Department of Indian Affairs
and Northern Development
Oil and Mineral Division
112 - 11th. Ave. S. E.
Calgary 21, Alberta

WELL HISTORY REPORT

ON

MOBIL COLVILLE E-15

Approved By: J. H. Stanford
Drilling and Production Engineering Supervisor

Date: June 7, 1971
Edmonton, Alberta

C O N F I D E N T I A L

By: R. W. Pidskalny
Z. F. Nikiforuk

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- Core Descriptions
- Water Analysis
- Core Gas Analysis
- Gas Analysis
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SECTION I - SUMMARY OF WELL DATA

a.	Well Name:	Mobil Colville E-15
b.	Permittee:	Mobil Oil Canada, Ltd.
c.	Operator:	Mobil Oil Canada, Ltd. Calgary Place, Calgary
d.	Location:	Unit E Section 15 Grid 67° 20'N 126° 15'W Latitude 67° 14' 18.2"N Longitude 126° 18' 25.6"W Unique Well Identifier 300E156720126150 Universal Well Location Reference: Lat 67.23839°N Long 126.30711°W
e.	Co-Ordinate:	Not development well
f.	Permit No.:	5105
g.	Drilling Contractor	Heath and Sherwood Drilling Rig #9 (Slim hole coring rig)
h.	Drilling Authority:	438
i.	Classification:	New field wildcat
j.	Elevation:	KB: 1269' Ground: 1260'
k.	Spudded:	April 18, 1970
l.	Completed Drilling:	October 9, 1970
m.	Total Depth:	5996' KB
n.	Well Status:	Dry and abandoned
o.	Rig Released:	October 18, 1970 12:00 PM
p.	Hole Size:	8 3/4" to 63' KB 6¼" to 515' KB 4¼" to 2753' KB 3" to 4554' KB 2 23/64" to 5996' KB
q.	Casing:	7" to 63' 5" to 515' 3½" to 2753' 2 7/8" liner 2694' to 4554'

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SECTION II - GEOLOGICAL SUMMARY

a. Formation Tops

	Depth (logs)	Elevation
Bear Rock	at surface	
Ronning	300	+ 969
Saline River	3760	-2491
Saline River Salt	4146	-2877
Mount Cap	4505	-3236
Mount Clark	4910	-3641
Proterozoic	5018	-3749
TD	5996	-4727

b. Cored Intervals

Continuous Cored Intervals

	Formation	Rec.
516 -.1248	Ronning	688.7
1341 - 2566	Ronning	1147.7
2644 - 2788	Ronning	125.2
2815 - 3930	Ronning-Saline R	1015.5
3948 - 4116	Saline River	160.0
4124 - 4216	Saline R Salt	41.0
4298 - 5996	Salt - Mt Cap - Mt Clark to TD	1577.5

c. Core Description

See Appendix

d. Sample Descriptions

None

e. Paleontological Determinations

None

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SECTION III - ENGINEERING SUMMARY

a. Report of Drill Stem Tests

i) DST #1 - Dual bottom-hole test
Date - May 4, 1970
Interval - 534' - 660'
Formation - Ronning
Misrun due to hydraulic tool not opening properly.

ii) DST #2 - Dual bottom-hole test
Date - May 5, 1970
Interval - 660' - 534'
Formation - Ronning
Misrun due to hydraulic tool not opening properly.

iii) DST #3 - Dual bottom-hole test
Date - May 5, 1970
Interval - 660' - 534'
Formation - Ronning

Preflow	3 min.	ISI.	35 min.
VO	15 min.	FSI	60 min.

Pressures:	IH	286 psi
	ISI	Not obtained
	IF	66 psi
	FF	66 psi
	FSI	Not obtained
	FH	283 psi

Missed shut-ins due to poor weight indicator. No weight shown at shallow depth.

iv) DST #4 - Single straddle
Date - Sept. 8, 1970
Interval - 4893 - 4925
Formation - Mt. Clark
Misrun due to hole condition unable to reach bottom.

v) DST #5 - Hook wall test
Date - Oct. 14, 1970
Interval - 5996' - 4518'
Formation - Mt. Cap to TD

Preflow	3 min	ISI	30 min
VO	180 min	FSI	60 min

Pressures:	IH	2300
	ISI	1921
	IF	1248
	FF	1868
	FSI	1876
	FH	1883

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Medium air blow, steady for 60 min. Decreasing to nil in 150 min.
Recovery 2010' mud, 1800' water
Water salinity 178,000 ppm

b. Casing Record

1. Conductor Pipe

Ran 6 jts. of 7" 17#/ft J-55 casing and landed at 63' KB.
Cemented with 13 sacks oilwell cement. No problem running pipe or cement.

2. Surface Casing

Ran 38 jts of 5" 13#/ft J-55 casing and landed at 515' KB.
Cemented with 59 sacks oilwell cement. Cement would not hold pressure. Squeezed 25 sacks fondu + 5% salt then 30 sacks fondu + 3% salt before obtaining a successful squeeze.

3. Intermediate String

Ran 2750' of 3½" 7.7#/ft HQ casing and landed at 2753' KB.
Cemented with 60 sacks oilwell cement.

4. Liner

Ran 1860' of 2 7/8" 4.7#/ft BX casing and landed at 4554' KB.
Cemented with 40 sacks fondu + 5% salt. After 8 hours ran an 11 sack plug of fondu cement on top of liner and after 8 hrs another 12 sack plug before it would hold mud. After 8 hrs. felt plug at 2506'.

c. Bit Record

No.	Make	Type	Size	Hours	Depth In	Depth Out	Footage	Serial No.
1		H-76	8 3/4	15	0	63	63	9237811CA69
2	HW	W7R	6¼	18½	63	340	277	LN 843
3	HW	W7R	6¼	21¼	340	516	176	LN 847
4	TRVCO	HNQ	4¼	6 3/4	516	598	82	HSI 131
5	"	"	4¼	8	598	754	156	" 125
6	"	"	4¼	5¼	754	872	118	" 137
7	"	"	4¼	1¼	872	883	11	" 130
8	"	"	4¼	1¼	883	894	11	" 135
9	"	"	4¼	½	894	900	6	" 136
10	"	"	4¼	1¼	900	905	5	" 134
11	"	"	4¼	4¼	905	935	30	" 132
12	"	"	4¼	1¼	935	938	3	" 133
13	"	"	4¼	1 3/4	938	946	8	" 124
14	"	"	4¼	1¼	946	967	21	" 123
15	"	"	4¼	2 3/4	967	989	22	" 127
16	"	"	4¼	2¼	989	1000	11	" 128
17	"	"	4¼	2	1000	1026	26	" 126
18	"	"	4¼	2 3/4	1026	1045	19	HSA 7283

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c. Bit Record (cont'd)

No.	Make	Type	Size	Hours	Depth In	Depth Out	Footage	Serial No.
19	TRVCO	HNQ	4¾	2 3/4	1045	1084	49	HSI 129
20	"	"	4¾					HSA 7281
21	"	"	4¾	2	901	913	12	" 7275
22	"	"	4¾	½	913	923	11	" 7277
23	"	"	4¾	7¼	923	993	70	HSI 138
24	"	"	4¾	½	993	999	6	" 142
25	"	"	4¾	2 3/4	999	1030	31	HSA 7285
26	"	"	4¾	5 3/4	1030	1078	48	HSI 139
27	TRVCO	HNQ	4¾	2¼	1078	1094	16	" 143
28	TRVCO	HNQ	4¾	2¼	1094	1111	17	" 141
29	TRVCO	HNQ	4¾	4 3/4	1111	1143	32	HSA 7278
30	TRVCO	HNQ	4¾	70	1143	1243	100	HSA 7288
31	"	HQNQ	4¾	¼	1243	1247	4	HSA 7287
32	Reed	Tricone	4¾	4 3/4	1247	1289	42	LN 876
33	Reed	W-7	4¾	1 3/4	1289	1292	3	XB 251
34	Reed	W-7	4¾	1	1292	1301	9	XB 249
35	Reed	W-7	4¾	3	1301	1318	17	XB 245
36	Reed	W-7	4¾	4 3/4	1318	1338	20	SN 902
31RR	TRVCO	HQNQ	4¾	½	1338	1341	3	
37	Reed	W7	4¾					857071
38	TRVCO	HQNQ	4¾	10½	1341	1430	89	HSI 146
39	TRVCO	HNQ	4¾	2½	1430	1452	22	" 148
40	TRVCO	HNQ	4¾					" 145
42	TRVCO	HNQ	4¾	10½	1452	1569	117	" 149
43	TRVCO	HNQ	4¾	4¾	1569	1616	47	" 147
44	TRVCO	HNQ	4¾	1½	1616	1627	11	" 44
45	TRVCO	HNQ	4¾	10	1627	1693	66	HSA 7289
46	TRVCO	HNQ	4¾	5 3/4	1693	1769	76	HSI 156
47	"	"	4¾	¼	1769	1770	1	" 155
48	"	HQNQ	4¾	14¼	1770	1935	165	153
49	"	HNQ	4¾	2¼	1935	1956	21	154
50	"	HQNQ	4¾	10¼	1956	2069	113	151
51	"	"	4¾	5½	2069	2126	57	152
52	"	"	4¾	9 3/4	2126	2219	93	157
53	"	"	4¾	10¼	2219	2337	118	150
54	"	HNQ	4¾	10¼	2337	2443	106	158
55	"	HNQ	4¾	3¼	2443	2485	42	162
56	"	"	4¾	3 3/4	2485	2536	51	160
55RR	"	"	4¾	5¼	2536	2566	40	162
57		Wedge	4¾	7	2566	2644	78	164
58	"	HNQ	4¾	8½	2644	2750	106	159
59	"	"	4¾	3/4	2750	2753	3	161
60	"	"	3"	2½	2753	2783	30	HSI 195
61	"	"	3"	1	2783	2789	6	" 189
62		Tricone	3"	2¼	2789	2815	26	
61RR	"	HNQ	3"	5¼	2815	2875	60	HSI 192
63			3"	8 3/4	2875	2996	131	" 193
64			3"	4 /34	2996	3060	64	" 194

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c. Bit Record (cont'd)

No.	Make	Type	Size	Hours	Depth In	Depth Out	Footage	Serial No.
65			3"	10½	3060	3213	153	HSI 198
66			3"	25 3/4	3213	3673	460	" 117
67			3"	½	3673	3675	2	" 129
68			3"	1½	3675	3699	24	" 40
69			3"	13½	3679	3923	224	" 26
70			3"	2	3923	3930	7	" 25
71			2 15/16	Drilling Cement				KI 3646
72		Rock bit	"	Drilling Cement				6032
74	TRVCO	NBQ	3"	16 3/4	3948	4116	168	HSI 27
75	"	Tricone	3"	2½	4116	4124	8	" 199 H
76	"	NBQ	3"	4 3/4	4124	4216	92	" 35
75RR	"	Tricone	3"	2¼	4216	4248	32	" 199 H
73RR		"	3"	3½	4248	4298	50	K76032
76RR	TRVCO	NBQ	3"	6	4298	4339	42	HSI 35
77	"	"	3"	15½	4339	4540	201	" 39
78	"	"	3"	11 3/4	4540	4621	81	" 34
79		Tricone	2 15/16	Fishing				6715
80		"	"	Drilling Cement				21366
81		"	"	"		"		2431
82	TRVCO	NBQ	3"	Couldn't reach bottom				HSI 118
83	SERVCO	MILL	3"	Cleaning to bottom				21367
84		Hawthorn	3"	9	3952	4135	183	
85		Hawthorn	3"	16	4135	4291	156	
82RR	TRVCO	NBQ	3	3	4291	4310	19	HSI 118
86		Tricone	2 15/16	2½	4310	4325	15	74633
87		Tricone	"	1½	4325	4333	8	74837
88		Hawthorn	2 63/64	9	4333	4378	45	
90	TRVCO	NBQ	3"		4378	4393	15	HSI 197
91		Hawthorn	2 63/64	5½	4393	4425	32	
92	TRVCO	NBQ	3	3	4425	4439	14	
93	TRVCO	NBQ	3	5½	4439	4473	34	HSI 204
94	"	"	3	8	4473	4524	51	" 208
95	"	"	3	6 3/4	4524	4554	30	" 206
97		Hawthorn	2 15/16	Drilling out cement				HS-8507-M
98	TRVCO	BX	2 15/16	Drilling out cement				HS-8507
99	TRVCO	BX	2 15/16	Drilling out cement				HSB-6860
100	TRVCO	BQ	2 23/64	1¼	4551	4555	4	HS-9189
101	TRVCO	BQ	2 23/64	9½	4555	4406	51	HS 9299
102	"	"	"	23	4406	4740	134	HS 9298M
103	"	"	"	7	4740	4780	40	HS 9190M
104	"	"	"	40	4780	4947	167	HS 9195M
105	"	"	"	10 3/4	4947	5050	103	HSI 211
106	"	"	"	22¼	5050	5173	123	" 216
107	"	"	"					" 218
108	"	"	"	17¼	5173	5244	71	" 213
109	"	"	"	12 3/4	5244	5310	56	" 215
110	"	"	"	3½	5310	5330	20	HS 9194
111	"	"	"	9¼	5330	5375	45	HS 9194W

NOTE: 73 TRVCO Rock Bit 2 15/16 2½ 3930 3948 18 K76032
(b) No record on bit 89.

c. Bit Record (cont'd)

No.	Make	Type	Size	Hours	Depth In	Depth Out	Footage	Serial No.
112	TRVCO	BQ	2 23/64	2¼	5375	5392	17	HS 9192M
113	"	"	"	12¼	5392	5450	58	HS 9193
114	"	"	"	25	5450	5589	139	HS 2300
115	"	"	"	19 3/4	5589	5719	128	HS 9297
116	"	"	"	19¼	5719	5857	138	HS 9296
117	"	"	"	8	5857	5911	54	HS 9188
118	"	"	"	12½	5911	5969	58	04044
119	"	"	"	3½	5969	5996	27	HS 9191

d. Mud Report

Description	Quantity
Kelzan	7,961 lbs.
Salt	154,925 lbs.
Fly Ash	40 lbs.
CMC	3,980 lbs.
Caustic Soda	280 lbs.
Kwikseal	4,720 lbs.
Sawdust	2 sacks
Cell-O-Seal	1,500 lbs.
Cement	788 sacks
Cutwell	1,001 gals.
Dowicide	110 lbs.
Soda Ash	100 lbs.
AM9	2,280 lbs.
AP	75 lbs.
DMAPN	68 lbs.
KFE	8.75 lbs.
Magcogel	2,240 lbs.
$CaCl_2$	160 lbs.
Fuel Oil	1,085 gals.
Bentonite	12,369 lbs.
Amitec	6 gals.
Salt Gel	6,600 lbs.
Cellex	130 lbs.
Sodium Bichromate	120 lbs.
Chromate	7 lbs.
Dichromate	18 lbs.

e. Deviation Report

Depth	Deviation (degrees)
450	2½
850	2
930	1

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e. Deviation Report (cont'd)

Depth	Deviation (degrees)
1560	1¼
1770	2 3/4
1910	4½
2050	6 3/4
2150	7¼
2194	7 3/4
2218	7¼
2265	7¼
2315	8
2352	7 3/4
2410	7¼
2508	7
2670	7½
2805	7 3/4
3220	8
3550	7¼
3925	6½
4400	2¼
4990	8½

f. Abandonment Plugs

Oct. 18, 1970

Plug #1 2700' - 1100' inside casing
Cemented with 30 sacks fondu and 30 sacks oilwell cement. Felt at 1100' after 8 hours.

Plug #2 5 sacks cement at surface. Steel cap welded over casing and a sign installed on a steel post 4 feet above ground level.

g. Lost Circulation Zones

1. Lost circulation at 270', 293' and 319'
Used 2 sacks sawdust
27 sacks kwik seal
3 sacks Cello-O-Seal
Ran 5" casing at 515' KB.

2. Lost circulation at 1207', 1219', and 1240'
Used 35 sacks Cello-O-Seal
68 sacks Kwik Seal
Drilled ahead to 1301' KB.
Ran AM-9 plug using 200# AM-9, 7# DMAPN, 4# AP and 4# KFE. Found plug at 905' and drilled out with 60-85% returns.

3. Lost complete circulation at 1332'.
Used 13 sacks Cello-O-Seal
Ran a AM-9 plug with 200# AM-9, 7# DMAPN, 4# AP and ½# KFE. Found plug at 1289' and drilled out. Ran another AM-9 plug from 1341'. After 8 hours tripped in and ran a cement-gel plug consisting of 23 sacks cement + 40# Magcogel.

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Would not hold pressure after 9 hours.

Ran 12 sacks cement on top. After 8 hours found plug at 1207'. Plug no good.

Ran Diesel-gel-cement plug with 9 sacks Magcogel, 6 sacks cement and 180 gal diesel. After 8 hours found plug at 2105', drilled out and were able to circulate.

4. Lost circulation at 1429' - 100% lost returns.
Decided to core ahead blind with 1 to 1½ bbl/min water through drill pipe and 1 to 2 BPM Kelzan mud down annulus for shale protection.

At 2125' made attempt to control the 100% lost circulation. Mixed 6 bags caribou moss, 3 sacks Cello-O-Seal and 2 sacks Kwik seal in 12 bbl of water and displaced over interval 1150'-1800'. After running in,circulating, pressuring up and cleaning out, still had 100% lost returns. Cored ahead blind.

Ran 3½" HQ casing at 2753'.

5. Drilled out and had 100% lost circulation at 2768'. Cored ahead blind to 3930'.

Attempted to regain circulation at 3930'

a) Ran a rubber plug and pumped 6 sacks Cello-O-Seal and 5 sacks Kwik seal with no success.

b) Followed with AM-9 plug consisting of 300# AM-9, 11# DMAPN, 13½# AP and 1# KFE. Pressure test and no success.

c) Displaced 54 sacks cement, 1 sack Magcogel and 1 sack $CaCl_2$. After16 hrs. drilled out from 2160' to 3240'.

d) Displaced 50 sacks cement + 1 sack Magcogel. After 24 hrs. drilled out and lost complete circulation at 2855'. Drilled out cement to 3937'.

e) Ran in rubber plug to 2900'. Pumped down 3 sacks Cello-O-Seal, 3 sacks Kwik seal and 1 sack Magcogel. Cleaned material out of hole.

f) Ran AM-9 cement plug made up with 300# AM-9, 15# AP, 1# KFE, 12# DMAPN, 1 sack Magcogel and 6 sacks oilwell cement. Tested plug and got 40% returns.

g) Ran another AM-9 cement plug - same components. Found plug at 2124 and after 3½ hours drilled out same to 2916'.

h) Ran another AM-9 cement plug - same components. Found plug at 2460' and drilled out with lost circulation at 2760'.

i) Ran another AM-9 cement plug - 300# AM-9, 12# DMAPN, 8# AP, 1.1# KFE, 1 sack bentonite and 4 sacks cement. Tripped in after 2 hours, no plug so cleaned out rubber plug.

Proceeded to core ahead to 4621' and appeared to have circulation.

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6. Continuous 40%-30% lost circulation from 4996' to 5996'. Continued coring without any remedial action.

h. Report of Blowouts

None

SECTION IV - LOGS

Induction Electrical Log	1580' - 515'	June 28/70
Sonic Log	1410' - 515'	June 28/70
Sonic Log	4550' - 2758'	Aug. 23/70
Electrical Log	4548' - 2758'	Aug. 24/70
Gamma Ray - Neutron	4554' - 34'	Aug. 23/70
Gamma Ray - Neutron	5982' - 4450'	Oct. 12/70

SECTION V - ANALYSIS

a. Core Analysis

See Appendix.

b. Water Analysis

See Appendix

c. Gas Analysis

See Appendix

d. Oil Analysis

None

SECTION VI - COMPLETION SUMMARY

a. Tubing Record

None

b. Perforation Record

None

c. Cementation Record

Oct. 18, 1970
Plug #1 2700' - 1970' inside casing
Displaced 30 sacks Fondu and 30 sacks Oilwell cement on top of BQ drill rods and logging tools stuck in hole. After 8 hours felt plug at 1100'.

Plug #2 Surface
Cemented with 5 sacks cement.

d. Acidization and Fracturing Record

None

e. Back Pressure and Production Tests

None

CORE LABORATORIES - CANADA, LTD. (19)
CALGARY, ALBERTA

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
/ /

Company Mobil Oil Canada, Ltd. (17-18) Formation (22-25) Page 1 of

Well MOBIL COLEVILLE E-15 Date Report File CMP-4-5155

Field, Province D. Fluid WATER BASE MUD (21) Analysts LS

Location 67° 20'N 126° 15'W (1-16) Analysis EFFL DIAMETER POROSITY (20) SMALL PLUG PERM. Remarks

CORE ANALYSIS RESULTS

Sample Number	Depth Feet	Ft. Rep.	Permeability Millidarcys			Perm. Ft.	Porosity Percent	Porosity Feet	Density		Reisidual Saturation			Visual Examination				
			K Max	K 90°	KV				Bulk	Grain	Oil % Pore	Total water % Pore						
	(26-31)	(32-34)	(35-41)	(42-48)	(49-55)		(56-58)			(59-61)	(62-64)	(65-67)	(68)	(69)	(70)	(71)	(72)	(73)
1	557.0 - 57.9	0.9	0.08	-0.1	-0.1	0.07	3.5	3.15	2.75	2.83	-1.0	-1.0		-	2	-	-	1
2	57.9 - 58.9	1.0	0.16	-0.1	-0.1	0.16	3.4	3.40	2.74	2.83	-1.0	-1.0		-	2	-	-	1
3	58.9 - 59.7	0.8	0.16	-0.1	-0.1	0.13	4.3	3.44	2.73	2.85	-1.0	-1.0		-	2	-	-	1
4	59.7 - 60.6	0.9	0.15	-0.1	-0.1	0.14	3.9	3.51	2.74	2.85	-1.0	-1.0		-	2	-	-	1
5	60.6 - 61.3	0.7	0.16	-0.1	-0.1	0.11	3.3	2.31	2.74	2.84	-1.0	-1.0		-	2	-	-	1
6	61.3 - 62.0	0.7	0.07	-0.1	-0.1	0.05	5.0	3.50	2.70	2.84	-1.0	-1.0		-	2	-	-	1
7	62.0 - 63.1	1.1	0.07	-0.1	-0.1	0.08	3.6	3.96	2.75	2.85	-1.0	-1.0		-	2	-	-	1
8	63.1 - 63.9	0.8	0.14	-0.1	-0.1	0.11	5.2	4.16	2.70	2.85	-1.0	-1.0		-	2	-	-	1
9	63.9 - 64.9	1.0	0.16	-0.1	-0.1	0.16	7.7	7.70	2.63	2.85	-1.0	-1.0		-	2	-	-	2
10	64.9 - 65.7	0.8	0.09	-0.1	-0.1	0.06	5.9	4.72	2.68	2.85	-1.0	-1.0		-	2	-	-	2
11	65.7 - 66.9	1.2	0.07	-0.1	-0.1	0.05	6.9	8.27	2.64	2.84	-1.0	-1.0		-	2	-	-	2
12	66.9 - 67.9	1.0	0.07	-0.1	-0.1	0.07	6.4	6.40	2.66	2.84	-1.0	-1.0		-	2	-	-	1
13	67.9 - 69.2	1.3	0.1	-0.1	-0.1	-0.1	5.8	7.54	2.67	2.84	-1.0	-1.0		-	2	-	-	1
14	69.2 - 70.1	0.9	0.16	-0.1	-0.1	0.14	6.9	6.21	2.65	2.85	-1.0	-1.0		-	2	-	-	2
15	70.1 - 71.1	1.0	0.07	-0.1	-0.1	0.07	5.3	5.30	2.70	2.85	-1.0	-1.0		-	2	-	-	1
16	71.1 - 72.3	1.2	0.08	-0.1	-0.1	0.10	6.0	7.20	2.67	2.85	-1.0	-1.0		-	2	-	-	1
17	72.3 - 73.3	1.0	0.08	0.1	-0.1	0.13	5.2	5.20	2.68	2.83	-1.0	-1.0		-	2	-	-	1

CORE LABORATORIES - CANADA, LTD. (19)
CALGARY, ALBERTA

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
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Company Mobil Oil Canada, Ltd. (17-18) Formation (22-25) Page 2 of

Well MOBIL COLEVILLE E-45 Date Report File CNP-4-5155

Field, Province D. Fluid (21) Analysts LS

Location (1-16) Analysis (20) Remarks

CORE ANALYSIS RESULTS

Sample Number	Depth Feet	Ft. Rep.	Permeability Millidarcys			Perm. Ft.	Porosity Percent	Porosity Feet	Density		Residual Saturation			Visual Examination				
			K Max	K 90°	KV				Bulk	Grain	Oil % Pore	Total Water % Pore						
	(26-31)	(32-34)	(35-41)	(42-48)	(49-55)		(56-58)			(59-61)	(62-64)	(65-67)	(68)	(69)	(70)	(71)	(72)	(73)
18	573.3 - 74.3	1.0	0.16	-0.1	-0.1	0.16	4.0	4.00	2.74	2.85	-1.0	-1.0		-	2	-	-	1
19	74.3 - 75.0	0.7	0.08	-0.1	-0.1	0.05	4.2	2.94	2.72	2.84	-1.0	-1.0		-	2	-	-	1
20	75.0 - 75.7	0.7	-0.1	-0.1	-0.1	-0.1	3.3	2.31	2.74	2.83	-1.0	-1.0		-	2	-	-	1
21	75.7 - 76.4	0.7	0.15	-0.1	-0.1	0.10	6.1	4.27	2.68	2.86	-1.0	-1.0		-	2	-	-	2
22	76.4 - 77.1	0.7	0.26	-0.1	-0.1	0.18	5.5	3.85	2.69	2.85	-1.0	-1.0		-	2	-	-	2
23	77.1 - 78.0	0.9	0.16	-0.1	-0.1	0.14	7.5	6.75	2.64	2.86	-1.0	-1.0		-	2	-	-	2

