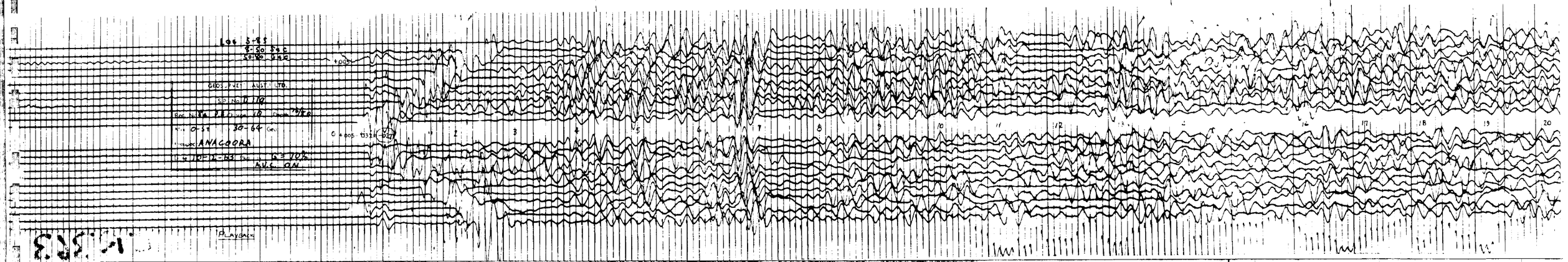


PLATE 7.

NOTE: To correct record to
+300' Datum Plane
subtract .032 from record time.



S.P. C-1 (500' N)
10# @ 56/60'
WELL GEOPHONE @ 4400' ft.
SEPT. 3, 1965
High
Med
Low
AMERADA PETROLEUM'S McDILL #1
BY
AUSTRAL GEOPROSPECTIONS PTY. LTD.

RECORD NO. 14

S.P. C-2 (500' N)
10# @ 56/60'
WELL GEOPHONE @ 6075'
SEPT. 3, 1965
High
Med
Low
AMERADA PETROLEUM'S McDILL #1
BY
AUSTRAL GEOPROSPECTIONS PTY. LTD.

RECORD NO. 15

S.P. C-2 (500' N)
10# @ 52/56'
WELL GEOPHONE @ 6076'
SEPT. 3, 1965
High
Med
Low
AMERADA PETROLEUM'S McDILL #1
BY
AUSTRAL GEOPROSPECTIONS PTY. LTD.

RECORD NO. 16

S.P. D-5 (1000' E)
10# @ 56/60'
WELL GEOPHONE @ 7140'
SEPT. 3, 1965
High
Med
Low
AMERADA PETROLEUM'S McDILL #1
BY

PLATE 6d