CORE LABORATORIES - CANADA, LTD. (19)
CALGARY, ALBERTA

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

Company Mobil Oil Canada, Ltd. (17-18) Formation (22-25) Page 3 of

Well Mobil Colville E-15 Date Report File CNP-4-5155

Field, Province D. Fluid (21) Analysts

Location (1-16) Analysis (20) Remarks

FD - FULL DIAMETER SAMPLE

CORE ANALYSIS RESULTS

Sample Number	Depth Feet (26-31)	Ft. Rep. (32-34)	Permeability Millidarcys K Max (35-41)	K 90° (42-48)	KV (49-55)	Perm. Ft.	Porosity Percent (56-58)	Porosity Feet	Density Bulk	Density Grain (59-61)	Residual Saturation Oil % Pore (62-64)	Residual Saturation Total water % Pore (65-67)	(68)	Visual Examination (69)	(70)	(71)	(72)	(73)
			CORE	#104	1584-1585 (Rec. 4') (1 Box)													
24	1581.0 - 82.0	1.0	0.05	-1.0	-1.0	0.05	2.2	2.20	2.76	2.82	-1.0	-1.0		4	2	-	-	1
25	82.0 - 82.8	0.8	-0.1	-1.0	-1.0	-	2.2	1.76	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
26	82.8 - 83.6	0.8	0.20	-1.0	-1.0	0.16	3.8	3.04	2.73	2.83	-1.0	-1.0		4	2	-	-	1
27	83.6 - 84.6	1.0	-0.1	-1.0	-1.0	-	4.0	4.00	-1.0	-1.0	-1.0	-1.0		4	2	-	-	2
—	84.6 - 85.0	0.4	-1.0	-1.0	-1.0	-	-1.0	-	-1.0	-1.0	-1.0	-1.0		2	-	-	-	-
			CORE	#105	1585-1590 (Rec. 5') (1 Box)													
28	1585.0 - 85.8	0.8	5.71	-1.0	-1.0	4.57	4.7	3.76	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
29	85.8 - 86.4	0.6	9.62	-1.0	-1.0	5.77	4.6	2.76	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
30	86.4 - 87.0	0.6	0.53	-1.0	-1.0	0.32	5.7	3.42	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
31	87.0 - 87.6	0.6	-0.1	-1.0	-1.0	-	4.4	2.64	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
32	87.6 - 88.4	0.8	-0.1	-1.0	-1.0	-	2.4	1.92	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
33	88.4 - 89.2	0.8	0.06	-1.0	-1.0	0.05	2.5	2.00	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
34	89.2 - 90.0	0.8	0.35	-1.0	-1.0	0.28	1.5	1.20	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
			CORE	#106	1590-1594 (Rec. 4') (1 Box)													
35	1590.0 - 90.8	0.8	0.47	-1.0	-1.0	0.38	5.6	4.48	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
36	90.8 - 91.9	1.1	-0.1	-1.0	-1.0	-	3.1	3.41	2.78	2.87	-1.0	-1.0		4	2	-	-	1
—	91.9 - 92.2	0.3	-0.1	-0.1	-0.1	-	-0.1	-	-1.0	-1.0	-1.0	-1.0		2	-	-	-	-

CORE LABORATORIES - CANADA, LTD. (19)
CALGARY, ALBERTA

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
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Company Mobil Oil Canada, Ltd. (17-18) Formation (22-25) Page 4 of

Well MOBIL COLVILLE E-15 Date Report File CNP-4-5155

Field, Province D. Fluid (21) Analysts

Location (1-16) Analysis (20) Remarks

CORE ANALYSIS RESULTS

Sample Number	Depth Feet	Ft. Rep.	Permeability Millidarcys			Perm. Ft.	Porosity Percent	Porosity Feet	Density		Reisidual Saturation			Visual Examination				
			K Max	K 90°	KV				Bulk	Grain	Oil % Pore	Total water % Pore						
	(26-31)	(32-34)	(35-41)	(42-48)	(49-55)		(56-58)			(59-61)	(62-64)	(65-67)	(68)	(69)	(70)	(71)	(72)	(73)
37	1592.2 - 93.1	0.9	1.82	-1.0	-1.0	1.64	2.2	1.98	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
38	93.1 - 94.0	0.9	-0.1	-1.0	-1.0	-	2.8	2.52	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
			CORE	#107	1594 -	1598	(REC.	4')	(1 Box)									
39	1594.0 - 94.5	0.5	-0.1	-1.0	-1.0	-	2.8	1.40	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
40	94.5 - 95.1	0.6	-0.1	-1.0	-1.0	-	4.3	2.58	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
41	95.1 - 95.7	0.6	0.82	-1.0	-1.0	0.49	2.8	1.68	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
42	95.7 - 96.4	0.7	0.06	-1.0	-1.0	0.04	3.6	2.52	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
43	96.4 - 97.2	0.8	0.23	-1.0	-1.0	0.18	2.6	2.08	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
44	97.2 - 98.0	0.8	0.06	-1.0	-1.0	0.05	5.0	4.00	-1.0	-1.0	-1.0	-1.0		4	2	-	-	2
			CORE	#108	1598 -	1604	(REC.	4')	(1 Box)									
45	1598.0 - 98.8	0.8	-0.1	-1.0	-1.0	-	4.5	3.60	-1.0	-1.0	-1.0	-1.0		4	2	-	-	2
46	98.8 - 99.5	0.7	-0.1	-1.0	-1.0	-	5.5	3.85	-1.0	-1.0	-1.0	-1.0		4	2	-	-	2
47	1599.5 - 1600.3	0.8	0.06	-1.0	-1.0	0.05	5.3	4.24	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
48	1600.3 - 01.4	1.1	0.06	-1.0	-1.0	0.07	5.8	6.38	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
49	01.4 - 02.0	0.6	-0.1	-1.0	-1.0	-	3.9	2.34	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
—	02.0 - 04.0	2.0	-1.0	-1.0	-1.0	-	-1.0	—	-1.0	-1.0	-1.0	-1.0		5	-	-	-	-

CORE LABOR.
CALGARY, A. - CANADA, LTD. (19)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

Company Mobil Oil Canada, Ltd. (17-18) Formation (22-25) Page 5 of

Well Mobil Conville E-15 Date Report File CWP-4-5155

Field, Province D. Fluid (21) Analysts

Location (1-16) Analysis (20) Remarks

CORE ANALYSIS RESULTS

Sample Number	Depth Feet	Ft. Rep.	Permeability Millidarcys			Perm. Ft.	Porosity Percent	Porosity Feet	Density		Residual Saturation			Visual Examination				
			K Max	K 90°	KV				Bulk	Grain	Oil % Pore	Total water % Pore						
	(26-31)	(32-34)	(35-41)	(42-48)	(49-55)		(56-58)			(59-61)	(62-64)	(65-67)	(68)	(69)	(70)	(71)	(72)	(73)
			CORE # 224			2313 -	2316	(Rec. 3')		(1 Box)								
50	2313.0 - 13.8	0.8	1.75	-1.0	-1.0	1.40	3.9	3.12	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
51	13.8 - 14.9	1.1	0.06	-1.0	-1.0	0.07	2.5	2.75	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
52	14.9 - 16.0	1.1	0.41	-1.0	-1.0	0.45	4.8	5.28	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
			CORE # 225			2316 - 2	324	(Rec. 8')		(2 Boxes)								
53	2316.0 - 16.8	0.8	0.76	-1.0	-1.0	0.61	1.9	1.52	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
54	16.8 - 17.6	0.8	3.45	-1.0	-1.0	2.76	3.7	2.96	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
55	17.6 - 18.3	0.7	-0.1	-1.0	-1.0	—	1.4	0.98	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
56	18.3 - 19.6	1.3	0.30	-1.0	-1.0	0.39	6.2	8.06	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
57	19.6 - 20.7	1.1	0.17	-1.0	-1.0	0.19	2.1	2.31	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
58	20.7 - 21.6	0.9	-0.1	-1.0	-1.0	—	1.5	1.35	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
59	21.6 - 22.6	1.0	0.06	-1.0	-1.0	0.06	1.9	1.90	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
60	22.6 - 22.9	0.3	0.06	-1.0	-1.0	0.02	3.0	0.90	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
61	22.9 - 23.8	0.9	0.06	-1.0	-1.0	0.05	1.4	1.26	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
062	23.8 - 25.0	1.2	48.80	-1.0	-1.0	58.56	1.2	1.44	2.19	2.83	-1.0	-1.0		4	2	-	-	1
			CORE # 226			2424 - 2429 (Rec. 5') (1 Box)												
63	2424.0 - 25.1	1.1	0.12	-1.0	-1.0	0.13	2.8	3.08	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
64	25.1 - 26.1	1.0	1.35	-1.0	-1.0	1.35	2.0	2.00	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
65	26.1 - 27.2	1.1	-0.1	-1.0	-1.0	—	1.9	2.09	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1

CORE LABORATORIES - CANADA, LTD. (19)
CALGARY, ALBERTA

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
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Company Mobil Oil Canada, Ltd. (17-18) Formation (22-25) Page 6 of

Well MOBIL GLVILLE E-15 Date Report File CNP-4-5155

Field, Province D. Fluid (21) Analysts

Location (1-16) Analysis (20) Remarks

CORE ANALYSIS RESULTS

Sample Number	Depth Feet	Ft. Rep.	Permeability Millidarcys			Perm. Ft.	Porosity Percent	Porosity Feet	Density		Residual Saturation			Visual Examination				
			K Max	K 90°	KV				Bulk	Grain	Oil % Pore	Total Water % Pore						
	(26-31)	(32-34)	(35-41)	(42-48)	(49-55)		(56-58)			(59-61)	(62-64)	(65-67)	(68)	(69)	(70)	(71)	(72)	(73)
66	2427.2 - 28.3	1.1	-0.1	-1.0	-1.0	-	1.7	1.87	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
67	28.3 - 29.0	0.7	-0.1	-1.0	-1.0	-	3.5	2.45	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1

CORE LABORATORIES – CANADA LTD.

PETROLEUM RESERVOIR ENGINEERING

WATER ANALYSIS

File CAL-2-3032 Page 1 of 1

Company Mobil Oil Canada, Ltd.

Well Mobil Colville E-15 K.B. ____ Grd. ____

67 14'18.20 W.L.

Location 126 18'25.60 N.L. Field Colville Lake Province N.W.T.

Formation ____ Interval ____

Sampled from DST #5 (4500' @ Packer) by ____

Date sampled Oct. 14/70 Date analysed Nov. 13/70 Analyst EM

Recovery ____

____ Mud type ____ Water cushion ____

Resistivity 0.054 Ohm-meters @ 72 °F

Specific gravity 1.1197 @ 60°F

pH 6.65 H_2S Absent

Refractive Index 1.361 @ 72°F

Total Solids:

Calculated 165,623 mg/liter

By evaporation @ 110°C - mg/liter

By evaporation @ 180°C - mg/liter

At ignition - mg/liter

MILLIGRAMS PER LITER

Na + K	Ca	Mg	Fe	Ba	Br	I	Cl	HCO_3	SO_4	CO_3	OH
61164	2565	656	Pres.	Abs.	-	-	99454	112	1672	Nil	Nil

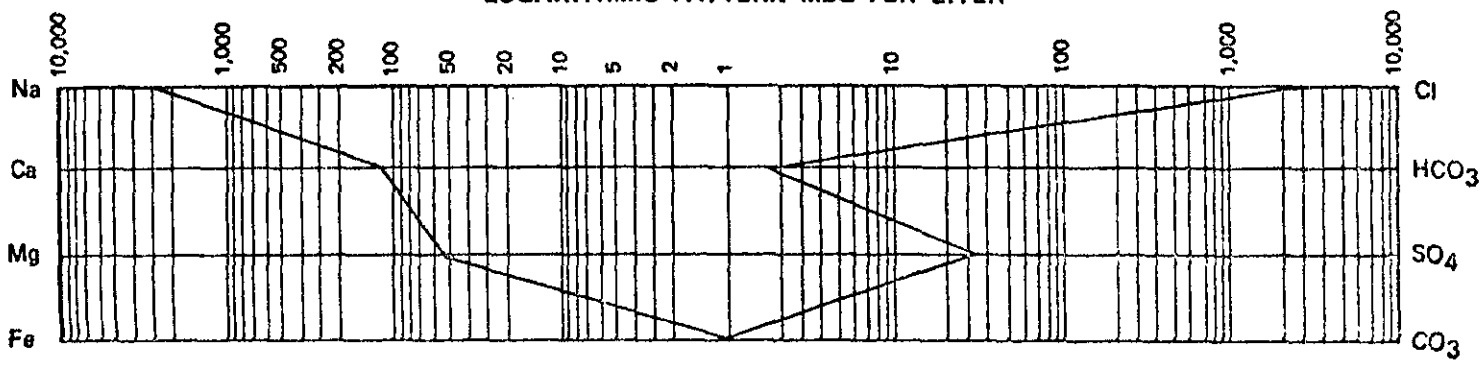
PER CENT CALCULATED SOLIDS

36.9	1.5	.4	Pres.	Abs.	-	-	60.0	.1	1.0	.0	.0

MEQ PER LITER

2659.3	128.0	53.9	Pres.	Abs.	-	-	2804.6	1.8	34.8	.0	.0

LOGARITHMIC PATTERN MEQ PER LITER



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CORE LABORATORIES - CANADA LTD.
Petroleum Reservoir Engineering

P.O. BOX 5670, POSTAL STATION "A"
CALGARY 9, ALBERTA
TELEPHONE: 253-3391

Company: Mobil Oil Canada, Ltd.
Hydrocarbon Analysis on Core Gas Samples

File: CBH-2-5790
Date: Aug. 4/70

Depth:	4608.0'-4608.5'		4608.5'-4609.0'		Drilling Mud Gas
	Sample #1		Sample #2		Sample #3
	Weight %	Mole %	Weight %	Mole %	
C_1	74.87	88.14	45.64	71.69	-
CO_2	Present (Not Quantitated)		Present (Not Quantitated)		Present (Approx. 0.5 Mole%)
C_2	9.90	6.22	11.02	9.23	Trace
C_3	8.16	3.49	16.10	9.20	Trace
IC_4	2.60	0.84	4.13	1.79	Trace
NC_4	2.52	0.82	6.45	2.80	Trace
IC_5	0.86	0.22	4.26	1.49	Trace Plus
NC_5	0.84	0.22	4.86	1.70	Trace Plus
C_6	0.24	0.05	4.62	1.36	Trace Plus
C_7	0.01	Trace	2.92	0.74	Trace Plus
	100.00	100.00	100.00	100.00	

Remarks: The two core samples were heated to 50°C for one hour prior to removal of 2 cc of sample from plastic bag. The drilling mud sample was heated to 150°F for one hour and 2 cc of gas cap was removed for analysis. Very good hydrocarbon peaks were obtained from core gas using an F10 Detector and are quantitated on an Air Free Basis. The CO_2 is not quantitated, due to the high Air Contamination, but is very low in total concentration.

CORE LABORATORIES – CANADA LTD.

PETROLEUM RESERVOIR ENGINEERING

Company: Mobil Oil Canada, Ltd. — Page: 1 of 2

Well: Mobil Colville E-15 — File: CBH-2-6017

Field: Colville Lake, N. W. T. — Analyst: DR

Location: 67 14'18.20 / 126 18'25.60 — Elevation: K.B. ____ Grd. ____

Formation: ____ — Depth: ____

Sampled from: Bubble Hose @ 45 Mins. — by: ____

Sampling pressure: ____ psig — Sampling temp.: ____ °F — Ambient temp.: ____ °F

Date sampled: Oct 14/70 — Date received: Oct 19/70 — Date analysed: Oct 19/70

Container pressure: 2 psig — Mud: ____ — Water cushion: ____

Recovery or flowrate: ____

CO'

*Sample Taken @ Bubble Hose 45 Mins After Opening Valve.

Remarks:
Sample Contained No Hydrocarbons of Measurable Quantity.

Hydrogen	0.02
Helium	-
Nitrogen	79.19
Carbon Dioxide	0.03
Oxygen	20.76
C_1	-
C_2	-
C_3	-
C_4	-
NC_4	-
IC5	-
NC5	-
C_6	-
C_{7+}	-
Total	100.00

CORE LABORATORIES – CANADA LTD.

PETROLEUM RESERVOIR ENGINEERING

GAS ANALYSIS

Company: Mobil Oil Canada, Ltd. — Page: 2 of 2

Well: Mobil Colville E-15 — File: CBH-2-6017

Field: Colville Lake, N. W. T. — Analyst: DR

Location: 67 14'18.20 / 126 18'25.60 — Elevation: K.B. ____ Grd. ____

Formation: ____ — Depth: ____

Sampled from: DST #6-Gas Cap On Water Sample — by: ____

Sampling pressure: Atmos.+ psig — Sampling temp. ____ °F — Ambient temp. ____ °F

Date sampled: Oct 14/70 — Date received: Oct 19/70 — Date analysed: Oct 19/70

Container pressure: ____ — Mud: ____ — Water cushion: ____

Recovery or flowrate: ____

COMPONENT	MOLE %	IMP. GPM @ 14.65 psia and 60° F
Hydrogen	.00	
Helium	.00	
Nitrogen	4.48	
Carbon Dioxide	3.96	
Hydrogen Sulphide	.00	
Methane	89.03	
Ethane	2.04	
Propane	.35	.080
Iso Butane	.06	.016
Normal Butane	.05	.013
Iso Pentane	.02	.006
Normal Pentane	.01	.003
Hexanes	Trace	.000
Heptanes Plus	.00	.000
Total	100.00	.118
Pentanes Plus		.009

SPECIFIC GRAVITY

Calculated .626 — Measured ____

GROSS B.T.U. per SCF 985.1

Calculated @ 14.65 psia, 60°F, moisture and acid - gas free.

VAPOR PRESSURE of PENTANES PLUS

(calculated) 18.8 psia @ 100°F

Pseudo Critical Pressure 681.1 psia

Pseudo Critical Temperature 353.0 °R

Remarks: Cylinder # 1089CG

Sample sealed after sampling.

Sample analysis calculated on air free basis. Original sample - 48% air contaminated.

CORE LABORATORIES - CANADA LTD.
Petroleum Reservoir Engineering

P.O. BOX 5670, POSTAL STATION "A"
CALGARY 9, ALBERTA
TELEPHONE 253-3391

Company: Mobil Oil Canada, Ltd.

POTASH SAMPLE

File: CAL-2-2886
Date: Oct. 16/70

ANALYSIS

Insolubles	12.6
Total K_2O	0.08
Magnesium	0.0042
Carnalite	0.048
Carnalite K_2O	0.008
Sylvite K_2O	0.072
Sylvite (KCl)	0.10
Halite (NaCl)	87.3

Depth Top Gauge	652 Ft.	Blanked Off	Yes	Date May 4, 1970	Ticket No. Nil
D. No.	2402	7904 12 Hr. Clock		Dual Kind of Job Bottom Hole	HOWCO District High Level
Pressure Readings	Field	Office Corrected		Tester W. Wolodko	Witness D. Moore
Initial Hydro Mud Pressure		286		Contractor Heath & Sherwood (Western) Ltd.	
Initial Closed in Pressure				K B Elevation / Top Packer Depth 534 / Bottom Packer Depth	
Initial Flow Pressure				Total Depth 660 / Casing Perforations Top / Bottom	
Final Flow Pressure				Interval Tested 534-660 / Formation Tested Ronning	
Final Closed in Pressure				Casing or Hole Size 4 1/4 / Liner or Rathole Size	
Final Hydro Mud Pressure		286		Size Surface Choke 3/4" / Size Bottom Choke 1/4" / Size and Type Wall Packer 3 1/2"ES	
Depth Centre Gauge	Ft.	Blanked Off		Size Drill Pipe 3 1/2 / ID and Length Drill Collars Nil	
BT P.R.D. No.		Hr. Clock		Anchor I.D. / Size O.D. / Amount-Type of Cushion	
Pressure Readings	Field	Office Corrected		Gauge Depth / °F meas. Temp. / °F est. / Mud Weight 8.5 / Mud Viscosity	
Initial Hydro Mud Pressure				All Depths Measured From K.B. / No. Folders Reproduced 10	
Initial Closed in Pressure				Time Periods (Minutes) 1st Flow / Initial CIP / 2nd Flow / Final CIP	
Initial Flow Pressure				Recovered Feet of	
Final Flow Pressure				Recovered Feet of	
Final Closed in Pressure				Recovered Feet of	
Final Hydro Mud Pressure				Recovered Feet of	
Depth Bottom Gauge	656 Ft.	Blanked Off	Yes	Oil Recovery Degrees API / Water Recovery Specific Gravity	
BT P.R.D. No.	1575	8742 12 Hr. Clock		REMARKS: Misrun. Hydrospring would not open.	
Pressure Readings	Field	Office Corrected			
Initial Hydro Mud Pressure					
Initial Closed in Pressure					
Initial Flow Pressure	Chart Lost				
Final Flow Pressure					
Final Closed in Pressure					
Final Hydro Mud Pressure					

LEGAL DESCRIPTION 67 14 18.20 126 18 25.60

MOBIL COLVILLE — Lease Name
F-15 — Well No.
1 — Test No.
CALGARY — Owner's District
COLVILLE — Field or Area
MOBIL OIL CANADA LTD. — Lease Owner
N.W.T. — Province

DRILL STEM TEST DATA

Depth Top Gauge	652 Ft.	Blanked Off	Yes	Date	May 5, 1970
			7904		Dual
A.D. No.	2402		12 Hr. Clock	Kind of Job	Bottom Hole
Pressure Readings	Field	Office Corrected		Tester	W. Wolodko
Initial Hydro Mud Pressure		282		Contractor	Heath & Sherwood (Western) Ltd.
Initial Closed in Pressure				K B Elevation	Top Packer Depth 534 Bottom Packer Depth
Initial Flow Pressure				Total Depth	660 Casing Perforations Top / Bottom
Final Flow Pressure				Interval Tested	534–660 Formation Tested Ronning
Final Closed in Pressure				Casing or Hole Size	4 1/4 Liner or Rathole Size
Final Hydro Mud Pressure		282		Size Surface Choke	3/4" Size Bottom Choke 1/4" Size and Type Wall Packer 3 1/2"ES
Depth Centre Gauge	Ft.	Blanked Off		Size Drill Pipe	3 1/2 ID and Length Drill Collars Nil
BT P.R.D. No.		Hr. Clock		Anchor I.D. / Size O.D.	Amount-Type of Cushion
Pressure Readings	Field	Office Corrected		Gauge Depth	°F meas. / °F est. Temp. Mud Weight 8.5 Mud Viscosity
Initial Hydro Mud Pressure				All Depths Measured From	K.B. No. Folders Reproduced 10
Initial Closed ...essure				Time Periods (Minutes) 1st Flow	Initial CIP 2nd Flow Final CIP
...tial Flow Pressure				Recovered	Feet of
Final Flow Pressure				Recovered	Feet of
Final Closed in Pressure				Recovered	Feet of
Final Hydro Mud Pressure				Recovered	Feet of
Depth Bottom Gauge	656 Ft.	Blanked Off	Yes	Oil Recovery Degrees API	Water Recovery Specific Gravity
BT P.R.D. No.	1575		8742 12 Hr. Clock	REMARKS:	Misrun. Hydrospring would not open.
Pressure Readings	Field	Office Corrected			
Initial Hydro Mud Pressure		284			
Initial Closed in Pressure					
Initial Flow Pressure					
Final Flow Pressure					
Final Closed in Pressure					
...l Hydro ... Pressure		284			

LEGAL DESCRIPTION

FIELD OR AREA COLVILLE

PROVINCE N.W.T.

Lease Name MOBIL COLVILLE Well No. E-15 Test No. 2

Owner's District CALGARY

Lease Owner MOBIL OIL CANADA LTD.

DRILL STEM TEST DATA

Depth Top Gauge 652 Ft.	Blanked Off Yes	Date May 5, 1970	Ticket No. 32-19301
P.R.D. No. 2402	7904 12 Hr. Clock	Dual Kind of Job Bottom Hole	HOWCO District High Level
Pressure Readings / Field / Office Corrected		Tester W. Wolodko	Witness D. Moore
Initial Hydro Mud Pressure: 285 / 286		Contractor Heath & Sherwood (Western) Ltd.	
Initial Closed in Pressure: –		K B Elevation	Top Packer Depth 534	Bottom Packer Depth
Initial Flow Pressure: 57 / 66		Total Depth 660	Casing Perforations Top / Bottom
Final Flow Pressure: 57 / 66		Interval Tested 534-660	Formation Tested Ronning
Final Closed in Pressure: –		Casing or Hole Size 4 1/4	Liner or Rathole Size
Final Hydro Mud Pressure: 285 / 283		Size Surface Choke 3/4"	Size Bottom Choke 1/4"	Size and Type Wall Packer 3 1/2" ES
Depth Centre Gauge Ft.	Blanked Off	Size Drill Pipe 3 1/2	ID and Length Drill Collars Nil
BT P.R.D. No.	Hr. Clock	Anchor Size I.D. / O.D.	Amount-Type of Cushion
Pressure Readings / Field / Office Corrected		Gauge Depth Temp. °F meas. °F est.	Mud Weight 8.5	Mud Viscosity
Initial Hydro Mud Pressure		All Depths Measured From K.B.	No. Folders Reproduced 10
Initial Closed Pressure		Time Periods (Minutes) 1st Flow 3 Initial CIP 35 2nd Flow 15 Final CIP 60	
Initial Flow Pressure		Recovered 3 Feet of Fresh Water	
Final Flow Pressure		Recovered Feet of	
Final Closed in Pressure		Recovered Feet of	
Final Hydro Mud Pressure		Recovered Feet of	
Depth Bottom Gauge 656 Ft.	Blanked Off Yes	Oil Recovery Degrees API	Water Recovery Specific Gravity
BT P.R.D. No. 1575	8742 12 Hr. Clock	REMARKS: Tool open at 7:47 with weak blow.	
Pressure Readings / Field / Office Corrected		Tool shut in at 7:50. Tool open at 8:25	
Initial Hydro Mud Pressure: 285 / 288		with weak blow dying in 5 mins. Tool shut	
Initial Closed in Pressure: –		in at 8:40. Pulled loose 9:40. Shutins	
Initial Flow Pressure: 60 / 68		were missed. No weight indicator on rig.	
Final Flow Pressure: 60 / 68			
Final Closed in Pressure: –			
Final Hydro Mud Pressure: 285 / 283			

LEGAL DESCRIPTION

MOBIL COLVILLE — Lease Name
E-15 — Well No.
3 — Test No.
CALGARY — Owner's District
MOBIL OIL CANADA LTD. — Lease Owner

FIELD OR AREA: COLVILLE LAKE

PROVINCE: N.W.T.

Depth Top Gauge 4909 Ft.		Blanked Off Yes	Date September 8, 1970		Ticket No. 32-19729
P.R.D. No. 22556		27613 24 Hr. Clock	Kind of Job Single Straddle		HOWCO District High Level
Pressure Readings	Field	Office Corrected	Tester G. Wiggett		Witness A. Mitchel
Initial Hydro Mud Pressure			Contractor Heath & Sherwood (Western) Ltd.		
Initial Closed in Pressure			K B Elevation	Top Packer Depth 4893	Bottom Packer Depth 4925
Initial Flow Pressure	Clock	Stopped	Total Depth 4954	Casing Perforations Top / Bottom	
Final Flow Pressure			Interval Tested 4893 - 4925	Formation Tested	
Final Closed in Pressure			Casing or Hole Size	Liner or Rathole Size 2 23/64"	
Final Hydro Mud Pressure			Size Surface Choke 3/4	Size Bottom Choke -	Size and Type Wall Packer 2 1/4"ES
Depth Centre Gauge Ft.		Blanked Off	Size Drill Pipe 2 3/4 - 2 3/16		ID and Length Drill Collars -
BT P.R.D. No.		Hr. Clock	Anchor I.D. / Size O.D. 1 3/4"		Amount-Type of Cushion Nil
Pressure Readings	Field	Office Corrected	Gauge Depth Temp.	°F meas. / °F est. Mud Weight 8.5	Mud Viscosity 60
Initial Hydro Mud Pressure			All Depths Measured From K.B.		No. Folders Reproduced 10
Initial Closed in Pressure			Time Periods (Minutes) 1st Flow	Initial CIP	2nd Flow / Final CIP
Initial Flow Pressure			Recovered	Feet of	
Final Flow Pressure			Recovered	Feet of	
Final Closed in Pressure			Recovered	Feet of	
Final Hydro Mud Pressure			Recovered	Feet of	
Depth Bottom Gauge 4916 Ft.		Blanked Off Yes	Oil Recovery Degrees API		Water Recovery Specific Gravity
BT P.R.D. No. 28685		24912 24 Hr. Clock	REMARKS: Misrun. Unable to reach bottom.		
Pressure Readings	Field	Office Corrected			
Initial Hydro Mud Pressure					
Initial Closed in Pressure					
Initial Flow Pressure	Clock	Stopped			
Final Flow Pressure					
Final Closed in Pressure					
Final Hydro Mud Pressure					

LEGAL DESCRIPTION 67 14' 18.20 / 126 18' 25.60

FIELD OR AREA COLVILLE LAKE

PROVINCE N.W.T.

MOBIL COLVILLE — Lease Name

E-15 — Well No.

4 — Test No.

CALGARY — Owner's District

MOBIL OIL CANADA LTD. — Lease Owner

Depth Top Gauge	4534 Ft.	Blanked Off	Yes	Date	October 14, 1970
BT P.R.D. No.	Otis #22556N		27613 24 Hr. Clock	Kind of Job	Bottom Hole
Pressure Readings	Field	Office Corrected		Tester	W. Wolodko
Initial Hydro Mud Pressure		2300		Contractor	Heath & Sherwood (Western) Ltd.
Initial Closed in Pressure		1921		K B Elevation	Top Packer Depth 4518
Initial Flow Pressure		1248		Total Depth	5996
Final Flow Pressure		1868		Interval Tested	4518 - 5996
Final Closed in Pressure		1876		Casing or ~~Liner~~	2 7/8
Final Hydro Mud Pressure		1883		Size Surface Choke	3/4
Depth Centre Gauge	Ft.	Blanked Off		Size Drill Pipe	2 1/4" - 2 3/4"
BT P.R.D. No.			Hr. Clock	Anchor I.D. Size O.D.	
Pressure Readings	Field	Office Corrected		Gauge Depth	74 °F meas. °F est.
Initial Hydro Mud Pressure				All Depths Measured From	K.B.
Initial Closed in Pressure				1st Flow	3 Initial CIP 30 2nd Flow 180 Final CIP 60
Initial Flow Pressure				Recovered	2010 Feet of Drilling Mud
Final Flow Pressure				Recovered	1800 Feet of Salt Water
Final Closed in Pressure				Recovered	Feet of
Final Hydro Mud Pressure				Recovered	Feet of
Depth Bottom Gauge	4541 Ft.	Blanked Off	Yes	Oil Recovery Degrees API	Water Recovery 178,000 PPM Specific Gravity NaCl 1.100
BT P.R.D. No.	Otis #28544N		24912 24 Hr. Clock		
Pressure Readings	Field	Office Corrected			
Initial Hydro Mud Pressure					
Initial Closed in Pressure					
Initial Flow Pressure	Stylus	Disengaged			
Final Flow Pressure					
Final Closed in Pressure					
Final Hydro Mud Pressure					

Ticket No.	32-19304
HOWCO District	High Level
Witness	D. Moore
Bottom Packer Depth	
Casing Perforations Top / Bottom	
Formation Tested	
~~Rathole~~ Size	2 23/64"
Size and Type Wall Packer	2 7/8"R3
ID and Length Drill Collars	Nil
Amount-Type of Cushion	Nil
Mud Weight	8.7
Mud Viscosity	70
No. Folders Reproduced	10

REMARKS: Tool open at 10:07 am with good air blow. Tool shut in at 10:10 am. Tool open at 10:40 am with good blow decreasing to very weak at end of flow period. Tool shut in at 1:40 pm. Pulled loose at 2:40 pm.

LEGAL DESCRIPTION 126 18' 25.60 67 14' 18.20

Lease Name: MOBIL COLVILLE
Well No.: E-15
Test No.: 5
Field or Area: COLVILLE LAKE
Owner's District: CALGARY
Lease Owner: MOBIL OIL CANADA LTD.
Province: N.W.T.

FORM 233-1

DRILL STEM TEST DATA

MOBIL COLVILLE E-15

CORE REPORTS

CORE #1 516 - 517' Cut 1'10" Recovered 1'10" (100%)
Coring times:
3, 2½

1' 10" Dolomite, silty, fine grained, light grey, stylolitic clay seams. Chert nodules frequent. Sparse vugs lined with coarse dolomite crystals. No oil shows.

CORE #2 517 - 537' Cut 20' Recovered 20' (100%)
Coring times:
3, 2½, 2½, 6, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 1, 3, 3, 2½, 4, 5, 4.

1' 7" Dolomite, silty, fine grained, light grey stylolite seams. Frequent white chert nodules up to 1" thick. Sparse vuggy porosity. Vugs up to ½" lined with coarse calcite crystals. No oil stain.

1' 5" As above mottled light to dark grey.

9" Dolomite, silty, fine grained, light grey, clay seams (stylolites). Tight.

7" As above with white chert nodules.

6" Dolomite, silty, fine grained, mottled dark to light grey, tight.

1' 10" Dolomite, silty, fine grained, light grey, chert nodules up to 2" across common. Nodules are vuggy, vugs lined with coarse calcite crystals. No oil shows.

2' 2" As above tight, chert nodules small (½").

7" As above (1' 10" interval).

1' 1"	Dolomite, silty, fine grained, mottled dark to light grey, tight.
½"	White chert band.
6"	As above (1' 2" interval).
5"	Dolomite, silty, mid grey, fine grained, vuggy chert nodules, abundant. Vugs lined with coarse calcite crystals. No oil shows.
1' 1"	Dolomite, silty, mid grey, fine grained, abundant, small chert nodules, (½"), tight.
6"	As above, no chert.
2' 2"	As above, occasional, large vuggy chert nodules, (2" across). No shows.
1' 8"	Dolomite, silty, mid grey to light grey mottles, fine grained. Sparse vugs up to ½" wide. No oil shows.
2"	Dolomite, medium to coarse grained, light grey, with common, half-inch vugs, lined with sparry calcite. ¼" burrows (?) filled with dark, fine grained dolomite. No oil shows.
3' 6"	Dolomite, fine grained, silty, light grey stylolit with clay seams common, tight.

CORE #3 537 - 557' Cut 20' Recovered 19' 5" (97%)

Coring times:
10, 4, 4, 9, 5, 5, 7, 6, 6, 6, 5, 5, 5, 5, 6, 6, 5, 5, 5, 4.

1' 2"	Dolomite, silty, fine grained, finely mottled dark and light grey, tight.
3' 2"	Dolomite, silty, fine grained, light grey, numerous stylolitic clay seams, tight.
2' 5"	Dolomite, silty, fine grained, mottled dark and light grey, tight.

3' 4"	As above, fractures inclined at about 30° to horizontal have patchy oil stain.
2' 6"	As above open, steeply inclined fractures with partial clay fill common, vugs up to 1" across lined by coarse dolomite crystals occur on some of them. No oil stain.
1' 4"	As above, no fractures, some small stylolites, tight.
3' 10"	As above.
1' 5"	As above, stylolites and steeply inclined fractures with small vugs developed along them. Patchy oil stain.
1' 1"	As above, no stylolites or fractures.

CORE #4 557 ~ 558' Cut 21' Recovered 21' (100%)
Coring times:
5, 2, 4, 7, 4, 5, 4, 3, 5, 10, 4, 4, 4, 5, 5, 5, 5, 5, 5, 8.

3' 0"	Dolomite, silty, fine grained, light grey with dark grey mottles, stylolites common, closed fractures common, tight, rare patches of coarsely crystalline calcite.
2' 1"	Dolomite, silty, fine grained, light grey, fractures common, all closed by coarse grained calcite, stylolites present, tight.
1' 10"	Dolomite, silty, fine grained, light grey, some dark grey mottles. Vertical and horizontal stylolites common. Vugs occasionally present, internal sedimentation and sparry dolomite cement reduce porosity, no oil stain.
1' 0"	As above, dark mottles common, no oil stain, some gypsum in vugs.
4' 3"	As above, no vertical stylolites, no vugs, tight.

1' 2" As above, rare vugs, completely filled by sparry dolomite and internal sediment, no oil stain.

3' 6" As above, tight, rare vertical and horizontal stylolites, rare spar filled fractures, tight.

3' 2" Dolomite, silty, light grey, occasional vertical and horizontal stylolites, small irregular vugs common, oil stained in top 8".

CORE #5 578 - 598' Cut 20' Recovered 19' 5" (97%)
Coring times:
3, 6, 4, 4, 4, 4, 4, 4, 4, 4, 24, 4, 4, 4, 4, 4, 4, 5, 4.

2' 11" Dolomite, silty, fine grained, some stylolites, a few open fractures. Scattered small vugs, oil stain in top 8".

3' 11" As above, no vugs, tight.

7' 1" As above, no vugs, pale to mid-grey mottled, tight.

2' 10" Dolomite, fine grained, light grey, silty, stylolites common, occasional vugs up to ½" diameter.

2' 6" Dolomite, mottled light and dark grey, silty, fine grained, rare stylolites. The dark markings are fairly well defined, tend to be round or oval and may be burrows.

CORE #6 598 - 618' Cut 20' Recovered 20' 7" (100%)
Coring times:
3, 2½, 2, 2½, 2, 2½, 3, 1½, 2½, 2½, 2, 3, 2, 2½, 2, 2, 2, 2, 2,

9' 4" Dolomite, buff with pale grey markings, possibly burrows, fine grained, silty, rare stylolites, tight, bitumen on some sub-horizontal fractures.

7" Syringopera? Structureless white dolomite tubes, 2 mm diameter, separated by calcite spar.

9' 1" As above (9'4" interval), few stylolites, rare vugs.

3" Dolomite, fine grained, silty, buff with irregular white patches, no vugs, tight.

1' 2" Dolomite, fine grained, buff, silty, vertical fractures with shale partings common, tight.

CORE #7 618 - 640' Cut 22' Recovered 21' (98%)
Coring times:
1, 1½, 1½, 1½, 1½, 2, 1½, 2, 2, 2, 2, 2½, 2, 2, 2½, 2, 2, 3, 2, 2.

14' 5" Dolomite, medium to fine grained, light grey, silty, rare stylolites, joints common, 20 - 30° to horizontal, tight.

2' 4" Dolomite, medium to fine grained, silty, dark grey mottled light grey, patches 1" - 2" across, stylolites common, tight.

4' 10" Dolomite, fine grained, silty, medium grey, stylolites common, rare vugs filled by coarse grained dolomite, tight.

CORE #8 640 - 660' Cut 20' Recovered 20' (100%)
Coring times:
4, 10, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2.

1' 0" Dolomite, buff, fine grained, silty, closed fractures common. Bitumen on some fractures.

3' 0" Dolomite, pale grey, fine grained, silty, rare stylolites, extensively fractured. Medium grained dolomite occurs along the fractures (recrystallized?). Frequently the grey dolomite fragments "float" in the white coarse grained material, tight.

1' 8" Dolomite, pale grey to buff, silty, fragments in a grey argillaceous matrix.

6' 10" Dolomite, pale buff, fine to medium grained, silty blebs of pyrite closed fractures at 20 - 30° to the horizontal common, very rare vugs about 1/10" across. Bitumen on some fractures.

2' 1" Dolomite, pale buff, fine grained, silty, argillaceous stylolitic seams common, occasionally widening into breccia zones of dolomite fragments in clay.

1' 5" Dolomite, pale buff, fine to medium grained, silty, rubble zones in clay well developed. Bitumen occurs in seams on the clay.

2' 4" Dolomite, pale buff, fine to medium grained, silty, argillaceous rubble common. Bitumen on fractures.

1' 4" Dolomite, pale buff, fine to medium grained, silty, fractures with coarser pale dolomite along them are common. Sparse, small vugs (1/10")

10" Dolomite, pale buff, fine to medium grained, silty, tight.

CORE #9 660 - 680' Cut 20' Recovered 20' (100%)
Coring times:
6, 4, 2½, 2½, 3, 6, 4, 2, 3, 3, 3, 3, 2½, 5, 8, 3, 3, 2½, 2½.

10" Dolomite, pale grey, fine grained, silty, fractures at 20 - 45° to horizontal common. Tight.

1' 6" As above, breccia "floating" in white matrix of dolomite. Fractured as above later than brecciation. Tight. Bitumen on some fractures.

8' 11" Dolomite, pale grey, fine grained, silty, extensively and irregularly fractured with a sparse fracture fill of white dolomite, later fractures at up to 45° to horizontal are common. Rare small vugs.

8' 10" Dolomite, pale grey, fine grained, silty, extensively fractured with a sparse argillaceous matrix, later fractures common. Rare vuggy porosity developed on the early fractures, vugs usually lined by coarsely crystalline dolomite.

CORE #10 680 - 700' Cut 20' Recovered 20' (100%)

20' Dolomite, fine grained, light grey, silty, brecciated in grey argillaceous matrix. Occasion vugs developed from the brecciation, late fractur at 45° to the horizontal, fairly common. Oil

stain on fractures and on vugs. The dolomite shows a lamination of vague dark grey seams about 1/2" apart and 30 - 45° to the horizontal, it may be original bedding.

CORE #11 700 - 720' Cut 20' Recovered 19' 2" (95%)

Coring times:
2, 6, 4½, 3, 2½, 2½, 3, 2, 1, 3, 3, 3, 3, 3, 3, 3, 2, 5, 9, 2.

3' 7" Dolomite, light grey, fine grained, silty; breccia in argillaceous matrix. A few vugs in the matrix up to 1" across, partly or completely filled by chert.

1' 0" Dolomite, mottled light to medium grey, silty, fine to medium grained, chert filled vugs occur sparsely.

5' 9" Dolomite, light grey, fine grained, silty, brecciated with argillaceous matrix. Chert nodules up to 3/4" across.

2' 0" Dolomite, mid grey with light grey bands ½" wide, dipping about 30° to the horizontal, occasional small vugs.

3" Dolomite breccia as 5' 9" interval, no chert.

6' 6" Dolomite, light grey, fine grained, silty, occasional small vugs.

7" Dolomite, breccia as 5' 9" interval, no chert.

Fractures dipping at about 30° are frequent throughout this core.

CORE #12 720 - 737' Cut 17' Recovered 17' (100%)

Coring times:
2, 3, 2, 2½, 2, 2½, 2½, 2½, 2½, 2½, 3, 2, 3, 2½, 3, 3½, 8½.

11' 7" Dolomite, pale buff, fine grained, silty, occasional chert nodules and stringers. Occasional vertical fractures filled with argillaceous material.

4' 7" Dolomite as above, brecciated, in argillaceous matrix.

CORE #13 737 - 754' Cut 17' Recovered 19' (100%)

Coring times:
2, 3, 4, 3, 2½, 2, 2, 3½, 4, 2½, 4, 3½, 4½, 6, 6, 8, 8.

2"	Rubble in argillaceous matrix of dolomite, fine grained, silty.
4. 5"	Dolomite, light grey, fine grained, silty, occasional bands of breccia with grey argillaceous matrix.
9"	Rubble of dolomite as above in argillaceous matrix.
9' 9"	As above 4' 5".
3' 4"	Dolomite, light grey, fine grained, silty, occasional stylolites, with argillaceous laminae. Rare vugs up to 1" across lined with coarsely crystalline dolomite.

CORE #14 754 - 770' Cut 16' Recovered 11' 3" (70%)

11' 3"	Dolomite, light grey, fine grained, silty, with some stylolites with thick argillaceous partings, occasional vugs up to 2" (?) across lined with coarse dolomite crystals. Laminations of darker grey rock are spaced about 1/4" apart and 1/8" thick, sub-horizontal.

CORE #15 770 - 786' Cut 16' Recovered 15' 8" (97%)

15' 8"	Dolomite, mottled light grey to pink-buff, fine grained, scattered small vugs (up to 1/4") lined with coarse dolomite, cut by sub-vertical and sub-horizontal fractures some of which are oil stained.

CORE #16 786 - 806' Cut 20' Recovered 20' (100%)

6' 3"	Dolomite, mottled light grey to pink-buff, silty, occasional stylolites, some fractures mainly sub-horizontal, occasionally oil stained.

1/4"	Argillaceous partings.
2' 0"	As above 6' 3" interval.
1/4"	Argillaceous parting.
8' 1"	As above 6' 3", vugs up to 2" across common, lined with coarse dolomite crystals, occasionally plugged with bitumen.

CORE #17 806 - 821' Cut 15' Recovered 14' 7" (98%)

4"	Shale, pale grey.
14' 3"	Dolomite, mottled light grey to buff, occasional stylolitic seams, fine to medium grained. Occasional vugs up to ½" lined with coarse dolomite crystals.

CORE #18 821 - 828' Cut 8' Recovered 8' 7" (100%)

8' 7"	Dolomite, mottled, light grey to buff, fine to medium grained. Occasional vugs up to ½" lined with coarse dolomite crystals. Fractures at about 30° to horizontal common, some oil stained.

CORE #19 829 - 850' Cut 21' Recovered 21' 2" (100%)

7' 0"	Dolomite, fine grained, silty, pale brown, vugs common, ½" across, lined with coarsely crystalline dolomite, few stylolites.
5' 1"	As above, breccia in argillaceous matrix. Blobs of bitumen occur in the matrix.
4' 4"	Dolomite, dark grey to light grey colour laminations, very silty. Some argillaceous layers, possibly of stylolitic origin. Thin dolomite veins occur.
3' 9"	As above, rubbly, with argillaceous matrix, some chert nodules.

CORE #20 850 - 870' Cut 20' Recovered 19' 10" (99%)

2' 0"	Dolomite, coarsely crystalline, euhedral in white, cryptocrystalline calcite matrix, some calcite veins, some pyrite.
1' 1"	Dolomite and quartz, coarsely crystalline bands, recrystalized or complex vug fillings. Varigated colouring, white, grey and red.
2' 0"	Dolomite, medium grained crystals in very sparse calcite cryptocrystalline matrix. Rare blebs of coarsely crystalline quartz. Vugs filled with crystalline dolomite and calcareous siltstone, pale grey in colour. Oil stain on oblique fractures.
11"	Siltstone, pale grey, calcareous with minor breccia of dolomite, medium grained.
9"	As above, 2' 0" interval.
1' 7"	As above, brecciated, coarse grained dolomite, crystals in the breccia seams, some vugs.
5"	As above, 2' 0" interval.
6"	As above, 1' 7" interval.
2' 7"	As above 2' 0" interval.
3' 4"	Dolomite, medium to fine grained, crystals, in cryptocrystalline calcite matrix, white, forms rubble with scanty, dark grey, medium grained, dolomite matrix. The rubble contains bitumen filled vugs.
2' 5"	Dolomite, crystals, coarse grained, in scanty matrix of cryptocrystalline calcite. Stylolitic clay seams common.
1' 0"	Siltstone, pale grey calcareous.
1' 2"	Dolomite, medium grained crystals, with some pyrites, occasional vugs, partly lined with chert and coarsely crystalline dolomite. Oblique fractures common.

CORE #21 870 - 872' Cut 2' Recovered 1' (50%)

1'	Dolomite, white, medium grained in calcareous matrix. 2" of argillaceous material at top of core, possibly a breccia zone which was drilled but not recovered.

CORE REPORTS

MOBIL COLVILLE E-15

CORE #23 879 - 895' Cut & Recovered 16 feet

16.0 Dolomite, greenish grey, medium, brecciated in part, few thin crumpled green shale bands, interbedded and fractured milky chert, vertical and highly inclined fractures, one 1 foot band of poor vuggy porosity with vugs up to ¼" across, dark brown tarry oil stain along open fractures, no visible stain in vugs.

CORE #24 895 - 900' Cut & Recovered 5 feet

5.0 Dolomite, grey with greenish cast, fine to medium crystalline, few thin crumpled green shale beds, partly silicified, fractured milky banded chert, few highly inclined fractures, few scattered small vugs, patchy dark brown tarry oil stain along the fractures.

CORE #25 900 - 905' Cut & Recovered 5 feet

5.0 Dolomite, grey, fine to medium crystalline, one thin crumpled green shale band, scattered vugs ranging in size from pin head to elongated druzzy dolomite crystals lined vugs, few irregular and highly inclined hairline fractures, no stain.

CORE #26 905 - 922' Cut & Recovered 17 feet

17.0 Dolomite, grey, fine to medium crystalline, cherty and siliceous, several open vertical fractures, few thin crumpled argillaceous bands, scattered small vugs, several large dolomite crystal lined vugs up to 3/4" across, minor patchy oil stain along the vertical fractures and vugs.

CORE #27 922 - 927' Cut & Recovered 5 feet

5.0 Dolomite, grey, fine to medium crystalline, cherty and strongly silicified, few irregular green shale bands, 1/3 of interval shows fine vuggy porosity, few tight hairline fractures, no visible staining.

CORE #28 927 - 934' Cut & Recovered 7 feet

7.0 Dolomite, grey, fine to medium crystalline, cherty and silicified, stylolitic, irregular open fractures over 1.5 feet interval, scattered poor pin point and small vug porosity, fair tarry brown oil stain in the open fractures, several ½" vugs have tarry brown oil infill.

CORE #29 934 - 940' Cut 6 feet Recovered 3.5 feet

3.5 Dolomite, grey, fine to medium crystalline, brecciated, cherty and silicified, very few scattered tiny vugs, few irregular open fractures, one thin pyrite band, patchy oil stain along the open fractures.

CORE #30 940 - 947' Cut & Recovered 7 feet

7.0 Dolomite, grey, fine to medium crystalline, argillaceous in part, siliceous, stylolitic, few tight vertical and irregular fractures, no stain.

CORE #31 947 - 967' Cut and Recovered 20 feet

9.0 Dolomite, grey, fine - medium, stylolitic, few thin crumpled green shale bands, partly brecciated, cherty in part, open vertical fractures with tarry brown oil stain.

10.0 Dolomite, grey, fine to medium crystalline, few irregular hairline fractures, poor vuggy porosity with widely spaced narrow, elongated, druzzy dolomite crystal lined, vugs, minor pin point porosity, patchy oil stain in the vugs.

1.0 Dolomite, grey - green, fine to medium, argillaceous, irregular open fractures, minor oil stain.

CORE #32 967 - 975' Cut 9 feet Recovered 7.5 feet

7.5 Dolomite, grey - green, fine to medium crystalline, fractured and brecciated, few pyrite blebs, few open vertical joints, scattered poor vuggy porosity with vugs lined with druzzy dolomite crystals, good tarry brown oil stain along the vertical joints.

CORE #33 975 - 984' Cut 9 feet Recovered 7.5 feet

7.5 Dolomite, grey, fine to medium crystalline, one thin crumpled green shale zone, few scattered vugs (¼" or less) few vertical and irregular fractures, patchy dark brown tarry oil stain along the vertical fractures.

CORE #34 984 - 989' Cut & Recovered 5 feet

5.0 Dolomite, grey, fine to medium crystalline, top 4 feet shows poor vuggy porosity with elongated vugs up to 3/4" long, druzzy dolomite crystals line the vugs, basal 1 foot very cherty consists of milky bedded and brecciated chert.

CORE #35 989 - 1000' Cut 11 feet Recovered 5 feet

5.0 Dolomite, grey, fine to medium crystalline, few thin argillaceous streaks, few irregular and vertical open fractures, cherty with mainly chert in basal portion of core, core badly shattered in general, no visible stain.

CORE #36 1000 - 1018' Cut 18 feet Recovered 13.5 feet

13.5 Dolomite, grey, fine to medium few irregular fractures, 6" soft crumpled shale band in central portion of core, occasional scattered tiny vugs with better developed vuggy porosity in basal 1.5 feet of core, no visible stain.

CORE #37 1018 - 1026' Cut 8 feet Recovered 7 feet

7.0 Dolomite, grey, fine to medium crystalline, few thin shaly bands, stylolitic, scattered poor vuggy porosity, vugs vary from pin head in size to ¼" across, no visible stain.

CORE #38 1026 - 1030' Cut 4 feet Recovered 3 feet

3.0 Dolomite, grey, fine to medium crystalline, scattered small vugs, few thin argillaceous interbeds, few open vertical fractures, patchy oil stain in the open fractures.

CORE #39 1030 - 1045' Cut & Recovered 15 feet

7.0 Dolomite, grey-green, fine to medium, badly fractured and brecciated, silty green shale matrix infill between dolomite fragments, minor chert, minor patchy oil stain on fractures.

8.0 Dolomite, grey, fine to medium crystalline, scattered large druzy dolomite crystal lined vugs have tarry brown oil infill, fair inter-crystalline and pin point porosity, no visible oil stain but poor to fair cut.

CORE REPORTS

MOBIL COLVILLE E-15

Hole side tracked at 898'. Core descriptions 1044 - 1084' from side tracked hole.

CORE #21A 1044 - 1054' Cut & Recovered 10'.

1044 - 1046'	Dolomite, grey, hard, compact, with healed hairline fractures.
1046 - 1047.5'	Dolomite, as above but fractured and bituminous infill along fracture planes (orange brown cut CCl_4) Marl, grey-green, dolomitic, slightly pyritic as fracture or cavity infill; contains brecciated dolomite fragments.
1047.5 - 1054.0'	Dolomite, grey, hard, compact, finely crystalline, in part fractured and with green-grey dolomitic and pyritic marly infill. In part vugular and with elongate (.1 - .5 inch) vugs.

CORE #22A 1054 - 1064' Cut & Recovered 10'.

Dolomite, grey, finely crystalline, in part banded dark grey, hard, with elongate vugs as above. In part brecciated and with high angle fractures.

CORE #23A 1064 - 1074' Cut & Recovered 10'.

1064 - 1068'	Dolomite, grey, finely crystalline, with high angle fractures with thin pyritic argillaceous infill. No vugs, compact.
1068 - 1070.3'	Dolomite, as above but with very common large (½" dia.) interconnected vugs.
1070.3 - 1070.8'	Dolomite and Marl, zone intensely fractured and crushed.

1070.8 - 1074' Dolomite, grey, hard, dense, fractured with argillaceous infill, a few vugs.

CORE #24A 1074 - 1078' Cut & Recovered 4'.

Dolomite, grey, in part mottled dark grey, finely crystalline, compact, dense, fractured, in part brecciated with dark-green, pyritic argillaceous infill.

CORE #25A 1078 - 1084' Cut & Recovered 6'.

Dolomite, grey, finely crystalline as above. High angle fractures with green argillaceous infill as above; low angle fractures contain brown oil stain. Locally medium to coarse crystals of dolomite along fracture planes and fair porosity. Basal foot of the core is brecciated and composed of greenish-grey marl infill around the brecciated fragments.

NOTE: The base of core 25A should be equal in depth to the top of Core No. 43.

CORE #43 1084 - 1085' Cut & Recovered 1'.

Dolomite, grey, finely crystalline, compact, dense, siliceous with discrete small blebs of chert. Core fractured, but fractures are healed.

CORE #44 1085 - 1092' Cut & Recovered 7'.

Dolomite, as above, silica bands up to 1" thick, apparently as infill along fracture planes. Scattered pyrite. Locally dolomite becomes medium crystalline but is dense and compact. Fractures are infilled with silica or greenish-grey argillaceous material. Basal 6 inches of core is greenish-grey, dolomitic, pyritic marl. Scarce local traces of hydrocarbons under fluroscope.

CORE #45 1092 - 1099' Cut & Recovered 7'.

Dolomite, grey, medium crystalline to finely crystalline, compact, dense, with scattered small vugs and pin-holes. No effective porosity. Core fractured and brecciated with dark-green, argillaceous, slightly calcareous infill. At base, very siliceous dolomite with bands of white chert.

CORE #46 1099 - 1106' Cut & Recovered 7'.

1099 - 1100'	Dolomite, grey, fine to medium crystalline, compact, dense; subordinate grey dolomitic marl.
1100 - 1101'	Dolomite, grey, finely to medium crystalline, brecciated, and with common .1 to .3 inch vugs with medium to coarse dolomite crystal linings. Vugs not interconnected.
1101 - 1106'	Dolomite, grey, hard, dense, finely to medium crystalline. Some green-grey argillaceous infill along fractures. Minor silica and pyrite. Basal 6" of core very siliceous.

CORE #47 1106 - 1111' Cut & Recovered 5'.

1106 - 1107'	Dolomite and Marl, interval brecciated. Dolomite fragments and green-grey marl infill.
1107 - 1109'	Dolomite, grey and greenish grey, fine to medium crystalline, hard, dense, compact and siliceous.
1109 - 1110.5'	Dolomite and chert. Dolomite as above; abundant silica apparently along fracture planes.
1110.5 - 1111'	Dolomite, chert and marl. Brecciated interval. Some vugs with coarse dolomite crystal linings. No effective porosity.

CORE #48 1111 - 1112.5' Cut & Recovered 1½'.

Chert and Dolomite. Grey, medium to fine crystalline dolomite, in part siliceous. Brownish-grey chert as fracture fillings and blebs. Subordinate amount of blue-grey dolomitic marl. Core fractured and brecciated.

CORE #49 1112.5 - 1115' Cut & Recovered 2½'.

1112.5 - 1113.06' Dolomite, grey, hard, compact finely crystalline and with hair line fractures and blue-grey marl infill.

1113.06 - 1115.0 Dolomite, marl and chert. Brecciated zone with marl and chert infill.

CORE #50 1115 - 1133' Cut & Recovered 18'.

1115 - 1115.5' Chert and dolomite. Off-white and with subordinate grey dolomite. Yellow-brown oil stain along fracture planes.

1115.5 - 1117.0' Dolomite and marl. Brecciated zone of dolomite and green-grey marl infill.

1117 - 1133' Dolomite, grey, compact, medium crystalline, dense, fractured with green-grey argillaceous and calcareous infill along fractures. In part brecciated.

CORE #51 1133 - 1143' Cut & Recovered 10'.

1133.0 - 1135.7' Dolomite, grey, medium crystalline, in part with streaks of off-white chert and silica blebs. In part mottled dark-grey. Subordinate finely granular dolomitic marl and green argillaceous infill. Compact, dense and non-porous.

1135.7 - 1139.1' Dolomite, similar to above.

1139.1 - 1139.3' Brecciated zone with dolomite fragments and green argillaceous infill.

1139.3 - 1143' Dolomite and chert. Dolomite as above with off-white chert as bands and blebs.

CORE #52 1143 - 1164' Cut & Recovered 21'.

1143 - 1146'	Dolomite, grey, medium to finely crystalline, fractured with fractures filled with green argillaceous infill. A few small scattered vugs.
1146 - 1153'	Dolomite, grey, compact, in part siliceous and with blebs of chert. In part brecciated and with argillaceous infill. Dominately fine to medium crystalline, compact, dense. Local concentrations of microcrystalline siliceous dolomite.
1153 - 1164'	Dolomite, similar to as above but with slight intercrystalline porosity.

CORE #53 1164 - 1177' Cut & Recovered 13'.

Dolomite, grey, compact, fine to medium crystalline, in part microcrystalline and siliceous. High angle fractures with green argillaceous infill. In part mottled dark green. One piece of core at about 1175 had dark-green argillaceous banding. Dip estimated to be 60^{o} from core axis and probably fracture dips. Rare small non-interconnected vugs. Fracture system infilled with green-grey argillaceous material.

CORE #54 1177 - 1197' Cut 20' Recovered 19'.

1177 - 1184'	Dolomite, grey, fine to medium crystalline, slightly impure, common small vugs, fractured with green argillaceous infill.
1184 - 1191'	Dolomite, as above. Toward base of interval numerous small vugs, in part interconnected.
1191 - 1197'	Dolomite, core broken. Dolomite as above, some zones of finely granular, marly dolomite.

CORE #55 1197 - 1209' Cut 12' Recovered 9'.

Dolomite, as above. At top of interval, dark grey, very finely granular dolomite. Drilling break at 1200'. Faint petroliferous odour to core on broken surface. Lost circulation at 1207'. Order of core in box 144 is in doubt and exact sequence of lithologies unknown.

CORE $56 & 57 1209 - 12~~1~~7' Cut 8' Recovered 6'.

1209 - 1213' Dolomite, grey, mottled dark grey, hard, dense, slightly pyritic. A few small vugs.

1213 -1217' Dolomite, similar to above. Lost circulation at 1217'. Only about 2 feet of core recovered.

CORE #58, 59 & 60 1217 - 1226' Cut 9' Recovered 8'.

Dolomite, similar to above. Grey, micro-crystalline, finely crystalline to medium crystalline, dense, compact, in part siliceous with conchoidal fracture, slightly pyritic, fractured and fractures filled with argillaceous material. Some oil stain on fracture planes. (Slight fluroescence) Scarce vugs. Lost return circulation at 1219'. No core recovery for 1219 - 1220 foot interval.

CORE #60, 61 & 62 1226 - 12~~3~~9' Cut 13' Recovered 10'

Dolomite, grey to dark grey, in part micro-crystalline, in part finely crystalline and medium crystalline and mottled with dark grey zones. Common pin-hole to 0.1 inch vugs. Some intercrystalline porosity and with yellow-green fluroescence. In 1236 - 1239, interval some large vugs ½ inch diameter. Core shattered apparently by bit action.

CORE #63 & 64 1239 - 1247' Cut 8' Recovered 4'.

Dolomite, grey, mottled dark grey, pyritic, abundant grey brecciated dolomite with coarse angular fragments with argillaceous infill and apparent secondary dolomitization. Core badly shattered. No oil stain. Lost circulation 1240'.

Drilled from 1248 - 1291' with a tri-cone bit. Only pulverized fragments returned in mud stream. Interval drilled with only partial circulation. Drilling behavior suggests large vugs in the interval. Fluid level in the hole could not be determined during complete circulation losses.

CORE REPORTS

MOBIL COLVILLE E-15

CORE #65 1338 - 1341.4' Cut & Recovered 3.4' (100%)

Coring times 2½, 2½, 8½, 6½.

9" Dolomite, white, medium to coarse grained, traces of pyrite on fractures. Scanty black clay in oblique fractures.

3" Dolomite, grey, fine to medium grained. Oblique fractures with abundant dark grey clay partings, almost a dolomite rubble in shale.

2' 5" Dolomite, grey, fine to medium grained. Oblique and vertical fractures filled by calcite.

This core is tight and has no evidence of hydrocarbons.

CORE #66 1341 - 1350' Cut & Recovered 9' (100%)

Coring times 4, 4, 4, 3½, 2, 2½, 3½, 3½, 2½.

9' Dolomite, medium to pale grey, medium to fine grained, irregular vertical and sub-horizontal fractures filled with calcite cement, hard black bitumen and argillaceous pyritous solution debris. The solution debris occasionally forms zones of dolomite breccia in grey shale 1 - 2" thick. One vug 2" across and lined with dog tooth spar occurs, it is the result of the fracture and solution.

CORE #67 1352 - 1360' Cut & Recovered 8' (100%)

Coring times 3½, 7, 3, 3, 3, 3½, 5, 5½.

8' Dolomite, mottled dark and light grey in irregular streaks at about 30° to the horizontal, fine to medium grained, sub-vertical and oblique fractures common, partly filled by green clay and hard black bitumen. Some small vugs developed in the fractures.

CORE #68 1360 - 1364' Cut & Recovered 4' (100%)

Coring times 3½, 3, 4½, 9.

4' Dolomite mottled dark and light grey in streaks at about 30° to the horizontal, fine to medium grained, rare vugs up to ½" lined with dog tooth spar. Vertical and oblique and sub-horizontal fractures common, clay and sparry calcite occur in some of them.

CORE #69 1364 - 1370' Cut & Recovered 6' (100%)

Coring times 1, 2½, 3, 3, 6, 7.

6' Dolomite, light grey with oblique darker streaks, fine to medium grained. Irregular vertical and horizontal fractures common, partly filled with black clay and bitumen, frequently developing into breccia zones.

CORE #70 1370 - 1374' Cut & Recovered 4' (100%)

Coring times 2½, 4, 4½, 8.

4' Dolomite, pale grey with rare oblique darker streaks, fine to medium grained. Irregular vertical and oblique fractures.

CORE #71 1374 - 1378' Cut & Recovered 4' (100%)

Coring times 2, 5½, 6, 5½, 15.

4' Dolomite, pale grey mottled dark grey in patches and oblique streaks, fine to medium grained. Rare small vugs. Oblique and sub-vertical irregular fractures common with clay and occasional calcite filling.

CORE #72 1378 - 1382' Cut & Recovered 4' (100%)

Coring times 3, 8, 10, 6½.

4' Dolomite, fine to medium grained, pale buff mottled dark grey occasional small (½") vugs lined with sparry calcite. Highly fractured, oblique and near vertical.

CORE #73 1382 - 1386' Cut & Recovered 4' (100%)

Coring times 6, 7, 7, 7.

4' Dolomite, dark and light grey streaked at about 30° to the horizontal, fine grained to medium grained. Veins of spary, coarse dolomite 1/8" thick are very common parallel to the colour banding they occur mainly in the light layers. These veins have vertical off-shoots which appear to be filling a fracture system. Small vugs occur occasionally in these veins. The irregular, clay filled, vertical and oblique fracture system displaces these veins and is therefore later than them. Pyrite and bitumen occur on these later fractures some of which are open.

CORE #74 1386 - 1391' Cut & Recovered 5' (100%)

Coring times 6, 6½, 7, 6½.

1' 9" Dolomite, pale grey with scattered dark streaks at about 30° to the horizontal. Some oblique fractures, tight.

1' 5" Dolomite, coarse grained equant crystals in microcrystalline matrix. White to dark grey, some oblique, pyritous, argillaceous, irregular partings.

1' 10" Dolomite as 1' 9".

CORE #75 1391 - 1393' Cut & Recovered 2' (100%)

Coring times 7, 7.

2' Dolomite, light grey, sparse, vertical dark grey streaks, severly broken by vertical and oblique fractures with pyrite and calcite veining. Very rare vugs up to ½" lined by spary dolomite.

CORE #76 1393 - 1397' Cut 4', Recovered 3' 6" (88%)

Coring times 6, 7, 7, 5.

4' Dolomite, pale grey, rare dark mottles dipping at 30° to the horizontal. Frequent oblique fractures, rarely with clay lamine.

CORE #77 1397 - 1412' Cut & Recovered 15' (100%)

Coring times 6, 7, 6½, 7, 7½, 6½, 7, 7, 6½, 7, 7, 7, 7, 7½, 7.

3' Dolomite, fine grained, pyritic , laminated dark and light grey at 30° to horizontal. Lamine are depositional or early diagenetic as they are disrupted by burrows. They are not current laminae. Rare oblique fractures occur.

12' Dolomite, fine to medium grained, light grey with dark, vague mottles. Irregular vertical and oblique fractures with clay seams are common.

CORE #78 1412 - 1423' Cut & Recovered 11' (100%)

Coring times 3½, 6½, 7, 7, 6, 7, 7, 7, 6, 7, 14.

3' 7" Dolomite, medium to light grey, banded to laminated, fine to medium grained, pyritous. Oblique to high angle fractures filled by pale green clay.

2' 2½" Dolomite, fine to medium grained dark grey with irregular blebs and contorted laminations of white coarse grained dolomite, apparently a partial replacement of a bio-turbated(?) or slumped(?) sediment. Some of the coarsest material is sparry dolomite filling vugs concordant with the contorted lamination. Oblique and vertical fractures filled by green clay are common.

5' 4" Dolomite, fine grained, pale grey with oblique, sparse dark grey laminations. Occasional oblique and near vertical fractures filled with green clay.

CORE #79 1423 - 1430' Cut 7' Recovered 6'6" (87%)

COring times 3, 7, 6½, 7½, 6½, 7, 9.

6' 6" Dolomite, fine to medium grained, mottled light and dark grey. Common oblique and vertical fractures some with 1" green shale fillings, the rest tight.

CORE #80 1430 - 1436' Cut & Recovered 6' (100%)

Coring times 4, 5, 4, 4, 14, 15.

6' Dolomite, fine to medium grained, mottled and obliquely streaked, light to dark grey. Fractures, parallel to oblique colour streaks or sub-vertical, are common. Some have clay or sparry dolomite filling, the rest are tight. Scattered pyrite blebs.

CORE #81 1436 - 1439' Cut & Recovered 3' (100%)

Coring times 8, 9, 12.

3'	Dolomite, fine to medium grained, banded light and dark grey at about 30° to the horizontal. Some bands show an upward transition from light grading to dark and changing abruptly to light at the base of the next band. Oblique, shaly, fractures parallel to the banding are common, vertical fractures also occur. Pyrite blebs are common. Vugs up to ¼", partly or completely filled by sparry dolomite occur rarely. Ghosts of are occasionally seen.

CORE #82 1439 - 1450' Cut & Recovered 11' (100%)

Coring times 4, 4½, 5, 5½, 6, 4, 4, 5, 5, 4, 5.

6"	Dolomite, fine grained, pale grey, intensely fractured. Many fractures open.
4' 0"	Dolomite, fine to medium grained, dark grey, oblique and vertical fractures, partly filled sparry dolomite, in part very porous. Some pale streaks.
1' 0"	Dolomite, fine to medium grained, pale grey with dark grey streaks and bands. Sparry dolomite filling cracks and vugs(?) the large vugs (1") have a central fill of pale green clay. Scattered pyrite.
5' 6"	Dolomite, fine to medium grained, pale grey with dark grey streaks and bands cut by near vertical and oblique filled with clay and sparry dolomite.

CORE #83 1450 - 1452' Cut 2' Recovered 1' 10" (91%)

Coring times 4½, 3.

1' 10"	Dolomite, fine to medium grained, pale grey, oblique, dark grey streaks. Few oblique and near vertical fractures, with sparse green clay infill.

CORE #84 1452 - 1467' Cut 15' Recovered 14' 6" (96%)

Coring times 7½, 2, 2, 2, 2, 2½, 2, 2, 2, 2, 2½, 2½, 3½, 6, 1.

9" Shale, pale grey.

4" Dolomite, micro breccia in grey shale matrix. The rock is irregularly fractured and penetrated by the above shale.

13' 3" Dolomite, fine to medium grained, dark to light grey, in part obliquely banded. Mottled by coarse grained white dolomite particles, some with green shale films between the crystals. Very rare vugs up to ¼" with crusy lining. Slightly pyritous. Cut by oblique to sub-vertical fractures filled with pale grey shale or fine grained, pale grey dolomite. The filling may be up to 1" wide. Some fractures seem to have been enlarged locally by solution to form vugs several inches long before they were filled.

8" Shale, pale grey.

CORE #85 1457 - 1470.6' Cut & Recovered 3.6' (100%)

Coring times 4½, 3, 2, 2½.

4" Dolomite, dark grey, fine to medium grained, fractures filled by fine grained dolomite. Solution - collapse boundary with bed below.

5" Green shale, contorted.

6" As above 4".

6" As above 5".

1' 9" As above 4".

CORE #86 1470 - 1472' Cut & Recovered 2' (100%)

Coring times 4, 6.

4" Dolomite, grey, fine to medium grained.

4" Green shale.

1' 4" Breccia of dolomite as above in green shale as above.

CORE #87 1472 - 1481' Cut & Recovered 9' (100%)

Coring times 14½, 14, 8, 5, 3½, 4½, 5, 4½, 4½.

3' 0" Shale, pale green with occasional dolomite fragments. Steep, irregular junction with the underlying dolomite.

7" Dolomite, black to dark grey, fine grained.

4" Green shale grading down into micro-breccia of white dolomite in green shale.

5' 1" Dolomite, white to grey, mottled and banded, very coarse grained cut by irregular veins of a micro-breccia of dolomite with green shale.

CORE #88 1481 - 1491' Cut 10' Recovered 9' 9" (97%)

Coring times 4½, 2, 3, 3, 4, 2½, 3, 3, 4, 9.

9' 9" Dolomite, dark to light grey, coarse grained with green shale film between the crystals in some places. An irregular system of fractures and vugs is filled by fine grained pyritous, dolomite. Green shale and shale dolomite micro-breccia fills some irregular fractures up to 2" wide which are probably later than the dolomite filled fractures.

CORE #89 1491 - 1503' Cut & Recovered 12' (100%)

Coring times 3, 3½, 3½, 2½, 3, 2½, 2, 2½, 3, 3½, 7, 8.

12' 0" Dolomite, light to dark grey, coarse grained, contain fragments of green shale. Cut by stylolitic seams some of which run into oblique fractures and vugs filled by fine grained white dolomite. Very coarse dolomite fills some of the fractures, these are vuggy. The coarse dolomite has irregular mottling which resembles bioturbation and may result from partial recrystallization of a previous fabric. Many of the darker parts of the dolomite seem to be of more varied grain size than the white coarse grained parts. The flecks of green shale suggest a mixing of lithologies before the obvious fracturing and before the coarse recrystallization is possible.

CORE #90 1503 - 1521' Cut 18' Recovered 17' 3" (96%)

Coring times 2½, 2, 3, 3, 3, 2½, 4, 3, 3, 6, 3, 3, 3, 2½, 3½, 2½, 3½, 4½, 2.

7' 0" Dolomite, coarse grained, dark and light grey convolutions, cut by an irregular system of veins filled with pale grey, fine grained dolomite or with green shale and dolomite fragments.

1' 0" Siltstone, pale green, dolomitic, contorted, fractured and intruded by dolomite micro-breccia.

10' 0" Interbedded in beds several inches thick grading down to interlaminations -
Dolomite, white, coarse grained.
Siltstone, pale green, dolomitic.
An irregular series of fractures and vugs penetrates these lithologies and is filled by drusy calcite, central vugs remain in the larger ones. Some parts of the bedding are contorted, this is possibly an earlier episode than the fracturing as some fractures pass across the contortions.

CORE #91 1521 - 1525' Cut & Recovered 4' (100%)

Coring times 5½, 6½, 5½, 33.

4' 0" Dolomite, dark grey, fine to medium grained, pyritous, recrystallized almost entirely to coarse grained white dolomite some of which has traces of green shale. Badly fractured.

CORE #92 1525 - 1533' Cut & Recovered 8' (100%)

Coring times 3½, 3½, 3½, 2, 2½, 2, 2, 4.

10" Dolomite, fine grained, pale grey.

3' 0" Dolomite, coarse grained, white, fractured; fractures filled with green dolomitic siltstone.

1' 1" Siltstone, green dolomitic, fractured, fractures filled with rubble of this lithology and of the above dolomitic lithologies.

3' 1" Dolomite, coarse to very coarse grained, pale grey, pyritous, films of green clay common between crystal
Fractured irregularly; fractures filled with green dolomitic silty shale. Occasional

fractures have patchy live oil stain.

CORE #93 1533 - 1537' Cut 4', Recovered 3'10" (96%)

Coring times 4, 5, 5, 4½.

3'10" Dolomite, coarse grained, dark to light grey, fractured fractures filled with pale green dolomitic siltstone. Some breccia bands of black dolomitic siltstone. The fractures are occasionally patchily oil stained.

CORE #94 1537 - 1542' Cut 5' Recovered 3' (60%)

Coring times 2, 4½, 3½, 5.

3' 0" Dolomite, dark grey, fine grained, irregular vuggy fractures completely filled by druzy dolomite. Irregular later fractures very common. Light grey in patches which are coarsely crystalline and patchy calcitic.

CORE #95 1542 - 1545' Cut 3' Recovered 5' (probably 2' missing from Core #94) (100%)

Coring times 4, 4½, 4.

5' Dolomite, grey, fine to medium grained, pyritous. Severely and irregularly fractured. Some shale partings on a few fractures, the rest with live oil stain.

CORE #96 1545 - 1550' Cut 5' Recovered 3' (60%)

Coring times 7, 4, 6, 10', 8.

3' 0" Dolomite, grey, fine to medium grained. Cut by high angle fractures filled by druzy dolomite and green dolomitic siltstone. Oil stain on most fractures.

CORE #97 1550 - 1553' Cut 3' Recovered 2' 3" (75%)

Coring times 6, 5½, 2.

2' 3" Dolomite, fine to medium grey, colour lamination and banding dark to medium grey.

CORE #98 1553 - 1563' Cut & Recovered 10' (100%)

Coring times 7, 6, 6, 6½, 6, 6, 6, 7, 6, 6½.

10' Dolomite, fine grained, irregular dark grey laminations and mottles at about 30 - 40° to the horizontal possibly due to varying insolubles. Some dark bands become stylolitic. Breccia bands, possibly due to solution, occur. Oblique fractures are rare, often oil stained.

CORE #99 1563 - 1567' Cut & Recovered 4' (100%)

Coring times 5, 6½, 7½, 8.

4' 0" Dolomite, fine grained, occasionally medium grained, laminated in part dark and light grey, the rest light grey. Cut by oblique fractures some of which are filled by grey clay.

CORE #100 1567 - 1569' Cut & Recovered 2' (100%)

Coring times 16, 8.

2' 0" Dolomite, fine grained, pyritous, light grey with obscure dark mottling. Fractured irregularly.

CORE #101 1569 - 1573.8' Cut 4.8' Recovered 4.8' (100%)

Coring times 24, 3, 2, 3, 5.

?" Siltstone, grey. (This may be up hole cavings or debris from the last core, it is badly re-cut rubble).

2' 11" Dolomite, dark and light grey laminations, frequently contorted, sometimes nodules of

dark material in light. The dark material is a fine to medium grained pyritous dolomite, the light is coarse grained and may be a recrystallization following a sedimentary composition banding. There are occasional oblique fractures, some with green silt bands on them.

10" Dolomite, fine grained, pyritous, light to dark grey with traces of contorted lamination. Fractured irregularly with infilling of green siltstone and white microcrystalline dolomite.

CORE #102 1773.8 - 1777' Cut & Recovered 3.2' (100%)

Coring times 2, 3, 2, 2.

4" Dolomite, fine grained pyritous, dark grey, fractured with coarse grained dolomite in - filling.

1' 11" Dolomite, very coarse grained, euhedral crystals with green clay matrix, grey or grey green, vague red mottling in places.

3" Shale, brown to green.

1' Dolomite, dark grey, fine grained with irregular areas of coarse grained, white, recrystallization. Cut by oblique fractures filled with green silt.

CORE #103 1577 - 1581' Cut 4' Recovered 2' 2" (54%)

Coring times 2, 3, 6, 6.

2' 2" Dolomite, dark grey, fine to medium grained, fractured severely. Calcite and grey shale fill the fractures.

CORE #104 1581 - 1585.4' Cut & Recovered 4.4' (100%)

coring times 6, 2½, 2, 5½.

1' Dolomite, light grey, very coarse grained euhedral crystals in a green shale matrix. Irregularly fractured with live oil stain on the fractures.

1' Dolomite, dark grey, very coarse grained euhedral crystals in a black, pyritous argillaceous matrix. Irregular fractures with live oil stain.

1' 9" Dolomite, light grey as above with concentrations of green silt on fractures.

8" Dolomite, pale buff, cryptocrystalline, intensely brecciated.

CORE #105 1585 - 1590.7' Cut & Recovered 5.7' (severely broken) (100%)

Coring times 1, 6, 2½, 2½, 2, 5½.

2' 3" Dolomite, light buff, severly brecciated, fair vuggy porosity, vugs lined by druzy dolomite.

3' 3" Dolomite, light grey, fine grained, cut by vertical and horizontal irregular fractures filled by green shale.

CORE #106 1590.7 - 1594.8' Cut & Recovered 4' 1" (100%)

Coring times 1½, 3, 4, 2½.

2' 0" Dolomite, light to dark grey, fine grained, severely brecciated in a sparse matrix of ground dolomite and argillaceous material.

4" Shale, dark grey.

1' 9" Dolomite, grey, fine to medium grained. Cut by oblique fractures which are partly leached and refilled by druzy dolomite to give fair vuggy porosity.

CORE #107 1594.8 - 1598.4' Cut & Recovered 3.6' (severely broken) (100%)

Coring times 2½, 2, 1½, 9, 7.

3' 7" Dolomite, pale grey, fine to medium grained. Cut by frequent, oblique fractures along which vugs are developed, some fractures are oil stained.

CORE #108 1598.4 - 1604' Cut 5.6' Recovered 4.5' (86%)

Coring times 1, 3, 3, 2, 9.

4' 5" Dolomite, pale grey, medium crystalline. Cut by oblique and vertical fractures on which sparse vugs occur. Argillaceous, slickensided material occurs on some cracks.

CORE #109 1604 - 1606' Cut & Recovered 2' (100%)

Coring times 2½, 7.

2' Dolomite, fine grained, grey with a few vugs (¼") lined by druzy dolomite. Affected by patchy recrystallization to coarse grained white dolomite.

CORE #110 1606 - 1612' Cut 6' Recovered 5' 8" (94%)

Coring times 1, 3, 4½, 10, 6, 5.

5' 8" Dolomite, fine grained pyritous, pale grey frequently with disrupted beds of similar but darker grey rock showing a dip of about 30°. Oblique fractures common. (Intraformational conglomerate?).

CORE #111 1612 - 1616' Cut & Recovered 4' (100%)

Coring times 3, 4, 5, 6.

4' Dolomite, fine to coarse grained, dark mottles in light grey matrix in part suggesting intraformational conglomerate. Pyritous. Cut by oblique fractures which are occasionally

enlarged to form vugs about ¼" across. Very sparse oil stain on the fractures. A few stylolitic seams with green clay partings.

CORE #112 1616 - 1617' Cut & Recovered 1' (100%)

Coring time 6.

1' Dolomite, fine grained, pale grey, slightly pyritous, oblique fractures common.

CORE #113 1617 - 1619' Cut & Recovered 2' (100%)

Coring times 2½, 7½.

2' As above in Core 112.

CORE #114 1619 - 1624' Cut 5' & Recovered 5' (100%)

Coring times 5, 24 (for 4 feet, individual feet not recorded).

3' 6" Dolomite, pale grey, medium grained, dolomite with a sparse matrix of microcrystalline, white, dolomite in some places. Oblique fractures common with occasional vugs developed on them.

1' 6" Dolomite, dark grey, medium grained dolomite cut by oblique fractures which are locally enlarged to vugs partially or completely filled by druzy dolomite.

CORE #115 1624 - 1625' Cut & Recovered 1' (100%)

Coring time 20.

CORE #116 1625 - 1627' Cut & Recovered 2' (100%)

3' Dolomite, fine grained, pale grey, very rare vugs up to ¼" across. Oblique fractures common.

CORE #117 1627 - 1629.4' Cut 2' 4" Recovered 2' 10"(?) (100%)

Coring times 1½, 2, 6.

1' 7" Dolomite, fine grained, mottled dark and light grey, slightly pyritous. Vugs common, up to ½" across, clustered and connected across the core in a few places, patchy lined by druzy dolomite. Cut by oblique fractures.

1' 3" Dolomite, medium to coarse grained in places equant crystals in a microcrystalline white dolomite groundmass. In places rubbly in grey shale. Small 1/10" scattered vugs.

CORE #118 1629.4 - 1632' Cut & Recovered 2.6' (100%)

2'6" Dolomite, fine to medium grained, light grey, cut by oblique fractures with scattered small vugs on them.

CORE #119 1632 - 1634' Cut 2' Recovered 3'(?) (100%)

3' Dolomite , fine to medium grained, light grey with irregular dark grey, argillaceous seams (solution seams?). Oblique fractures common.

CORE #120 1634 - 1638' Cut 4' Recovered 3' (75%)

Coring times 2, 4½, 4½, 6.

1' 10" Dolomite, mottled buff to dark grey, medium grained, oblique fractures.

1' 2" Dolomite, fine grained, grey, possibly slightly argillaceous.

CORE #121 1638 - 1639' Cut & Recovered 1' (100%)

CORE #122 1639 - 1640' Cut & Recovered 1' (100%)

Coring times 16, 7.

2' Dolomite, microcrystalline to fine grained, pale grey with rare dark grey laminations. Oblique fractures occasionally opening into small vugs.

CORE #123 1640 - 1647' Cut 7' Recovered 5' 6" (79%)

Coring times 3, 3, 4½, 6, 3, 4, 7.

8" Dolomite, fine grained, mottled light and dark grey, occasional ¼" vugs lined by drusy dolomite.

7" Shale, grey.

2' 2" Breccia of fine grained, grey dolomite in matrix of coarse grained white dolomite.

½" Shale grey.

1' 2" Dolomite, fine grained, dark grey, rare ¼" vugs.

9" Dolomite, pale grey, cryptocrystalline, dark grey laminations, oblique to the length of the core are frequent, some are solution laminae with insolubles concentrated on them.

CORE #124 1647 - 1649' Cut 2' Recovered 6" (25%)

Coring times 2, 7.

CORE #125 1649 - 1651' Cut & Recovered 2' (100%)

Coring times 6, 8.

CORE #126 1651 - 1655' Cut 4' Recovered 1' 10" (45%)

Coring times 4, 6, 3, 6.

8' Dolomite, buff, fine grained, occasional dark solution partings, severely fractured.

CORE #127 1655 - 1657' Cut 2' Recovered 1' 11"

Coring times 6, 7.

CORE #128 1657 - 1658' Cut 1' Recovered 10"

Coring time 5.

CORE #129 1658 - 1660' Cut 2' Recovered 2' (100%)

Coring times 6, 8.

5' Dolomite, buff, fine to medium grained, dark solution laminae common. Scattered vugs up to ½" lined by drusy dolomite. Oblique fractures common.

CORE #130 1660 - 1663' Cut 3' Recovered 2' 10" (96%)

Coring times 6, 9, 8.

CORE 131 1663 - 1667' Cut 4' Recovered 2' (50%)

Coring times 8, 6, 11, 10.

CORE #132 1667 - 1671' Cut 4' Recovered 3' 4" (84%)

Coring times 14, 10½, 8, 8.

CORE #133 1671 - 1674' Cut & Recovered 3' (100%)

Coring times 11, 11, 12, 14.

CORE #134 1674 - 1678' Cut & Recovered 4' (100%)

Coring times 13, 11, 11, 15.

2' 9" Dolomite, fine grained, dark brown, solution partings common, some oblique fractures.

11" Dolomite, microcrystalline, dark brown with darker argillaceous laminations.

4' 6" Dolomite, fine grained, dark brown, occasional solution laminae, scattered small vugs, oblique fractures.

4' 3" Dolomite, fine grained, dark grey, argillaceous, some solution laminae, oblique fractures.

3' 9" Dolomite, white and dark grey mottled, medium to coarse grained, occasional stylolites, cut by oblique fractures which are occasionally bituminous.

CORE #135 1678 - 1682' Cut & Recovered 4' (100%)

Coring times 10, 17, 8, 6,

1' 7" Dolomite, medium to coarse grained,mottled white and dark grey. Stylolites common.

2' 5" Dolomite, fine grained, pale grey, stylolites, cut by oblique fractures.

CORE #136 1682 - 1684' Cut & Recovered 2' (100%)

CORE #137 1684 - 1686' Cut & Recovered 2' (100%)

Coring times 12, 12½, 8½, 7½.

4' Dolomite, fine grained, dark brown, solution laminae common, oblique fractures common.

CORE #138 1686 - 1688' Cut & Recovered 2' (100%)

CORE #139 1688 - 1690.5 Cut 2' 6" Recovered 1' 6" (60%)

Coring times 11, 10, 8, 12½, 14+.

3' 6" Dolomite, dark grey, fine grained, cut by oblique fractures. Black argillaceous solution laminae are common.

CORE #140 1690.5 - 1692' Cut & Reocvered 1.5' (100%)

1' 5" Dolomite, dark grey, fine grained, argillaceous some solution stringers.

Milled 1692 - 1693'
CORE #141 1693 - 1694' Cut 1' Recovered 8" (66%)

Coring time 3.

8" Dolomite, fine to medium grained, dark grey, argillaceous laminations steeply inclined, occasional oblique fractures. Some of the laminations are solution stringers.

CORE #142 1694 - 1696' Cut & Recovered 2' (100%)

CORE #143 1696 - 1698' Cut & Recovered 2' (100%)

Coring times 7, 7, 4½, 4½.

3' 2" Dolomite, as above in Core #141.

10" As above severely shattered.

CORE #144 1698 - 1700' Cut 2' Recovered 1' 6" (75%)

Coring times 3, 3.

1' 2" Dolomite, as above, severely fractured.

4" Dolomite, light grey, fine grained, unfractured.

CORE #145 1700 - 1712' Cut & Recovered 12' (100%)

Coring times 4, 3, 3, 3, 2½, 3, 3, 1½, 3, 2, 3½, 3½.

4' 6" Dolomite, microcrystalline to fine grained, pale grey to white, with dark grey argillaceous laminations, in part distorted, some oblique fractures with argillaceous partings. There is evidence of movement of up to ¼" on some fractures.

7' 6" Dolomite, fine grained, grey, frequent uneven argillaceous partings (solution partings). Frequent fractures. Slightly pyritous on the partings.

CORE #146 1712 - 1717.7' Cut & Recovered 5' 8" (100%)

Coring times 2, 3, 3½, 3, 2½, 5.

1' 9" Dolomite, fine grained, grey, frequent, argillaceous partings.

3' 9" Dolomite, fine grained, grey, a few vugs up to ¼" across, darker argillaceous partings rare and poorly developed.

1' 2" As above 1' 9" with white mottling.

CORE #147 1717 - 1731' Cut & Recovered 13' (100%)

Coring times 2½, 3, 3, 3, 3, 3, 4, 4, 4, 3, 3½, 3, 4½.

3' Dolomite, fine grained, pale grey, with dark grey argillaceous solution stringers.

2' 4" Dolomite, dark grey, fine grained, argillaceous, rare solution stringers.

7' 8" As above 3'.

CORE #148 1731 - 1733' Cut & Recovered 2' (100%) (extreme shattering)

Coring times 4, 6.

2' Dolomite, microcrystalline, grey, some argillaceous laminae, very severely shattered.

CORE #149 1733 - 1744' Cut 11' Recovered 7' 4" (¢6%)

Coring times 4, 3½, 2, 3, 2, 1, 2, 4, 3½, 3½, 4½.

9" Dolomite, microcrystalline, dark grey, slightly argillaceous.

4' 2" As above very severely fractured, black bitumen on some fractures.

1' 5" As above 9".

CORE #150 1744 - 1749' Cut 5'

Coring times 5, 6, 5, 5, 7.

1' 6" Dolomite, finely crystalline, pale grey.

1' 0" As above severely fractured.

1' 3" As above 1' 6".

1' 3" As above 1' 0".

CORE #151 1749 - 1765' Cut 16' Recovered 11' 6" (72%)

Coring times 4½, 8, 6, 7, 4½, 5½, 3, 3, 4, 3, 2½, 2, 4, 2½, 1½, 1.

5' 6" Dolomite, dark grey, microcrystalline argillaceous.

4' 8" As above, severely shattered.

1' 6" Dolomite, pale grey, fine grained, moderately fractured.

CORE #152 1765 - 1768.8' Cut 3'10" Recovered 3' 10" (100%)

1' 0" Dolomite, grey, microcrystalline to fine grained, slightly pyritous, argillaceous partings very common, rubbly.

2' 10" Dolomite, light grey, fine grained, argillaceous partings common but very thin. Oblique fractures common.

CORE #153 1771 - 1777' Cut 6' Recovered 5' 5" (90%)

Coring times 3, 4, 4, 3½, 4, 3½.

5' 5" Dolomite, fine grained, pale grey, with very steep dark brown argillaceous laminae (in part solution stringers). Brecciated in a scanty argillaceous matrix.

CORE #154 1777 - 1791' Cut & Recovered 14' (100%)

Coring times 3, 2½, 3, 3, 2, 3½, 2½, 3, 3, 2½, 3½, 2½, 3½, 4.

10' 0" Dolomite, grey, microcrystalline, argillaceous, slightly pyritous. The argillaceous bands appear to be intensified and disturbed by solution in most cases, where they are not they have sharp upper margins and grade downwards into less argillaceous dolomite. Occasional patches of coarse grained, white dolomite occur, usually confined by solution laminae. Fractures are rare, occasionally filled by coarse grained dolomite.

5"	Dolomite, pale grey green, coarse grained with argillaceous seams.
6"	As above 10'.
3' 1"	Dolomite, pale grey green, coarse grained, abundant argillaceous matrix. Laminated, the shalier laminations are occasionally affected by solution and may be severely disturbed. Occasional fractures.

CORE #155 1791 - 1801' Cut & Recovered 10' (100%)

Coring times 4, 3½, 3½, 4, 5½, 5, 4, 5, 5, 5,.

10' 0"	Dolomite, finely crystalline, pale grey, slightly pyritous, occasional argillaceous partings, some developed into sytlolitic solution seams. Rare high angle fractures with patchy oil stain, occasional fractures filled by coarse grained white dolomite.

CORE #156 1801 - 1822' Cut & Recovered 21' (100%)

Coring times 6½, 4, 4, 3½, 4, 3, 3½, 4, 4, 5, 7, 4½, 4, 5½, 4, 4, 4, 4, 7.

6' 8"	Dolomite, dark grey, fine grained, argillaceous partings common, very irregular possibly due to solution effects.
1' 7"	As above, recrystallized to coarse grained.
4' 7"	Dolomite, pale grey, microcrystalline, argillaceous laminae distroted in the top 6" with patches of coarsely crystalline white dolomite.
1' 2"	As above 4' 7" dark grey and medium crystalline.
3' 2"	Dolomite, fine grained, pale grey, occasional stylolites and fractures with black shale partings. Rare patches of white, coarse grained dolomite.
2' 2"	Dolomite, fine grained, grey, irregular argillaceous laminae, modified by solution.
1' 8"	As above, recrystallized to coarse grained white dolomite.

CORE #157 1822 - 1825' Cut 4' Recovered 4'4" (100%)

Coring times 4½, 3½, 4.

4' 0"	Dolomite, fine grained to microcrystalline, light grey, argillaceous laminae infrequent, sometimes modified by solution. Bottom 2" replacement(?) by coarse grained white dolomite rimmed by pyrites.
4"	Grey shale(?) with fragments of the above dolomite(?).

CORE #158 1825 - 1845' Cut & Recovered 20' (100%)

Coring times 3, 4, 3½, 3½, 4, 3½, 4, 4, 4, 3½, 3½, 4, 4½, 3½, 6½, 5, 4½, 4½, 4, 3.

3' 0"	Dolomite, fine to medium grained, argillaceous laminations common.
4' 10"	Dolomite, microcrystalline to fine grained, pale grey, highly fractured.
6' 10"	Dolomite, fine to medium grained, pale grey with dark grey argillaceous mottling.
6' 4"	Dolomite, as above light parts partly replaced by coarse grained dolomite patches with white veins enclosing yellow centres. Rubbly, pyritous shale partings are common.

CORE #159 1845 - 1853' Cut & Recovered 8' (100%)

Coring times 3, 3, 5½, 5, 7, 4, 7, 8.

8'	Dolomite, fine grained, dark grey, argillaceous laminae common often irregular due to solution. Some beds show disruption and repetition due to sediment movements. Bedding at approximately 30^{o} to horizontal. Fracturing common.

CORE #160 1853 - 1866' Cut & Recovered 13' (100%)

Coring times 4, 2½, 3, 2½, 2½, 2½, 3, 2½, 2½, 3, 14, 3½, 5, 7.

3' 6" Dolomite, dark grey, fine grained with argillaceous laminae and thin beds. There is evidence of interrupted sedimentation: - Shaly beds with sharp plain upper surfaces grading down to dolomite. Uneven 'burrowed' bedding planes. Cracks penetrating down into beds with a filling of the succeeding lithology. The cracks are vertical though the beds dip at about 30°.

6' 5" Dolomite, dark grey, fine grained argillaceous, occasionally slightly pyritous. Uneven argillaceous seams common. Highly fractured oil stain on some fractures.

3' 1" Dolomite, microcrystalline to finely crystalline white to pale grey with dark argillaceous pyritous bands. Occasionally fractured with scattered oil stain in the fractures.

CORE #161 1866 - 1873' Cut & Recovered 7' (100%)

Coring times 2½, 3½, 2½, 4, 4, 3½, 4½.

1' 5" Dolomite, coarse grained, white, black argillaceous partings, very irregular. Fractures oil stain on fractures.

5' 7" Dolomite, fine grained, grey, irregular argillaceous partings.

CORE #162 1873 - 1889' Cut 16' Recovered 14' 7" (96%)

Coring times 4, 3½, 3, 3, 3, 2½, 6½, 4½, 7, 6, 5, 7, 5½, 7, 6, 7½.

3' 6" Dolomite, fine grained, dark grey, darker argillaceous partings common. Fractured, oil stain on some fractures.

3' 4" Dolomite, microcrystalline, dark grey with irregular bands and blebs of white cryptocrystalline dolomite, Some irregular argillaceous partings.

2' 4"	Dolomite, microcrystalline, pale grey with dark grey laminations.
5' 5"	Dolomite, finely crystalline, brown with dark grey bands of argillaceous laminae. In parts the laminae are disrupted. Fractured, oil stain on fractures.

CORE #163 1889 - 1895' Cut & Recovered 6' (100%)

Coring times 4½, 3½, 4½, 4, 4, 5.

1' 5"	Dolomite, dark grey, fine grained, with partings and fractures, irregular, partly shale filled, with some oil stain.
2' 3"	Dolomite, light grey, fine grained, rare argillaceous partings. Fractured, oil stain on the fractures.
2' 4"	As above 2' 3" dark grey, a few very dark bands at 30° to the horizontal. Fractured, oil stain on some fractures.

CORE #164 1895 - 1900' Cut & Recovered 5' (100%)

:Coring times 5, 5, 3, 5, 3½.

5'	Dolomite, fine to medium grained, pale grey with bands and mottles of dark grey, slightly argillaceous rock. Fractured, oil stain on the fractures.

CORE #165 1900 - 1903' Cut 3' Recovered 1' 3" (42%)

Coring times 4½, 6½, 2.

7"	Dolomite, pale grey, microcrystalline, fractured.
8"	Dolomite, dark grey, finely crystalline, fractured.

CORE #166 1903 - 1904' Cut 1' Recovered 1' 7" (100%)
(Core form #165 left in hole)

Coring time 33.

1' 7" Dolomite, fine grained, brown, fractured.

CORE #167 1904 - 1920' Cut & Recovered 16' (100%)

Coring times 6, 7½, 6, 6, 7, 5½, 5, 5½, 6½, 5, 5, 6, 6, 6, 9½, 10, 9½.

5' 7" Dolomite, brown, microcrystalline, argillaceous. Irregular argillaceous partings common. Few oblique fractures.

4' 0" Dolomite, white to light grey, finely crystalline to microcrystalline, traces of pelletoid texture, fractured, oil stain on the fractures.

5' 3" Dolomite, white to light grey, finely crystalline to microcrystalline, irregular argillaceous laminae common. Fractured, fractures oil stained, partly filled by shale.

CORE #168 1920 - 1935' Cut & Recovered 15' (100%)

Coring times 4, 5, 21, 7½, 5, 6½, 6, 7, 7½, 7½, 7½, 7, 8, 7, 12.

15' Dolomite, microcrystalline, dark grey, banded with light grey and with argillaceous partings. The dark grey dolomite is slightly argillaceous the light grey is not. Stylolite partings common. Irregular oblique and near vertical fractures common, usually oil stained.

CORE #169 1935 - 1951' Cut & Recovered 16' (100%)

Coring times 2½, 3, 3, 2½, 3, 3½, 3½, 2, 4, 7, 6, 5, 4, 4, 16, 11.

6' 7" Dolomite, fine grained, brown, slightly silty, frequent uneven, argillaceous partings. Fractures with oil stain on the fractures.

4' 2" Dolomite, fine grained, pale brown with grey mottling. Fractured with solution vugs up to 1/8" developed on the fractures. Oil stain on the fractures.

4"	Chert, white, preserving original texture of the rock (well sorted pellets in spar matrix, some pellets with central voids but no organic structures).
1' 10"	Dolomite, microcrystalline, dark and light grey banded with evidence of soft sediment disruption. Pyritous. Fractured. Oil stain on the fractures.
3' 1"	Dolomite, fine grained, brown, abundant argillaceous partings. Fractures with some solution vugs (1/8") on them.

1951 - 1956' Cut by no recovery from inner barrel.

CORE #170 Recovered from outer barrel 1' 3"

Dolomite, fine grained, to microcrystalline, brown, fractured, some solution vugs on the fractures, oil stain on the fractures. Represents the interval 1951 - 1956'.

CORE #171 1956 - 1974' Cut & Recovered 18' (100%)

Coring times 4, 5½, 4, 4, 4, 4, 5, 5, 5½, 7, 5½, 5½, 5½, 3, 4½, 4½, 3.

18' 0"	Dolomite, microcrystalline, pale grey to pale buff, argillaceous partings common. New vertical and new horizontal fractures common, sometimes filled by dolomite rubble.

CORE #172 1974 - 1988' Cut & Recovered 14' (100%)

Coring times 4, 3½, 5, 4, 5, 5, 4, 4½, 4½, 6, 2½, 3, 4, 7½.

3'2"	Dolomite, fine grained, pale grey mottled dark, obliquely fractured.
1' 1"	Dolomite, fine grained, grey, slightly argillaceous.
2' 3"	Dolomite, microcrystalline, pale grey, pelletoid texture, some vertical and sub-horizontal fractures.

1' 2"	Dolomite, fine grained, pale grey, mottled dark grey, small vugs (1/8") common, oblique fractures common.
2' 1"	Dolomite, fine grained, grey, banded dark grey, slightly argillaceous.
3' 7"	Dolomite, fine grained, grey, argillaceous partings common, green spotted in part (relics of sand size glauconite grains?). Occasional clay bands up to several inches thick, apparently filling wide fractures.

CORE #173 1988 - 2008' Cut & Recovered 20' (100%)

Coring times 4, 4½, 3½, 4½, 3½, 4, 4½, 5, 3½, 3½, 3½, 3, 3½, 3½, 3, 4, 5, 5½, 4½, 6.

10' 0"	Dolomite, pale grey, fine grained, occasional grey argillaceous bands oblique fractures common, frequently oil stained, sometimes filled by fine, argillaceous rubble.
5' 7"	Dolomite, pale grey, coarse grained, contorted argillaceous, dark grey bands and partings, oblique fractures common, oil stained. Pyrite in argillaceous bands.
2' 6"	Dolomite, dark grey, microcrystalline, argillaceous some oblique fractures with oil stain. Argillaceous material decreases downwards.
1' 11"	Dolomite, pale grey, mottled dark grey, fine to medium grained, few oblique fractures.

CORE #174 2008 - 2027' Cut & Recovered 19' (100%)

Coring times 4, 4, 4, 4, 3, 9, 10, 4, 5½, 3½, 4, 4, 5, 4½, 4, 4½, 4, 5, 5.

7' 2"	Dolomite, fine grained, pale grey, mottled dark grey, rare oblique fractures with oil stain. Rare irregular sub-vertical fractures with clay partings.

2"	Fine dolomite breccia in dark grey shale.
6' 2"	Dolomite, pale grey, fine grained, occasional irregular sub-vertical fractures with clay partings. Occasional sub-horizontal fractures with oil stain.
3' 6"	As above 6' 2" with frequent irregular argillaceous partings.

CORE #175 2027 - 2040' Cut 13' Recovered 12' 3" (94%)

Coring times 3, 4, 7, 4, 3½, 4, 3½, 4, 4½, 5½, 7, 5, 11.

9' 2"	Dolomite, microcrystalline, pale grey with slightly argillaceous irregular bands (slumped or churned beds) and argillaceous solution partings. Some oblique fractures and sub-vertical irregular fractures with shale partings on them.
3' 10"	Dolomite, dark grey, finely crystalline, slightly argillaceous vugs up to ¼" partly filled by drusy dolomite. Some irregular vertical fractures with clay seams. Occasional oblique fractures.

CORE #176 2040 - 2046' Cut & Recovered 6' (100%)

Coring times 5, 4, 4, 4, 4, 3.

6' 0"	Dolomite, fine grained, slightly argillaceous, brown, argillaceous partings, frequently stylolitic, fractured, fractures partly filled with white drusy dolomite, some solution vugs up to ½", on the fractures.

CORE #177 2046 - 2062' Cut & Recovered 16' (100%)

Coring times 5½, 5½, 4, 6, 7, 5, 7, 7, 6, 6, 6, 6, 6, 7½, 8, 11.

3' 10"	Dolomite, fine to medium grained, slightly argillaceous, dark grey, occasional argillaceous partings.

12' 4" Dolomite, microcrystalline, grey, pyritous. Laminated by varying argillaceous content, laminae contorted by slumping, cut by very small, imperestent faults and made very irregular by solution effects. Cut by irregular steep fractures with shaly partings and by more even steep or oblique fractures some of which are oil stained.

CORE #178 2062 - 2069' Cut & Recovered 7' (100%)

Coring times 8, 4½, 5, 11, 5, 7, 8.

10" Dolomite, microcrystalline, pale grey with argillaceous partings, modified by solution.

5' 2" Dolomite, microcrystalline, pale grey with dark grey argillaceous partings and laminations, even bedded at 20 - 30° to the horizontal. Rare intervals of 1 - 2" severely fractured.

CORE #179 2069 - 2071' Cut 2' Recovered 1' 6" (75%)

Coring times 7, 6.

7" Dolomite, microcrystalline, brown, slightly argillaceous, with argillaceous laminations. Rare sub-vertical fractures with oil stain.

11" Dolomite, fine to medium crystalline, with contorted argillaceous partings. Patches of chert occur rarely, up to 1" across, showing what may be a relict finely pelletoid texture.

CORE #180 2071 - 2082' Cut & Recovered 11' (100%)

Coring times 1, 5, 3, 5, 3½, 4, 4, 4, 4, 5, 2.

9' 4" Dolomite, fine grained, dark grey, with contorted argillaceous partings. Small (1/8") vugs completely filled by drusy dolomite are common. Oblique fractures common with occasional oil stain.

1' 8" Dolomite, fine grained, dark grey, regular argillaceous laminations, oblique fractures.

CORE #181 2082 - 2092' Cut & Recovered 10' (100%)

2' 9"	Dolomite, microcrystalline, dark grey, slightly argillaceous, frequent argillaceous laminae, pyritous, fractured.
5' 1"	Dolomite, cryptocrystalline to microcrystalline, with drusy dolomite patches (1/8"), white with irregular partings and mottles of dark grey argillaceous material. Moderately to severely fractured with oil stain on most fractures.
2'2"	Dolomite, evenly laminated. Fractured, no oil stain.

CORE #182 2092 - 2100' Cut & Recovered 8' (100%)

2' 0"	Dolomite, cryptocrystalline to microcrystalline, with drusy dolomite patches, irregular dark grey argillaceous laminae and mottles. Severely fractured, oil stain on the fractures.
1' 6"	Dolomite as above, evenly laminated, highly fractured, no oil stain.
1' 8"	As above, 2' 0".
9"	As above 1' 6".
2' 0"	As above 2' 0".

CORE #183 2100 - 2107' Cut 7' Recovered 5' (71%)

5' 0"	Dolomite, cryptocrystalline, pale grey, laminated darker grey; laminae usually flat, dippint at 20^{o} to 30^{o} but occasionally contorted, apparently argillaceous, frequently pyritous. Severely fractured, fractures sometimes filled by dark grey shale.

CORE #184 2107 - 2125' Cut 18' Recovered 17' (94%)

5' 11"	Dolomite, cryptocrystalline to microcrystalline, pale grey with dark grey, argillaceous mottles and irregular partings, pyritous, oblique fractures common.
8' 2"	Dolomite, cryptocrystalline, brown, frequently evenly laminated in shades of darker and lighter brown, fractured.
3' 11"	Dolomite, microcrystalline to finely crystalline, patches (1/8") of drusy dolomite, irregularly mottled, dark and light brown. Fractured.

CORE #185 2125 - 2126' Cut & Recovered 1' (100%)

1'	Dolomite, brown, microcrystalline, slightly argillaceous, with irregular argillaceous partings. Fractured, oil stain on the fractures.

CORE #186 2126 - 2129' Cut 3' Recovered 3'7"(?) (100%)

Coring times 2, 2, 3.

3' 0"	Dolomite, fine grained to microcrystalline, brown, slightly argillaceous, with irregular argillaceous laminae. Some vugs(?) up to 1" x½" completely filled by drusy dolomite. Irregular sub-horizontal and sub-vertical fractures with argillaceous linings, frequently open and oil stained.

CORE #187 2129 - 2134' Cut 5' Recovered 4' 9" (95%)

Coring times 6, 5, 7½, 7½, 7.

4' 9"	Dolomite, microcrystalline to fine grained, brown, slightly argillaceous, with irregular argillaceous laminae. Vugs up to ¼" across filled by drusy dolomite. Irregular sub-horizontal fractures and sub-vertical fracture lined by argillaceous material.

CORE #188 2134 - 2136' Cut & Recovered 2' (100%)

Coring times 10½, 10½.

1' 4"	Dolomite, brown microcrystalline to finely crystalline, abundant fossil fragments of corals and brachiopods(?). Some irregular argillaceous partings. Some sub-horizontal and sub-vertical irregular fractures with oil stain on some.
8"	Dolomite, white to light grey, microcrystalline, occasional recrystallized patches, fine grained. Irregular argillaceous partings.

CORE #189 2136 - 2149' Cut 16' Recovered 13' 2" (82%)

Coring times 10, 8, 2, 4, 4, 4½, 4, 3½, 3½, 3, 5, 5½, 6.

2' 2"	Dolomite, white, microcrystalline, irregular dark argillaceous partings.
1' 1"	Dolomite, white, microcrystalline to cryptocrystalline, intensely crushed to form scattered rock fragments up to 3/4" across in an indurated matrix of fine grained crushed rock. Probably has excellent intergranular porosity.
1' 3"	Dolomite, white, fine grained to microcrystalline with irregular seams of argillaceous material, some stylolitic (possibly also crushed as above) on a very fine scale.
4' 2"	Dolomite, breccia as above 1' 1".
2"	Dolomite, breccia in black shale matrix.
4' 4"	As above 1' 1".

Irregular fractures are scarce in this core. There is a little scattered black bitumen in them.

CORE #190 2149 - 2163' Cut 14' Recovered 13' (93%)

Coring times 3½, 5, 6, 7½, 9, 5½, 6, 6, 6, 6½, 7, 7, 7, 3.

4' 7" Breccia, white, microcrystalline dolomite fragments in fine grained, cursched, indurated dolomite matrix. Rare sub-vertical and sub-horizontal fractures are post-brecciation.

9" Breccia of dolomite as above in abundant dark grey argillaceous matrix.

6' 6" Breccia, dolomite white as above in sparse dark grey argillaceous matrix.

1' 2" Dolomite, white, microcrystalline, with irregular argillaceous laminae. Fractured sub-horizontally, oil stain on the fractures.

CORE #191 2163 - 2165.7' Cut & Recovered 2.7" (100%)

Coring times 8½, 9, 5+

2' 8" Dolomite, brown, fine to medium grained, slightly argillaceous, some irregular argillaceous partings. Oblique fractures common with argillaceous material on them, some oil stain.

CORE #192 2166 - 2180' Cut & Recovered 14" (100%)

Coring times 6, 11, 7, 6, 6, 6, 6, 6, 5, 6½, 7½, 8½, 5½, 7.

1' 0" Dolomite, dark grey, fine to medium crystalline, few irregular argillaceous partings.

3' 0" As above, argillaceous partings very common.

1' 6" Breccia of fragments up to 3" across in a matrix of crushed dolomite.

2' 9" Dolomite, grey to brown, fine grained to microcrystalline, argillaceous, irregular partings common.

4' 11" Dolomite, grey to brown, microcrystalline, argillaceous partings rare, commonly fractured, oil stain on the fractures.

10" As above, 2' 9".

CORE #193 2180 - 2200' Cut & Recovered 20' (100%)

Coring times 7, 6, 6, 5½, 6, 5, 5, 6, 5½, 4½, 6½, 6, 4½, 6, 5½, 5½, 5, 6½, 6, 5.

4' 10" Dolomite, microcrystalline, dark grey, pyritous, argillaceous, frequent uneven argillaceous partings. Fractures sub-vertical and sub-horizontal, some solution vugs on them.

7" Dolomite, microcrystalline, white, grey mottled, cut by oblique, oil stained fractures.

9" As above not mottled.

10" As above 7", mottling caused by argillaceous material forming irregular partings in places.

12' 2" Dolomite, pale grey, laminated or mottled dark grey, laminations occasionally dark grey and irregular.

10" Dolomite, grey, microcrystalline, frequent, irregular argillaceous partings.

CORE #194 2200 - 2218' Cut & Recovered 18' (100%)

Coring times 3, 5½, 4, 3½, 3, 3½, 3, 4, 4, 3½, 4, 3½, 3½, 2½, 3½, 3½, 4, 4½, 12+.

6' 9" Dolomite, microcrystalline, grey with dark, even argillaceous laminations. Some oblique fractures.

5' 4" Dolomite, obscurely mottled grey on light grey fractured obliquely, microcrystalline. A few irregular argillaceous partings. Some fragments of the bed below in the basal 6".

5" Dolomite, laminated, light and dark grey, laminae contorted, overturned and broken. Fine grained.

5' 6" Dolomite, some dark grey laminae in a light grey rock, the laminae occasionaly irregular. Microcrystalline, pyritous. Occasional oblique fractures.

CORE #195 2220 - 2224' Cut 4' Recovered 3' 6" (88%)

Coring times 3½, 3½, 2, 5.

1' 2" Dolomite, dark grey, microcrystalline, some irregular, oblique fractures some filled by drusy calcite, some by argillaceous material. Frequent irregular argillaceous partings.

2' 4" Breccia of dolomite as above in an abundant matrix of dark grey shale.

CORE #196 2224 - 2244' Cut & Recovered 20' (100%)

Coring times 4, 5, 3, 4, 4, 4, 4, 4, 4, 4, 3½, 3, 4, 4, 4, 4½, 4, 4, 4½, 5½.

4' 11" Dolomite, dark grey, microcrystalline, slightly argillaceous, trace pyrite, cut by high angle oil stained calcite filled fractures. A later set of high angle fractures cross-cuts the first set and is filled with rubble of this dolomite in an abundant matrix of dark grey shale. About 50% of the interval is breccia in bands up to 1' wide. The calcite filled veins do not link up completely across the breccia bands indicating the removal of some of the dolomite at the fracture boundaries.

3' 4" Dolomite, white, micrycrystalline, with irregular darker, rare argillaceous stringers.

4" Breccia of dolomite as above 3' 4".

1' 10" As above 3' 4".

9' 7" As above 3' 4" about 25% breccia bands up to 1' 2" wide.

CORE #197 2244 - 2256' Cut & Recovered 12' (100%)

Coring times 3, 3, 3, 3½, 4½, 3, 4, 4½, 8, 6, 5, 4½.

3' 11" Dolomite, white, microcrystalline, irregular, dark, argillaceous stringers. Severely fractured, oil stained.

4' 4" Dolomite, dark grey, microcrystalline, darker argillaceous laminae. Fractured severely.

3' 9" As above 4' 4" not fractured.

CORE #198 2256 - 2272' Cut & Recovered 16' (100%)

2' 2" Dolomite, dark grey, fine grained with coarse grained blebs, frequent irregular argillaceous seams.

9' 5" Dolomite, dark grey, microcrystalline, frequent irregular argillaceous seams.

1' 3" Dolomite, white, cryptocrystalline to microcrystalline, frequest irregular argillaceous seams.

3' 2" Dolomite, dark grey, fine grained, irregular argillaceous seams common.

CORE #199 2272 - 2281' Cut & Recovered 9' (100%)

Coring times 5, 4½, 4, 7, 6, 5½, 5, 6, 3½.

11" Dolomite, microcrystalline, irregular argillaceous partings, dark grey.

2' 3" Dolomite, microcrystalline, brown, darker (argillaceous?) laminations showing trough bedding on a millimeter scale.

2' 0" As above fractured with drusy calcite filling the fractures.

3' 10" Dolomite, fine grained, dark brown, irregular darker, argillaceous, laminations and mottles.

CORE #200 2281 - 2284' Cut & Recovered 4' (100%)

Coring times 3, 4½, 4½, 5.

4' Dolomite, buff, microcrystalline, irregular, argillaceous partings, pyrite blebs. Rare sub-vertical, irregular fractures filled with shale.

CORE #201 2284 - 2286' Cut & Recovered 2' (100%)

Coring times 6, 5.

2' Dolomite, pale buff, microcrystalline, dark laminations, pyrite blebs, severe fractureing to crushing in places, with patchy, good fracture porosity.

CORE #202 2286 - 2288' Cut & Recovered 2' (100%)

2288 - 2289' Cut 1' Recovered 0' (0%)

CORE #203 2289 - 2298' Cut & Recovered 9' (100%)

Coring times 5, 2, 8½, 6, 5, 6, 5, 5, 5, 6.

2' Dolomite, brown, microcrystalline, fractured.

2" As above, pale buff.

1' not recovered.

6' 9" Dolomite, as above 2' severely fractured with grey argillaceous material in the fractures, argillaceous, dark grey banding frequent.

11" Dolomite, fine grained, blebs of coarse grain, brown, few fractures, filled by drusy calcite.

CORE #204 2298 - 2306' Cut 8' Recovered 6' (75%)

Coring times 6½, 6, 5, 5½, 5, 1½, 3½, 6.

1' Dolomite, brown, fine grained with pale coarse grained blebs and dark contorted argillaceous stringers.

6" Dolomite, brown, microcrystalline, some even argillaceous laminae.

5" As above 1'.

1' 10" As above 6"

3" Dolomite, white, replacing fine oolite, pyrite replaces cores of some ooliths, some glauconite grains. Laminations of very argillaceous rocks in which glauconite is abundant and all the grains are severly flattened.

4"	Dolomite, light grey, cryptocrystalline.
1'	Dolomite, grey, finely crystal line, buff with dark grey specks, vague, irregular argillaceous partings. Possible ghosts of scattered organic particles (crinoids?).

CORE #205 2306 - 2314' Cut 8' Recovered 7' (88%)

Coring times 6½, 6, 5, 5½, 5, 2, 3½, 6½, 2½.

7'	Dolomite, white, with irregular brown argillaceous stringers, occasional stylolitic seams, occasional zones of dolomite rubble in shale. A few high angle fractures.

CORE #206 2314 - 2318' Cut 4' Recovered 6'(?) (100%) (Pick-up from 205).

Coring times 5½, 4, 4½, 4½, 6.

3"	Breccia of dolomite in shale.
1' 0"	Dolomite, microcrystalline, white with occasional dark brown mottles.
1' 0"	As above, dark grey mottles and partings frequent. Junction with the bed above sharp and irregular showing a steep dip which is paralleled by the general dip of the partings.
9"	As above, mottles brown with a rudinating bedding. Mottles fine grained.
1' 5"	Dolomite, microcrystalline, pale grey, even dark brown laminations, slightly pyritous.
1"	Dolomitic sand.
1' 6"	Dolomite, brown, microcrystalline, irregularly fractured with clay filled. Penetrated at the top by the above bed.
1"	Dolomite modules in grey shale, and irregular, stylolitic, contact joins it to the bed above.
2"	Dolomite, pale grey, laminated with pyrite, microcrystalline, a flat bedding plane separates it from the succeeding bed.

CORE #207 2319 - 2326' Cut & Recovered 7' (100%)

Coring times 6, 7, 6, 7, 6, 7, 7.

1' 8"	Dolomite, pale grey, laminated with pyrite, mircrocrystalline.
2'7"	Dolomite, pale grey, microcrystalline, argillaceous irregular stringers.
2' 9"	Dolomite, pale grey, microcrystalline, dark grey mottles.

CORE #208 2326 - 2337' Cut & Recovered 11' (100%)

Coring times 2, 6, 6, 5½, 6½, 7, 7, 6½, 6, 7½, 7½.

1' 10"	Dolomite, white, microcrystalline, dark, even laminations, pyritous.
2"	Oblique, irregular seam of shale and contorted, laminated dolomite.
1' 4"	Dolomite, as above 1' 10" laminae more numerous and irregular towards the base which is a clay seam.
9"	As above 1' 4".
11"	Dolomite, white, microcrystalline, abundant argillaceous seams, highly irregular.
9"	As above 1' 4".
3' 9"	As above 1' 10".

CORE #209 2337 - 2341' Cut & Recovered 4' (100%)

Coring times 3, 5, 6, 5.

2' 7"	Dolomite, light buff, microcrystalline, even, dark grey laminations. Oblique and high angle fractures common. Some pyrite on occasional argillaceous partings.
1' 5"	Dolomite, brown, fine grained to microcrystalline, severely fractured, fractures open and filled with drusy dolomite. Later fractures displace the dolomite filled set.

CORE #210 2341 - 2347' Cut 4' Recovered 3' 6" (87%)

Coring times ?, 4, 4, 3½.

8"	Dolomite, microcrystalline, argillaceous, pyritous, in part nodular.
2' 10"	Dolomite, brown, fine grained with coarse grained white irregular patches, severely fractured to brecciated, some of the coarse grained areas may be fracture fill. Sparse vugs with drusy dolomite lining up to ¼".

CORE #211 2347 - 2351' Cut & Recovered 4' (100%)

Coring times 4½, 4, 6, 4.

1' 1"	Dolomite, grey, microcrystalline, slightly pyritous. Irregular oblique and vertical fractures common. Some vugs(½") filled by drusy dolomite on the fractures.
2' 11"	Dolomite, grey, microcrystalline, slightly pyritous. Severely and irregularly fractured. Fractures filled with drusy dolomite. Open vugs (¼") frequent on the fractures. Some stylolitic clay semms.

CORE #212 2351 - 2356' Cut & Recovered 5' (100%)

Coring times ?, 4, 3, 3, 4.

3' 6"	Dolomite, irregularly banded dark grey and light brown, fine grained, some laminations and thin rubbly beds of clay. Vugs up to ½" with drusy dolomite lining.
1' 6"	As above with bands of stomatolites forming 50% of the rock. Stomatolites pale brown frequently recrystallized to clear, euhedral, coarse dolomite. Traces of organic fragments.

CORE #213 2356 - 2361.5' Cut & Recovered 5.5' (100%)

Coring times 3½, 4, 4, 6, 6, 2½+.

5"	Pale brown stromatolitic dolomite, largely recrystallized coarse to micro-grained, pyritous.
1' 3"	Dolomite, brown, fine grained to microcryatalline, coarse grained patches. Some vugs lined by drusy dolomite.
1' 5"	Dolomite, white, microcrystalline, with irregular argillaceous laminae and mottles decreasing downwards. Some horizontal vugs 1" x 1/10".
2' 5"	Dolomite, white, microcrystalline, a few brown bands, severely fractured, brecciated in places.

CORE #214 2361.5 - 2364.6' Cut & Recovered 3' (100%)

Coring times +3, 4, 5½, 2+.

3'	Dolomite, microcrystalline, white, darker (argillaceous?) laminae. Scattered vugs (1/8") frequently flat sided with angular cones (gypsum molds?). Severely fractured.

CORE #215 2364.6 - 2368' Cut 3.4' Recovered 3.4' (100%)

Coring times 3½, 5½, 8, 11½.

2' 4"	Dolomite, microcrystalline, white irregular dark argillaceous partings increasing downwards.
1' 1"	Dolomite, microcrystalline, grey, occasionally intensely fractured to a fine breccia.

CORE #216 2368 - 2371' Cut & Recovered 3' (100%)

Coring times 8, 6, 7.

6"	Dolomite, microcrystalline, grey, severely brecciated in abundant, light brown microcrystalline matrix.
2' 6"	As above 6" not brecciated.

CORE #217 2371 - 2377' Cut & Recovered 6' (100%)

Coring times 15, 6, 6, 7½, 8, 7.

6"	Dolomite, dark grey, microcrystalline, argillaceous, some irregular argillaceous partings and bands.
3' 0"	Dolomite, pale buff, microcrystalline, with irregular dark grey, argillaceous stringers.
1' 2"	Dolomite, pale grey or white, microcrystalline, with irregular dark grey argillaceous stringers.
1' 5"	Dolomite, pale grey, microcrystalline, with pale mottles like sections of continuous tubes about ¼" diameter. The edges have dark grey bands and the centres have one or several irregular blebs of drusy dolomite.

CORE #218 2377 - 2387' Cut & Recovered 10' (100%)

Coring times 4, 7½, 7, 8, 8, 7, 10, 8½, 9, 8.

2' 10"	Dolomite, grey with irregular dark grey bands, microcrystalline.
3' 0"	Dolomite, brown, microcrystalline to fine grained, coarse blebs, frequent argillaceous, irregular partings. Fractured.
3' 11"	Dolomite, grey with irregular dark grey bands, microcrystalline.

CORE #219 2387 - 2391' Cut & Recovered 4' (100%)

Coring times 7½, 7½, 8, 6.

4' 0"	Dolomite, microcrystalline, dark grey, severely fractured to rubbly. Some fractures lined with drusy dolomite and partly open.

CORE #220 2391 - 2393' Cut & Recovered 2')100%)

Coring times 4, 8, 8+(?).

2' 0" Dolomite, dark grey, microcrystalline, irregular argillaceous partings, fractured, fractures partly filled with drusy dolomite.

CORE #221 2393 - 2399' Cut 6' Recovered 5' 6" (92%)

Coring times 3, 5, 3½, 3½, 5, 6.

3' 7" Dolomite, microcrystalline, dark grey, irregular argillaceous partings.

1' 0" As above, severely fractured to brecciated, fractures partly open, partly filled by drusy dolomite with minor calcite.

11" Dolomite, white, microcrystalline, severely brecciated to rubbly.

CORE #222 2399 - 2406' Cut 7' Recovered 3' (43%)

Coring times 5, 7, 3, 6, 6, 4, 9.

3' Dolomite, microcrystalline, brown to dark grey mottled, frequent irregular argillaceous partings. Severely fractured to finely brecciated.

CORE #223 2406 - 2413' Cut 7' Recovered 6' 9" (96%)

Coring times 3½, 7, 5, 5, 6, 6, 7.

1' 10" Dolomite, microcrystalline, thin irregular bands of grey and brown, severely fractured to brecciated, occasional patches up to 1" of drusy dolomite and calcite, also fracture fillings of the same.

3' 1" As above, grey, argillaceous.

2" As above, severely fractured with abundant pyrite vein filling.

1' 8" As above 3' 1".

CORE #224 2413 - 2416' Cut & Recovered 3' (100%)

Coring times 7, 7, 5.

3' 0" Dolomite, microcrystalline, slightly argillaceous, some irregular argillaceous partings. Severely fractured to brecciated. Fractures partly filled by drusy calcite, partly open. Some traces of bitumen in the fractures.

CORE #225 2416 - 2424' Cut & Recovered 8' (100%)

Coring times 7, 4½, 5½, 6, 5, 8, 4½, 6½.

8' Dolomite, dark grey, microcrystalline, slightly argillaceous, pyritous, frequent, irregular argillaceous partings and stringers. Some intervals of severe fracturing with drusy calcite filling, some open with scattered bitumen.

CORE #226 2424 - 2429.8' Cut & Recovered 5.8' (100%)

Coring times 4½, 5, 4½, 3½, 5, 5½.

5' 10" Dolomite, dark brown, to dark grey, microcrystalline to fine grained, severely fractured. Some fracture porosity.

CORE #227 2429.8 - 2435' Cut & Recovered 5.2' (100%)

Coring times 6, 5, 5, 8, 8.

5' 2" Dolomite, brown, microcrystalline, irregular argillaceous partings, severely fractured to finely brecciated.

CORE #228 2435 - 2443' Cut 8' Recovered 7' (87%)

Coring times 4, 6, 5½, 7, 6, 6½, 4, ?,

4' 6" Dolomite, brown, microcrystalline, argillaceous partings, severely fractured, some fractures filled with dursy dolomite.

1' 2" Dolomite, dark grey, microcrystalline, very argillaceous, pyritous.

1' 4" Dolomite, light grey, microcrystalline to cryptocrystalline, laminations of darker argillaceous rock occur infrequently, severely fractured.

CORE #229 2443 - 2445' Cut 2' Recovered 1' 9" (87%)

Coring times 2, 2½.

1' 9" Dolomite, pale grey with occasional dark grey argillaceous bands, microcrystalline, severely fractured with some shale fill.

CORE #230 2445 - 2451' Cut 6' Recovered 4' 4" (72%)

Coring times 4½, 1½, 2, 2, 2, 2½.

4' 4" Dolomite, pale grey, microcrystalline, severely fractured, occasional shale fill, trace oil stain on fractures.

CORE #231 2451 - 2457' & 2457 - 2460' Cut 9' Recovered 4'7" (50%)

Coring times 2½, 3, 3½, 3½, 3, 4. 5, 8, 4.

2' 4" Dolomite, pale grey, microcrystalline, severely fractured.

2' 3" As above finely brecciated.

CORE #232 2460 - 2463' Cut 3' Recovered 3' 6"(?) (100%)

Coring times 3, 4, 2.

2' 0" Dolomite, microcrystalline, finely banded light grey and brown, pyritous, severely fractured.

1' 6" Dolomite, microcrystalline, light grey with brown thin bands, soft-sediment cracks occur filled with drusy dolomite. Some cracks narrow down from a bed top and are filled by the suceeding bed material, probably dessication cracks. A few late oblique fractures occur.

CORE #233 2463 - 2469' Cut 6' Recovered 7' 6"(?) (100%)

Coring times 3, 3, 4, 4, 5, 6½.

6' 3" Dolomite, microcrystalline, pale grey with irregular, brown bands, fractured to severely fractured, trace bitumen.

1' 3" Dolomite, pale brown, microcrystalline with irregular, brown, finely crystalline mottles, pyritous.

CORE #234 2469 - 2475' Cut 6' Recovered 4'10" (94%)

Coring times 1, 3½, 3½, ?, 6, 2.

2' 4" Dolomite, microcrystalline, dark grey, argillaceous, laminated light grey, fractured, fractures filled in part with drusy dolomite.

2' 6" Dolomite, light grey, microcrystalline with blue-grey, irregular mottles up to ½" across, irregular argillaceous partings become more common downwards. Severely fractured.

CORE #235 2475 - 2482' Cut & Recovered 7' (100%)

Coring times 6½, 5, 4, 5, 6, 9, 5.

1' 0" Dolomite, microcrystalline to fine grained, light grey with blue-grey mottles and abundant stylolitic argillaceous partings, fractured severely.

9" As above stylolitic partings rare. Fractured severely.

4' 0" Dolomite, microcrystalline, light grey with thin dark grey irregular bands possibly showing soft sediment deformation, some vugs parallel to the banding up to 2" by ¼" lined by drusy dolomite. Fractured along the banding.

1' 3" Dolomite, microcrystalline, light grey, obscure blue-grey mottling, some argillaceous stylolitic seams. Badly fractured.

CORE #236 2482 - 2485' Cut & Recovered 3' (100%)

Coring times 2½, 4, 8.

3' Dolomite, fine grained, light grey with dark grey-blue mottling, occasional, irregular argillaceous partings. Highly fractured.

CORE #237 2485 - 2496' Cut 11' Recovered 10' (91%)

Coring times 2, 3, 1½, 2, 1½, 2, 3, 3, 3, 2, 2½.

7' 2" Dolomite, white, fine grained to medium grained, severely fractured to brecciated, some fracture planes pyrite bearing and slickensided.

2' 10" Dolomite, brown, microcrystalline to cryptocrystalline, fine grained pyrite blebs, severely fractured to brecciated.

CORE #238 2486 - 2502' Cut 6' & Recovered 5' (83%)

1' 6" Dolomite, brown, microcrystalline to cryptocrystalline, severely fractured with shale fill. Frequent irregular argillaceous stringers.

3' 4" Dolomite, pale grey, microcrystalline to cryptocrystalline, some even argillaceous bands. Severely fractured.

CORE #239 2502 - 2504' Cut 2' Recovered 1' 3" (87%)

Coring times 4, 6.

1' 3" Dolomite, cryptocrystalline to microcrystalline, slightly argillaceous, very severely fractured. Trace of oil stain on some fractures.

CORE #240 2504 - 2509' Cut 5' Recovered 3' 10" (76%)

Coring times 2, 5, 5, 4, 10?

2' 4" Dolomite, pale grey, microcrystalline, occasional even, dark grey, argillaceous bands. Severely fractured, some oil stain on the fractures.

1' 6" Dolomite, pale grey with dark grey mottles, microcrystalline slightly argillaceous. Severely fractured.

CORE #241 2509 - 2511' Cut 2' Recovered 3' (highly broken) (100%)

Coring times 5, 5.

3' Dolomite, cryptocrystalline to microcrystalline, pale grey, slightly argillaceous, severely fractured.

CORE #242 2511 - 2516' Cut 5' Recovered 4' 8" (96%)

Coring times 6, 4, 4, 3, 5.

4' 8" Dolomite, brown, microcrystalline to cryptocrystalline, discontinuous, irregular argillaceous stringers common. Severely fractured.

CORE 243 2516 - 2520' Cut 4' Recovered 4' 8"(?) (100%)

Coring times 3½, 3½, 4, 5.

2' 4" Dolomite, grey argillaceous, pyritous, laminated, severely fractured. Separated by an irregular, stylolitic(?), fracture (?) from the bed below.

2' 4" Dolomite, pale grey with even, dark grey, bands, microcrystalline, slightly argillaceous. Severely fractured.

CORE #244 2520 - 2526' Cut 6' Recovered 5' (83%)

Coring times 5, 5, 4, 6, 3, 6.

5' Dolomite, microcrystalline to cryptocrystalline, green-grey, banded dark grey slightly argillaceous, slightly pyritous. Fractured with argillaceous material on the fractures to breccia with shale matrix. Some bands fine grained, part oil stained.

CORE #245 2526 - 2531' Cut 5' Recovered 1' 3" (25%)

Coring times 3, 4½, 5, 6, 8½.

1' 3" Dolomite, fine grained to microcrystalline, dark grey argillaceous mottles on a white ground, severely fractured to brecciated. Traces of pelletoid texture.

CORE #246 2531 - 2536' Cut 5' Recovered 3' 9" (75%)

Coring times 4½, 7, 6, 5½, 6.

3' 9" Dolomite, fine grained, white, fractured to very fractured to fine rubble, oil stain on some fractures.

CORE #247 2536 - 2540' Cut & Recovered 4' (100%)

Coring times 4½, 4, 2½, 24.

3' 8" Dolomite, fine grained to microcrystalline, white to light grey with occasional dark grey laminae. Severely fractured to brecciated.

4" As above, breccia in abundant dark grey shale matrix.

CORE #248 2541 - 2551' Cut 10' Recovered 2' 6" (25%)

2' 6" Dolomite, microcrystalline to cryptocrystalline, light and dark grey banded, finely disseminated pyrite common, scattered vugs up to 1/8" common. Severely fractured to finely brecciated.

CORE #249 2551 - 2554' Cut 3' Recovered 3' 6"(?) (100%)

2' 5" Dolomite, microcrystalline to cryptocrystalline, white, finely brecciated by fracturing to fragments up to ¼" across set in an abundant matrix of ground dolomite with occasional grey argillaceous patches. Late, slickensided oblique fractures cut the breccia.

1' 1" Dolomite, microcrystalline, dark brown, deverely fractured, recovered as loose fragments 1" across

CORE #250 2554 - 2564' Cut 10' Recovered 5' 6" (55%)

5'6" Dolomite, microcrystalline dark brown, fractured to a fine breccia with occasional slickensided, through-going, fractures.

CORE #251 2564 - 2566' Cut 2' Recovered 3" (12%)

Coring times 2½, 10.

3" Dolomite, microcrystalline, dark brown, fractured severely, argillaceous partings common.

CORE #252 2644 - 2645.3' Cut 1'3" Recovered 0'5" (33%)

Coring times 2½, 6+.

5½" Dolomite, cryptocrystalline, white, some pyrite blebs, fractured some of the fractures filled by drusy calcite.

1½" Dolomite, microcrystalline, brown, with steeply dipping irregular argillaceous stringers, fractured, some fractures filled by drusy calcite.

CORE #253 2645.3 - 2650' Cut 5' Recovered 3' 10" (77%)

Coring times +7½, 6½, 6, 4.

10" Dolomite, microcrystalline, brown, occasional irregular argillaceous stringers, somewhat fractured, fractures filled with drusy calcite.

3" Dolomite, pale brown, microcrystalline to cryptocrystalline, shows relict texture of a medium to fine grained oosparite.

2" Chert, white, replaces oosparite. Separated by an irregular stylolitic seam from the following bed.

1' 5" Dolomite, pale grey, microctystalline, fractured, becoming rubble in the basal 8".

CORE #254 2650 - 2656' Cut 6' Recovered 4' 3" (71%)

Coring times 1½, 3½, 4, 2½, 5, 4.

7" Dolomite, pale grey, microcrystalline, severely fractured, core very broken.

1' 1" Dolomite, pale grey, microcrystalline, fractured to severely fractured, fractures filled by drusy calcite. Fractures are about 60° to horizontal, cut by a set of joints, less steep with shaly partings in some cases.

2' 7" Dolomite, pale grey, microcrystalline, severely fractured to finely brecciated. Traces of oil stain on some fractures.

CORE #255 2656 - 2668.5' Cut & Recovered 12.5' (100%)

Coring times 1½, 4½, 5, 5, 4½, 5, 4½, 5, 5, 4, 4, 2, 5+.

11' 7" Dolomite, pale grey, microcrystalline, steeply inclined bedding indicated by colour banding, severely fractured, oil stained in places. Late oblique slickensided, occasional fractures cut the severe fracturing.

11" Dolomite, as above, fractured to fine breccia in a matrix of ground dolomite.

CORE #256 2668 - 2678' Cut 10' Recovered 9' (90%)

Coring times 5, 4½, 3, 3, 2, 2½, 4, 4, 4, 2.

5" Dolomite, white, microcrystalline, fractured to fine breccia in crushed dolomite.

1' 5" Dolomite, grey, microcrystalline, weverely fractured, fractures filled by drusy calcite cement. Fraces of bedding in faint colour banding. Traces of oil stain on the fractures.

2' 8" Dolomite, very pale grey, fine grained, severely fractured.

2' 3" Dolomite, replacing coarse grained oosparite, white, cut by occasional oblique joints. The fracturing of the beds above is absent. Top 3" may be oomicrite. Top boundary is sharp, uneven and oblique possibly a bedding plane with stylolitic modification.

3' 3" Dolomite, grey, microcrystalline, severely fractured to fine breccia in ground dolomite. Upper boundary very irregular, convolute surface showing extensive stylolitic modification, fractures stop abruptly at the boundary and do not effect the oolite above it.

CORE #257 2678 - 2684' Cut 6' Recovered 4' 3" (71%)

Coring times 4½, 6½, 3½, 4½, 5½, 4.

1' 9" Dolomite, pale grey, microcrystalline, severely fractured in part, pyrite blebs.

6" Oolite, replaced by white chert with parts completely dolomitic. Top 1" contains lumps of dolomite as above 1' 9" possibly fracture bounded and introduced during the fracturing; no evidence of fractures in the oolite. Pyritous in the dolomitic parts.

2' 0" Dolomite, light grey, microcrystalline to fine grained, severely fractured to brecciated. Cut by occasional late, oblique fractures.

CORE #258 2684 - 2692' Cut 8' Recovered 6' 9" (84%)

Coring times 3, 4, 3, 2, 3, 2, 6, 2.

6' 4" Dolomite, light to dark grey, microcrystalline, severely fractured to brecciated. The breccia fine, in a matrix of ground dolomite. Some fractures filled by drusy calcite.

CORE #259 2692 - 2696' Cut 4' Recovered 3' 8" (87%)

Coring times 2, 5, 5, 4.

2' 0"	Dolomite, brown, microcrystalline, severely fractured.
1' 8"	Dolomite, microcrystalline, brown, fine breccia in a matrix of ground dolomite, rebrecciated into medium breccia with a greyish matrix of ground dolomite.

CORE #260 2696 - 2701' Cut 5' Recovered 4' 6" (90%)

Coring times 4, 6, 4, 3½, 7.

2' 1"	Dolomite, grey, microcrystalline, brecciated by fracturing, matrix pale grey, finely gound dolomite.
5"	Dolomite, pale buff, cryptocrystalline, fractured to fine breccia.
2' 0"	Dolomite, pale buff, microcrystalline, severely fractured.

CORE #261 2701 - 2706' Cut 5' Recovered 5' 6"(?) (100%)

Coring times 5, 5½, 7½, 5, 8.

6"	Dolomite, microcrystalline, buff to pale grey, severely fractured.
1' 8"	Chert, white, replacing coarse ground oolite (oosparite?) some bands still dolomitic.
3' 4"	Dolomite, microcrystalline, pale grey, colour banding shown imdistinct bedding, fractured, in places severely.

CORE #262 2706 - 2714' Cut 8' Recovered 10' 7"(?) (100%)

Coring timed 3, 5½, 8, 5, 5, 5, 6, 6, 3.

1' 4"	Dolomite, microcrystalline, pale grey, fractured.
1' 5"	Dolomitem microcrystalline, pale grey and dark grey, mottled, scattered vugs up to ¼", severely fractured, oil stain on the fractures and in the vu

6"	Dolomite, brown, microcrystalline, pyritous, somewhat fractured.
2"	Chert, replacing coarse oolite. Edges of the oolite are not silicified, they pass abruptly but without a definite bedding plane into microcrystalline dolomite.
10"	Dolomite, as above 6".
1"	Chert, as above.
6' 5"	Dolomite, as above.

CORE #264 2717 - 2728' Cut 11' Recovered 8' 6" (77%)

Coring times 5, 3, 3, 2½, 3, 2, 4, 3, 1½, 3, 4.

5' 10"	Dolomite, dark grey, microcrystalline, severely fractured.
2' 8"	Dolomite, pale grey, microcrystalline ,severely fractured.

CORE #263 2714 - 2717' Cut 3' Recovered 2' 6" (87%)

2' 6"	Dolomite, pale buff, microcrystalline to cryptocrystalline, severely fractured to brecciated.

CORE #265 2728 - 2732' Cut & Recovered 4' (100%)

Coring times 5, 5, ?, 6.

4'	Dolomite, light buff to grey, microcrystalline to fine grained, severely fractured to brecciated, occasional chert nodules up to 1/8".

CORE #266 2732 - 2738' Cut 6' Recovered 5' (83%)

Coring times 3½, 10, 4, 6½, 6, 6.

5'	Dolomite, pale grey, microcrystalline to cryptocrystalline, fractured to fine breccia in gound dolomite.

CORE #267 2738 - 2740' Cut 2' Recovered 1' 6" (75%)

Coring times 5, 5.

CORE #268 2740 - 2744' Cut 4' Recovered 6" (12%)

Coring times 4½, 3, 2½, 5.

2' Dolomite, light grey, microcrystalline, traces of bitumen on fractures. Severely fractured.

CORE #269 2744 - 2750' Cut 6' Recovered 10" (14%)

Coring times 6, 5, 2½, 2, 2, 2½.

10" Dolomite, grey, microcrystalline to fine grained, fractured, vugs up to 1/8" along the fractures. Vugs lined by fine grained euhedral dolomite crystals.

CORE #270 2750 - 2751.8' Cut 1' 10" Recovered 8" (35%)

Coring times ?, 6+.

8" Dolomite, microcrystalline, pale grey, porcellanous texture, in part severely fractured, irregular veins of coarse, clear, dolomite crystals. Trace clay and silt.

CORE #271 2751.8 - 2753.2' Cut 1.4' Recovered 1' (71%)

Coring times ?, ?.

1' Dolomite, microcrystalline, grey, with occasional uneven argillaceous laminae. Fractured. Much local cave? above core.

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CORE # 272 2755 - 2761' Cut & Recovered 6'

6' Dolomite, grey brown, micro-cryptocrystalline, slightly argillaceous (less than 10%) slightly silty (less than 10%), indistinct bedding. Occasional vug lined with milky calcite (dolomite?). Core is badly fractured with generally steep fractures lined with dark argillaceous material. Poor vuggy porosity. No permeability.

CORE #273 2761 - 2766' Cut 5' Recovered 2'

2' Dolomite, as above. Core is broken to rubble.

CORE #274 2766 - 2769' Cut 3' Recovered 1'

1' Dolomite, dark brown and grey, very slightly pyritic. Core is brecciated and fractured.

CORE #275 2769 - 2772' Cut 3' Recovered 2'

2' Dolomite, blue-grey, argillaceous, slightly silty, with a few patches of chert which shows some oolitic texture.

CORE #276 2772 - 2776' Cut 4' Recovered 6"

6" Dolomite rubble, blue-grey as above, microcrystalline, slightly argillaceous, slightly silty, no porosity (except fracture porosity).

CORE #277 2776 - 2778' Cut 2' Recovered 6"

6" Dolomite as above, broken to rubble.

CORE #278 2778 - 2783' Cut 5' Recovered 6"

6" Dolomite, medium bleu-grey, crypto-micro-crystalline, argillaceous, slightly silty, very slightly micromicaceous dense. Bedding planes marked by thin argillaceous dark lines dipping approximately 45°. Core is badly fractured.

CORE #279 2783 - 2788' Cut 5' Recovered 1'

1' Dolomite, grey-brown, micro-cryptocrystalline badly broken and fractured, tight. Contaminated by pipe grease. Soft white material probably CMC a mud additive used to lubricate rods inside casing.

NOTE: Interval 2788 - 2815' was drilled. No sample returns.

CORE #280 2815 - 2818' Cut 3' Recovered 3'

3' Dolomite, blue-grey and brown. Brown dolomite is slightly argillaceous. Blue-grey dolomite is mottled in part with indistinct shadows showing pelletoid or oolitic texture. Core contains few vugs of white crystalline calcite and is fractured and broken. No porosity (except fracture porosity.)

CORE #281 2818 - 2826' Cut 8' Recovered 7'

7' Dolomite, blue-grey mottled and brown as above.

CORE #282 2826 - 2838' Cut 12' Recovered 10'

10' Dolomite, blue-grey mottled as above. Contains 3 thin 1/8" bands of shale, grey-green dolomitic slightly calcareous, dipping about 30°.

CORE #283 2838 - 2847' Cut 9' Recovered 8'

8' Dolomite, blue-grey to grey-brown, micro-cryptocrystalline, slightly argillaceous very slightly silty. Rare patches of pyrite. Bedding dips 10^{o} - 20^{o}. Brecciated in places and fractured with high-angled breaks. Some fractured planes filled with glassy and white calcite. Few thin shale partings dipping 10^{o} - 20^{o}. No porosity (except fracture porosity).

CORE #284 2847 - 2849' Cut & Recovered 2'

2' Dolomite, grey-brown, micro-cryptocrystalline with few thin shale beds as above. Some fracture planes and few vugs lined with white cyrstalline calcite (dolomitic?). Core is fractured and broken. No porosity (except fracture porosity).

CORE #285 2849 - 2851' Cut & Recovered 2'

2' Dolomite, grey-brown, micro-cryptocrystalline as above. Slightly argillaceous some fractures and vugs lined with calcite.

CORE #286 2851 - 2858' Cut & Recovered 7'

5' Dolomite, grey-brown as above, becoming darker brown and more argillaceous near 2856' where acid residue leaves dark brown shaly fragments. Several white calcite filled fractures, slightly anhydritic.

2' Dolomite, light grey, slightly argillaceous mottled with blue-grey dolomite. Breccia zone at 2856.5' consists of ½" of dolomite fragments in a matrix of white-pale yellow slightly anhydritic dolomite.

CORE #287 2858 - 2861' Cut & Recovered 3'

3' Dolomite, medium grey, dense, micro-crypto-crystalline, slight trace pyrite. Core is fractured and broken. Some fractures have dark argillaceous linings. From 2858 - 59 very irregular bedding planes suggest slump features. These were pre-fracture and contemporaneous with deposition of rock.

CORE #288 2861 - 2862' Cut & Recovered 1'

1' Dolomite, medium grey to grey-brown, dense as above.

CORE #289 2862 - 2869' Cut & Recovered 7'

7' Dolomite, grey-brown and blue-grey mottled. Brecciated in places and fractured at steep angles with calcite filled fractures and some lined with dark argillaceous material. Bedding planes irregular.

CORE #290 2869 - 2873' Cut & Recovered 4'

4' Dolomite, light grey with blue-grey mottles. Few vugs up to ¼" at 2872 - 73 lined with milky crystalline calcite (dolomitic?) Upper 6" is brecciated and several fractures filled with white calcite (dolomitic?) and some with black argillaceous scale.

CORE #291 2873 - 2875' Cut & Recovered 2'

2' Dolomite, grey-brown, microcrystalline, fractured as above. At 2973.5' bedding dips at 20° and is cut by a worm burrow.

CORE #292 2875 - 2889' Cut 14' Recovered 6'

6' Dolomite, medium grey - grey-blue and some grey-brown. Poor vuggy porosity but no permeability (except fracture porosity). Core is fractured and broken.

CORE #293 2889 - 2895' Cut & Recovered 6'

6' Dolomite, grey-brown, micro-cryptocrystalline, slightly argillaceous and very slightly silty. Several vugs filled with milky calcite srystals (dolomitic?) and platy glassy crystals of anhydrite. Poor vuggy and inter-fragmental porosity in the brecciated zones but no permeability. Some porosity may be caused by removal of anhydrite. Core is broken and fractured in several places.

CORE #294 2895 - 2903' Cut & Recovered 8'

8' Dolomite, light grey to blue-grey, micro-crypto-crystalline dense. Brecciated. One thin bed of dark brown shale ¼" thick at 2898'. Some poor inter-fragmental porosity in brecciated zone but no permeability. Core is fractured. (Fracture porosity, permeability probably present).

CORE #295 2903 - 2907' Cut 4' Recovered 2'

2' Dolomite, light grey, slightly argillaceous, slightly silty, brecciated. Core is broken up.

CORE #296 2907 - 2913' Cut 6' Recovered 5'

5' Dolomite, breccia light grey, micro-crypto-crystalline, fractured and broken. Some inter-fragmental porosity but no associated permeability.

CORE #297 2913 - 2924' Cut & Recovered 11'

3' Dolomite breccia as above. Fracture planes filled with white calcite (dolomitic?).

8' Dolomite, grey and grey-brown, micro-crypto-crystalline, brecciated in part, not as badly as above. Fractured with calcite and argillaceous scale filled breaks.

CORE #298 2924 - 2936' Cut & Recovered 12'

5' Dolomite, medium grey, crypto-microcrystalline with thin 1/8" grey-green shale partings in lower 2' where bedding is relatively even and dips about 30°. Fractures are steep-angled and lined with calcite, or argillaceous scale, which is slickenside in places. Thin (¼") green shale band at base of interval is in unconformable contact with interval below.

1' Dolomite breccia. Dolomite is brown and grey slightly argillaceous and silty and is cut by calcite filled fractures.

0.5' Dolomite, grey-green, very argillaceous, dense. Beds dip uniformly at about 30°.

5.5' Dolomite breccia. Dolomite is grey and brown, some dark brown, micro-very finely crystalline, slightly argillaceous, some is slightly silty but surface of core looks sandy. Lower 6" of interval is light grey, cryptocrystalline dolomite, very brecciated and fractured. Porosity exists between some of the fragments (possibly formed by leaching of softer dolomite? and/or anhydrite?). No permeability. Some stylolite-like breaks.

CORE #299 2936 - 2944' Cut & Recovered 8'

8' Dolomite, grey-brown as above, brecciated and later fractured. Most fractures filled with white dolomitic(?) calcite which has been washed out of some fractures causing some porosity.

CORE #300 2944 - 2956' Cut & Recovered 12'

12' Dolomite, dark brown and grey, brecciated. Upper 5' is extremely fractured and broken with white calcite lined fractures. Lower 7' shows early brecciation but is not as severely fractured. Some large vugs up to 1" diameter lined with calcite crystals in lower 7'. Minor soft white anhydrite present in some fracture fillings. No permeability.

CORE #301 2956 - 2970' Cut 14' Recovered 12'

12' Dolomite, brown and blue-grey, mostly brecciated and fractured. Darker grey argillaceous dolomite from 2957 - 61'. Fractures lined with calcite and white powdery anhydrite. Trace vuggy porosity 2966 - 67'. No permeability.

CORE #302 2970 - 2981' Cut & Recovered 11'

11' Dolomite breccia, fragments of blue-grey, cryptocrystalline dolomite in a grey argillaceous dolomite matrix. Few calcite lined vugs 2973 - 297[illegible] Some dark brown to black argillaceous dolomite and streaks of shale 2980 - 81'.

CORE #303 2981 - 2993' Cut & Recovered 12'

12' Dolomite, grey-brown to grey, micro to crypto-crystalline, fractured with calcite lined fractures Brecciated in places. Trace of vuggy porosity but no permeability (except fracture porosity and permeability).

CORE #304 2993 - 2996' Cut 3' Recovered 0'.

CORE #305 2996 - 3011' Cut 15' Recovered 0'

CORE #306 3011 - 3023' Cut 12' Recovered 11'

5' Dolomite, uniform light grey, cryptocrystalline, slightly argillaceous, dense, fractured.

6' Dolomite breccia. Dolomite is dark brown, cryptocrystalline slightly argillaceous with several large (2" diameter) vugs lined with sparry calcite. Several veins and fracture fillings lined with calcite, minor anhydrite and fine buff dolomite crystals. Vuggy porosity but no permeability. Some breaks have dark argillaceous lining.

CORE #307 3023 - 3030' Cut & Recovered 7'

7' Dolomite, grey to grey-brown, fractured and brecciated. Fractures lined with calcite and some crystalline dolomite. Occasional vugs lined with blue-grey-milky quartz. Poor vuggy porosity. No permeability.

CORE #308 3030 - 3036' Cut & Recovered 6'

6' Dolomite, brown and grey, upper 1' is brown and brecciated with some vuggy porosity. Middle 3' are grey, fractured, not brecciated, have a few thin argillaceous interbeds dipping about 30°. Lower 2' are light grey to brown mottled, are brecciated and have a few calcite lined vugs. One quartz fragment about 2" diameter with some surrounding calcite occurs at 3034.5'.

CORE #309 3036 - 3046' Cut & Recovered 10'

10' Dolomite, brown, grey-brown, brecciated with few vugs of white calcite and calcite lined fractures.

CORE #310 3046 - 3058' Cut 12' Recovered 11'

11' Dolomite, brown, grey-brown, brecciated, fractured and broken to rubble. Few vugs of white quartz.

CORE #311 3058 - 3059' Cut & Recovered 1'

1' Dolomite, dark brown, micro-cryptocrystalline, irregular bedding planes dipping about 30°. Fractured with steeply dipping fracture planes, some are calcite lined.

NOTE: Lost swivel bearings in hole. Milled 3059 - 3060'.

CORE #312 3060 - 3062' Cut & Recovered 2'

2' Dolomite, medium-dark grey, crypto-micro-crystalline, argillaceous, few small vugs filled with calcite and rare silica. Acid leaching of vug linings leaves a skeleton of crystalline silica - disolving the calcite.

CORE #313 3062 - 3071' Cut 9' Recovered 4'

2' Dolomite, grey-grey-brown, with small vugs of calcite and quartz. Fractured and brecciated.

2' Dolomite breccia, angular fragments larger ones are platy, of dolomite in a cream-buff fairly soft matrix of calcareous clay which is slightly silty with glassy and dark quartz grains. Missing core probably came from this interval.

CORE #314 3071 - 3081' Cut & Recovered 10'

5' Dolomite, dark grey , dense, argillaceous with tendency to break along bedding planes which dip 20 - 30°. Few fractures filled with white calcite and minor quartz.

3' Dolomite breccia dark brown, brittle and broken.

2' Dolomite, grey-brown, dense, few calcite filled vugs and fractures but more consolidated than 3' above.

CORE #315 3081 - 3093' Cut 12' Recovered 10'

10' Dolomite, dark-medium grey, crypto-micro-crystalline, argillaceous, fractured. Occasional vug and fracture filled with white calcite and minor quartz. Lower 2' is brecciated with fragments of brown dolomite in a matrix of relatively soft buff, very argillaceous dolomite. Trace of pyrite. Trace of poor vuggy porosity.

CORE #316 3093 - 3109' Cut 16' Recovered 0'

CORE #317 3109 - 3115' Cut 6' Recovered 0'

CORE #318 3115 - 3121' Cut 6' Recovered 4'

4' Dolomite, brown and grey, micro-cryptocrystalline, broken and fractured. Some vuggy porosity in broken section may have been caused by leaching of salt? and/or anhydrite? as a few vugs have square outlines. Grey dolomite is slightly pyritic. Some vugs lined with crystalline dolomite and some with soft white anhydrite.

CORE #319 3121 - 3136' Cut & Recovered 15'

7' Dolomite, medium grey, porcellaneous in part, bedding planes irregular but dip about 30°. Several high-angled fractures. Some vugs filled with calcite and minor quartz.

6' Dolomite breccia. Grey and light brown dolomite broken and reconsolidated with darker dolomite. Fractures and vugs filled with calcite and quartz and minor dolomite crystals. Some large 2" diameter vugs filled with sparry calcite. Patterns of porosity on the outside of core suggest leaching of salt? anhydrite? calcite?. Some very small vugs have square corners suggesting salt casts.

2' Dolomite dark grey, dense, very slightly pyritic. Fractured with generally high angled fractures. One break dipping at 10° is lined with slickensided dark shale.

CORE #320 3136 - 3156' Cut & Recovered 20'

2' Dolomite, dense, microcrystalline, blue-grey, porcellaneous texture in part. Bedding dips about 30° and core has tendency to break along these planes. Few high-angled fractures.

5' Dolomite breccia of grey-brown and grey-blue dolomite fragments broken by 3 - 4 continuous thin shale beds, dark brown very hard, brittle, dolomitic, some slickensided dipping about 30°. Few irregular bands of micro vugs indicating some leaching has occurred of fracture filling material.

2' Thinly bedded dolomite, grey with numerous thin dark argillaceous, shaley interbeds dipping 20 - 30°. Lower 1' shows fault trace with near-vertical displacement.

5' Dolomite breccia, dark grey, grey-blue and dark brown dolomite. Few calcite lined vugs and fracture planes. Poor vuggy porosity but no permeability.

3' Dolomite, grey, dense, not brecciated but breaks along bedding planes which dip about 30°. Few vugs of white quartz. Few thin calcite filled fractures. Cut by ½" soft broken dark brown shale bands at 3152' which looks bituminous but gives no cut.

3' Dolomite breccia, dark grey and brown, dolomite with many fractures and vugs filled with quartz and calcite and a few with buff dolomite crystals. Lower 1' has much good porosity which appears to be leach porosity in a mixture of dolomite fragments cut by calcite filled vugs and fractures.

Whole core is contaminated by dark brown pipe dressing.

CORE #321 3156 - 3168' Cut & Recovered 12'

5' Dolomite, dark brown-grey, very argillaceous in part, brecciated in part but most is not broken too badly and shows bedding planes dipping 20 - 30°. Few thin dark shaley slickensided partings and a few quartz filled vugs. No porosity (except possible fracture porosity).

4' Dolomite breccia, fragments of brown and grey dolomite in a lighter grey-buff dolomite matrix, with a few calcite filled vugs and a few minor quartz-filled vugs. Traces of soft white anhydrite on interior of core. Surface shows elongated vugs resembling leach porosity where anhydrite(?) was removed. Few dark brown shale partings. Most of this interval is broken to rubble.

3' Dolomite, as in 5' interval above, ½" band of yellow calcite at 3165'.

CORE #322 3168 - 3181' Cut & Recovered 13'

3' Dolomite, dark brown-grey, argillaceous, porcellaneous in part with a few thin dark argillaceous partings. Mottled blue-grey in part. Dip of bedding 20 - 30°.

10' Dolomite breccia, badly broken fragments of brown and grey dolomite in a matrix of buff or dark grey argillaceous dolomite. Vugs and fracture fillings of calcite and minor quartz. Slight trace of soft white anhydrite. Empty vugs on surface of core may indicate leaching of anhydrite?.

CORE #323 3181 - 3200' Cut & Recovered 19'

3' Dolomite, medium grey, micro-cryptocrystalline, very slightly argillaceous, irregular bedding planes but generally core breaks with 20 - 30° dip. Few steep near vertical fractures, calcite filled. Few thin dark argillaceous breaks. Core is not badly broken.

3' Dolomite breccia brown, with grey mottles micro-cryptocrystalline, argillaceous, thin calcite filled fractures. Core is badly broken.

10' Dolomite, medium grey as 3181 - 3184' interval above. Not badly broken.

3' Dolomite breccia, medium blue-grey to light grey, only very slightly argillaceous, few calcite filled fractures. Trace of fine vuggy (leach?) porosity.

NOTE: Most breaks occur along thin argillaceous beds exposing a dark shaly surface. This gives core a deceptive very argillaceous appearance.

CORE #324 3200 - 3213' Cut & Recovered 13'

5' Dolomite, breccia, medium grey, slightly argillaceous, micro-cryptocrystalline, very slightly silty, some porcellaneous texture. Slight trace of pyrite. Numerous calcite filled fractures and vugs. Most breaks occur along fractures lines with argillaceous material. Core broken to rubble.

8' Dolomite, medium - dark grey, cryptocrystalline, argillaceous, not brecciated. Core has tendency to break along fairly regular bedding planes which are marked by thin dark argillaceous seams and dip 20 - 30°. Several very thin shale partings of grey-green dolomitic shale, thinly bedded, hard and brittle with some slickensiding. Some near vertical faults, calcite-lined show in the bedding.

CORE #325 3213 - 3233' Cut & Recovered 20'

20' Dolomite, medium grey to grey-brown, micro-crypto-crystalline, slightly argillaceous, interbedded with brecciated dolomite with a very brittle dark buff argillaceous matrix with a tendency to shatter. About 2' of core is brecciated. Fractures are present throughout the core but through non-brecciated zones most are well sealed with calcite or crystalline dolomite and the core stays together better, breaking across bedding planes rather than along fractures. Bedding dips 20 - 30°. Few small vugs of pale yellow calcite and traces of soft white anhydrite.

CORE #326 3233 - 3253' Cut & Recovered 20'

20' Dolomite, same lithology as core #325. Brecciated zones 3234' - 42', 3347 - 48', 3252 - 53' where dolomite is dark buff, not argillaceous to very slightly argillaceous, slightly silty and breaks easily. Remainder is argillaceous dolomite with irregular bedding planes and a few thin shale breaks. Zone 3245 - 46' is dolomitic and grades to shale, dark grey-green with calcite inclusions. No porosity (except possible fracture porosity).

CORE #327 3253 - 3273' Cut & Recovered 20'

20' Dolomite, grey and grey-brown, crypto-micro-crystalline some porcellaneous texture, argillaceous (under 10%) and the light grey-brown dolomite is slightly silty (10%). Most of the core is brecciated. Fractures are numerous, high-angled and lined with calcite, crystalline dolomite or thin argillaceous scale. Several thin (1/16") shale beds and the core breaks along these rather than along steep fractures. Fine vugg porosity (no permeability) in brecciated zones.

Large calcite filled vug at 3261'.

CORE #328 3273 - 3293' Cut & Recovered 20'

16' Dolomite, medium grey, blue-grey and brown, crypto to microcrystalline with some mottled porcellaneous texture. Most of interval is either brecciated or has irregular bedding planes. Brown dolomite is slightly calcareous and associated with brecciated zones. Calcite is abundant as a fill in brecciated zones. Few large calcite-lined vugs occur in the irregularly bedded zones giving a trace of vuggy porosity. Several steep angled fractures lined with calcite, and several thin shale breaks cross the core. Shale is dark grey-green, hard dolomitic and some is black bituminous-appearing but gives no cut. Core breaks along the shale beds.

4' Dolomite, grey to grey-green, thin, even beds with dip of 10 - 15° . Dolomite is very argillaceous (20 - 30%). Core breaks along the argillaceous bedding planes (in poker-chip fashion) Fractures, calcite-lined some near vertical, some near horizontal run through the interval.

CORE #329 3293 - 3313' Cut & Recovered 20'

1' Dolomite, grey, very argillaceous, evenly bedded as interval 3289 - 93'.

19' Dolomite, medium grey-brown, mostly brecciated as 16' interval of core #328. Brecciated zones are so fractured and fragmented that small chips flake off the surface giving a vuggy surface porosity.

CORE #330 3313 - 3333' Cut & Recovered 20'

10' Dolomite, breccia, grey-brown, micro-crypto-crystalline badly fractured, most of core is rubble. Few calcite-filled vugs and fracture fillings and a few dark black irregular shaley partings. Poor-fair vuggy porosity.

2' Dolomite, grey-blue-grey, cryptocrystalline, very argillaceous (20 - 30%) thin bedded dipping about 10° or less. Bedding shows a few minor slip faults and thin breccia zones.

2' Dolomite breccia as in 10' interval above. Poor vuggy porosity.

4' Dolomite, grey-blue-grey, argillaceous. Bedding to very contorted in places but core is still well consolidated. Few calcite beds and vugs. No porosity.

2' Dolomite breccia as in 10' interval above (3313 - 3323).

CORE #331 3333 - 3353' Cut & Recovered 20'

12' Shale, grey, thin bedded, very dolomitic grading to dolomite in places. Bedding is both regular-dipping 10 - 15° and in places irregular with contorted and faulted beds. Few near vertical fractures are sealed with calcite.

8' Dolomite, crypto-microcrystalline, grey-brown, brecciated, cut by many calcite-filled fractures. Few thin beds (maximum of 6" thick) of shale, grey dolomitic as above. Several unconformable surfaces throughout the core at dolomite-shale contacts. No porosity (except possible fracture porosity).

CORE #332 3353 - 3373' Cut & Recovered 20'

20' Dolomite, grey, crypto-microcrystalline, very argillaceous, grading to a dolomitic shale in some places. Bedding generally dips 10 - 15° but is extremely contorted in places. About 3' dolomite 3353 - 56' is brecciated as 8' interval above. Core is cut by several steep calcite-lined fractures. Several unconformable contacts in this interval. Core is dense and tight.

CORE #333 3373 - 3392' Cut 19' Recovered 18'

18' Dolomite, grey to light grey-brown, crypto-microcrystalline mostly brecciated with few more evenly bedded argillaceous sections. Brecciated sections consist of a mosaic pattern of dolomite fragments. Few shale interbeds (less than 1") and numerous paper thin shale partings. Few calcite-lined vugs and several steep dipping calcite-lined fractures, one prominent 1" thick steeply dipping calcite band at 3384'.

CORE #334 3392 - 3413' Cut 21' Recovered 19'

19' Dolomite, grey and grey-brown, mostly crypto-crystalline some microcrystalline, argillaceous (10 - 20%) with very thin dark grey argillaceous bands. Bedding is generally even with dips up to 45°. Some zones of uneven bedding and some minor brecciated zones. One prominent calcite bed dipping about 60°. (steeper than surrounding dolomite which dips 20°) 1" thick coarsely crystalline and is cut by a thin band of pyrite. Core is cut by steep-angled fractures, most with very thin calcite or crystalline dolomite linings. No porosity (except fracture porosity).

CORE #335 3413 - 3424' Cut 11' Recovered 6'

6' Dolomite, grey and grey-brown micro-crypto-crystalline, argillaceous, interbedded with thin, less than 6" bands of shale, dark grey-green, dolomitic. Estimate 30% of interval is shale. Bedding dips 10 - 15°. Several steep fractures cut the core, most lined with calcite, some with a dark argillaceous scale.

Lost piece of coring bit in hole, milled from 3424 - 3425'.

CORE #336 3425 - 3437' Cut & Recovered 12'

12' Dolomite, light grey and grey-brown, micro-crypto-crystalline, slightly argillaceous. Evenly bedded, dense, argillaceous from 3425 - 3430' then becoming less argillaceous (brecciated), and unevenly bedded. Several steep angled calcite-filled fractures cut the core which is broken along many fractures. A few shale beds, less than 1" thick making up about 5 - 10% of the core are dark grey-green, thinly bedded and dolomitic. No porosity (except fracture).

CORE #337 3437 - 3452' Cut 15' Recovered 13'

13' Dolomite, grey to grey-brown, micro-crypto-crystalline, argillaceous, interbedded with thin beds of shale, dark grey-green, slightly dolomitic compact thin bedded. Thickest bed is 4". About 10% of core is shale. One 1" shale band is crumbled and soft possibly bentonitic. Several thin argillaceous bands in the core. Dolomite is mostly evenly bedded, dipping 20 - 25° but some

zones are irregularly bedded and/or brecciated. Core is cut by calcite-filled fractures up to ¼" thick and running in several directions but most are steep angled.

CORE #338 3452 - 3472' Cut & Recovered 20'

20' Dolomite, (85%) with thin interbeds of shale (10%) and many calcite-filled fractures (5%). Dolomite is grey to grey-brown, argillaceous and slightly silty, evenly bedded 3452 - 58' and brecciated to 3472'. Dolomite is interbedded with shale and in brecciated zones shale often forms the matrix. Thickest shale bed is 4" and contains about 2" of soft crumbling "rotten" shale. Most shale is compact and hard. Fractures are generally high-angled and calcite-filled (¼-½" thick). Some fractures follow shale beds and are slickensided. Brecciated zones often contain so much calcite from small micro-fractures that the dolomite would be described as calcareous.

CORE #339 3472 - 3492' Cut & Recovered 20'

20' Dolomite, medium grey and grey-brown, with few shale interbeds, grey-brown dolomite is non to slightly argillaceous. Medium grey dolomite is argillaceous. Dolomite is mostly brecciated or with very irregular bedding. Some has more regular bedding dipping 20 - 30° with some up to 45°. Numerous steep-sided calcite filled fractures and core breaks along both fractures and bedding planes. Lithology same as Core #337.

CORE #340 3492 - 3513' Cut & Recovered 21'

21' Dolomite, grey to grey-brown, crypto-micro-crystalline, slightly argillaceous, slightly pyritic with few shale interbeds dark grey-green dipping 20 - 25°. Dolomite is mostly brecciated Core breaks along steep calcite-filled fractures and at shale breaks. Some of calcite fracture filling is slickensided. No porosity (except fracture).

CORE #341 3513 - 3534' Cut & Recovered 21'

21' Dolomite. Same as Core #340.

CORE #342 3534 - 3555' Cut & Recovered 21'

21' Dolomite, light grey and grey-brown, slightly argillaceous, very slightly silty, brecciated and in part evenly bedded with 20 - 30° dips. Numerous thin shale beds (15%) occur mainly in evenly bedded section, are paper-thin and provide breaking planes for the core. Large calcite-filled fracture at 3549 - 50'. Numerous other steep calcite-filled fractures some showing small fault movement across them with vertical displacements of ½ - ¼".

CORE #343 3555 - 3576' Cut & Recovered 21'

21' Dolomite, grey and grey-brown, crypto-micro-crystalline interbedded with 20 - 30% shale, dark grey-green, hard, thin-bedded, slightly dolomitic. Only minor brecciation occurs below 3557'. Most of core relatively even bedded with beds of shale up to 5" thick (most are much thinner ¼") dipping 20 - 30°. Entire core has been fractured but these have been well-healed with calcite and the core has not broken along fracture planes. At 3555' a thin ¼" irregular band of black - very dark brown material giving a brown powder when scratched, partially slickensided, very black on slickensided surface, flaky in part, very slightly pyritic and resembling bitumen occurs. The material gives no cut in chlorothene. It would not burn with a match but under a welder torch it melted, bubbled and burned to a crisp cindery scale. Probably bitumen.

CORE #344 3576 - 3597' Cut & Recovered 21'

21' Dolomite, grey and grey-brown as above, interbedded with shale, dark grey-green, dolomitic as above. Shale constitutes 20 - 30% of core and occurs as paper thin beds up to a 3' thick bed 3589 - 92'. Dolomite is argillaceous (10 - 20%) and slightly silty (5 - 10%). About 1/3 of the core is brecciated and/or with disturbed bedding and the remainder is fairly evenly bedded with dips 20 - 30° Several thick ¼" fractures filled with sparry calcite crystals cross the core. Core breaks along these fractures and along bedding planes.

CORE #345 3597 - 3617' Cut & Recovered 20'

20' Dolomite, some brecciated but most is evenly bedded with shale interbeds as above. Estimated core is 20 - 30% shale. Two 1' thick shale beds occur in interval 3606 - 3610'. Core breaks both along bedding planes and along calcite-filled fractures. At 3601' is a thin 1/8" band of dark brown-black bitumen as at 3555'.

CORE #346 3617 - 3637' Cut & Recovered 20'

20' Dolomite, grey and grey-brown with numerous thin shale interbeds paper thin to ½". Estimate 10% of core is shale. Dolomite is mostly regularly bedded but in a few places it is irregularly bedded. Only few traces of breccia occur. Entire core shows calcite filled fractures but none are broken. Core breaks along bedding planes with 20 - 30° dip. Some show slickensiding. At 3629 - 30 is a thin band of black bituminous material (1/16") and a trace of vuggy porosity not associated with the bitumen.

CORE #347 3637 - 3657' Cut & Recovered 20'

20' Dolomite, grey to grey-brown, argillaceous, crypto-microcrystalline, with numerous interbeds of shale, dark grey-green, dolomitic. Estimate 20% of core is shale. Dolomite is brecciated over about ¼ of the interval. Many calcite-filled fractures running at several angles cut the core. Some fractures are shale filled. Lower 4' of core 3653 - 57' is badly broken up and consists of medium dark brown dolomite with thin 1/8 - 1/16" contorted shale beds. Core breaks along fractures and along irregular bedding planes.

CORE #348 3657 - 3660' Cut 3' Recovered 2'

2' Dolomite, dark grey-brown as in lower 4' of Core #347, and is broken to rubble.

CORE #349 3660 - 3662' Cut & Recovered 2'

2' Dolomite, dark grey to light grey-brown, argillaceous with thin shale interbeds as above. Core broken to rubble.

CORE #350 3662 - 3673' Cut & Recovered 11'

11' Dolomite, dark grey and light grey-brown, argillaceous with interbeds of shale. Dolomite is brecciated from 3664 - 3667' and in lower 6". Core cut by calcite-filled fractures and vugs. At 3663' and 3670' two thin 1/8" bands of dark brown bituminous shale. Upper 1' and lower 6" broken to rubble.

NOTE: Rubble in Core #348, 349 and 350 may be caused by a dull bit vibrating rather than by rock lithology. Part of diamond core bit stayed in hole. Made run with mill bit.

CORE #351 3673 - 3675' Cut & Recovered 2'

2' Dolomite, grey-brown, argillaceous, brecciated in part and interbedded with shale , grey-green dolomitic. About 20% of core is shale.

Made second run with mil bit - milled from 3675 - 3678'.

CORE #352 3678 - 3692' Cut & Recovered 14'

14' Dolomite, grey to grey-brown, crypto-micro-crystalline, argillaceous interbedded with shale grey-green, thin bedded, dolomitic. Shale beds are mostly less than ¼" thick.

Summary: 4' Dolomite with few thin shale beds irregular bedding and some calcite lined fractures.

3' Dolomite - shale breccia about 25% shale.

4' Dolomite, argillaceous with minor interbeds of shale. Dip is about 45°. Few calcite filled fractures and vugs. Brecciated in lower 6" with some calcite infilling.

3' Dolomite, brown, argillaceous grading to shale in the lower 2'. Interval is 60% shale.

CORE #353 3692 - 3699' Cut 7' Recovered 3'

Core slipped out of Core Barrel and was recovered from drill pipe.

3' Dolomite, dark - medium grey, argillaceous cryptocrystalline, interbedded with shale, dark grey-green, thin bedded, dolomitic. Slight trace pyrite. Shale beds usually thin but one is 10" thick. About 40% of core is shale. Bedding contorted and irregular with minor brecciation. Shale section (10") has steep fractures not calcite filled. The interbedded section has several calcite filled fractures. No porosity.

CORE #354 3699 - 3706' Cut 7' Recovered 7½'

Dolomite, light-medium grey, cryptocrystalline dense which leaves a white argillaceous residue (slightly anhydritic?) and extremely fine silt interbedded with shale, grey-green slightly dolomitic. Only one steep fracture in the core - all breaks are along these shale beds - dipping 15 - 20°.

2' Dolomite interbedded and brecciated with about 30% shale.

1.5' Dolomite with few thin shale beds (1/16") and 3 - 4 interbeds of bitumen dark black-brown as at 3555'.

4' Dolomite and shale interbedded and brecciated in places (30 - 40%) shale.

CORE #355 3706 - 3715' Cut & Recovered 9'

9' Dolomite and shale as above thinly interbedded with some brecciation. Most breaks along shale interbeds. One shale-filled fracture at 3711'. Few calcite veins with shallow dip at 3713'. Few calcite vugs from 3713 - 3715'. Core is about 10% shale.

CORE #356 3715 - 3721' Cut & Recovered 6'

6' Dolomite and shale grey-green interbedded with some minor brecciation. Thickest shale bed is about 5" most are less than 1/3". Shale is bentonitic in thin streaks that have washed undergauge. Most breaks are along shale planes - some slickensided. Few steep angled, Calcite filled fractures but these appear well sealed and core does not break along them. Few irregular streaks of calcite. Core is tight. About 20% shale.

CORE #357 3721 - 3741' Cut & Recovered 20'

20' Dolomitè, medium - light grey, very argillaceous slightly silty, interbedded with shale, dark grey, slightly dolomitic and cut in places by steep calcite filled fractures.
High shale content in following beds: 3721 - 3725', 2727 - 2733', 3714 - 3715'.
Calcite-filled fractures are abundant throughout. In interbedded sections they thin and die out when crossing shale beds then expand again in dolomite beds.
Lower 3' 3738 - 41' is dolomite broken along steep calcite-lined fractures to a rubble.

CORE #358 3741 - 3761' Cut & Recovered 20'

20' Shale dark green, slightly dolomitic, trace of pyrite with interbeds of dolomite, argillaceous, silty. Core is 40 - 50% dolomite. Core is mostly evenly bedded but some very irregular bedding, some brecciated dolomite in shale matrix. Dolomite leaves white residue (anhydrite?) and some very fine silt.
Calcite filled fractures are present in entire interval but predominent in lower 3 feet.
From 3758. Dolomite interbeds are pale brown with pink tint. Some leach porosity on surface of core in lower 6".

CORE #359 3761 - 3772' Cut & Recovered 11'

6' Shale, green, waxy, thin bedded, crumbly, slightly dolomitic with thin irregular interbeds and inclusions of dolomite, pale pink-brown, and grey-green, argillaceous, silty and possibly slightly anhydritic.

4' Shale, red, slightly dolomitic, very thinly bedded with interbeds of dolomite, pink-brown, very argillaceous, silty with extremely fine glassy quartz grains.

1' Shale green as in upper 6' with interbeds of dolomite, crypto-microcrystalline, grey-green, argillaceous.

Whole core is bedded - not brecciated. Dips 15 - 25°. Core breaks along bedding planes some are slickensided. Only one prominent steep fracture.

First pink-brown silty dolomite 3758'
First red shale 3767'.

CORE #360 3772 - 3775' Cut & Recovered 3'

3' Interbeds of shale, dark maroon-chocolate brown, dense, dolomitic, and siltstone light grey-green, very dolomitic, argillaceous, tight and shale green, slightly dolomitic. Bedding is irregular in places but generally dips 10 - 20°. Brecciated in places with fragments of dark red dolomitic shale in red-brown shale.

CORE #361 3775 - 3781' Cut & Recovered 6'

6' Interbedded shale, red and green, dolomitic and siltstone light grey-green, dolomitic. Bedding is thin and dips 10 - 20°. Core tends to break along even bedding into "poker-chips". Some brecciation of dark red shale fragments in green shale and some contorted bedding in lower 2' of core.

Add red marker dye to hole 10:30 p.m. July 11.

CORE #362 3781 - 3800' Cut & Recovered 19'

core is coloured red by marker dye.

19' Shale with thin interbeds of siltstone and anhydrite. Shale is (a) red dolomitic and (b) dark green dolomitic and (c) waxy geen, very slightly dolomitic. Red and dark green shale predominate. Siltstone is light grey-green dolomitic, argillaceous and tight. Predominent siltstone bed 3798 - 3799'. Anhydrite occurs in thin beds less than 1/8" thick and one steep fracture is lined with pale buff anhydrite at 3792 - 93'. Bedding is regular to contorted with some small faults and folds present. In interval 3788 - 3800' anhydrite occurs in thin beds and numerous small fractures cutting shale and forming a breccia pattern as it isolates fragments of shale. Estimate core is 60% shale. 30 - 35% siltstone, 5 - 10% anhydrite.

CORE #363 3800 - 3820' Cut & Recovered 20'

20' Shale with interbeds of siltstone and anhydrite as above. Shale is dark red dolomitic and dark green, slightly dolomitic. Siltstone is light gre green to dark grey-green, very dolomitic and argillaceous. Anhydrite occurs in thin beds and fracture filling. Bedding is thin 1/16 - 1/8" and regular over most of the core with few spots of irregular bedding and brecciated red and green shale fragments in anhydrite matrix. Regular bedding dips 15 - 25°. Few high angled anhydrite filled fractures in lower 10'. Some thin fractures have been displaced by later faulting - generally along bedding planes. Core breaks along bedding - not along fractures. Major colours: 3800 - 3806' Red shale, 3806 - 09' green shale and siltstone, 3809 - 15' red shale, 3815 - 17' green shale, 3817 - 20' red shale.

Little or no effect from red dye on this core.

CORE #364 3820 - 3840' Cut & Recovered 20'

20' Shale, dark red, waxy in part, slightly dolomitic, in thin interbeds of grey-green dolomitic siltstone, green shale and anhydrite. Core is generally irregularly bedded with beds under ½" thick and dips 15 - 30°. Anhydrite occurs in beds and in crooked fractures cutting across bedding planes. One large straight fracture at 3828' filled with green shale and anhydrite.

CORE #365 3840 - 3860' Cut & Recovered 20'

20' Interbeds of shale red and green and siltstone light grey-green to dark grey with anhydrite occurring in interbeds and fracture fillings. Bedding is mostly regular but some is distorted and faulted with minor brecciation. Anhydrite occurs in crooked fracture fills cutting across bedding indiscriminantly. Some larger voids filled with anhydrite. Estimate shale 50%, siltstone 40 - 45%, anhydrite 5 - 10%.

CORE #366 3860 - 3880' Cut & Recovered 20'

20' Interbeds of shale red and green, siltstone, dolomitic, argillaceous and minor anhydrite. Bedding dips usually 15 - 25°. Interval 3869 - 70' is green shale badly broken by vertical fractures with thin white-pale orange anhydrite filling. Slickensiding is common. Over remainder of core thin crooked anhydrite-filled fractures run indiscriminantly at all angles, are about 1/16" wide and white to pale orange colour. Shale 60%, siltstone 30 - 35%, anhydrite 5 - 10%.

CORE #367 3880 - 3896' Cut & Recovered 16'

16' Shale, red and green with minor interbedded siltstone, cut and brecciated in places by anhydrite, white to pale orange. Crystalline to earthy. Lower 13' 3883 - 96' is extremely contorted and brecciated by anhydrite influx which has fragmented the red and green shale and siltstone to a matrix of anhydrite. One thin white anhydrite filled fracture is later than the brecciation and cuts near vertically across

the bedding. Bedding is generally steep 30 - 45°. Estimate shale 45 - 50%, anhydrite 30%, siltstone 20 - 25%,

CORE #368 3896 - 3915' Cut 19' Recovered 12'

12' Shale, red-green and dark grey to black with siltstone dolomitic, argillaceous, red, grey-brown and pink-brown. The entire sequence has been cut by white-pale orange anhydrite seams. Anhydrite follows bedding in places, cuts across bedding planes and forms large irregular masses. Some of the shale has been brecciated by the influx of anhydrite. Estimate shale 60%, anhydrite 35% siltstone 5 - 10%.

CORE #369 3915 - 3921' Cut 6' Recovered 6' & 7' of core #368

13' Shale, green to very dark green with minor siltstone pale red - cut and brecciated by anhydrite white to pale orange as in Core #368.

CORE #370 3921 - 3930' Cut 9' Recovered 7'

NOTE: Core #370 consists of recoveries from several runs each cutting a small interval. Core has a tendency to jam and break into a rubble. Last 2' approx. were cored with a mud mixture to try to prevent jamming.

5' Shale, green, dolomitic, soft, slightly bentonitic, crumpled in places, more resistant in others. Some minor bands of grey-green dolomitic siltstone are present. Anhydrite occurs as thin beds, white - pale orange (thickest bed is 1") and fracture fillings, Cutting indiscriminantly across bedding planes and brecciating the core in places. Traces of red shale. Core is full gauge where siltstone beds occur and over the 1" anhydrite bed. Bedding is contorted and one near vertical fault is visible with displacement about 2". Estimate shale 75%, anhydrite 15%, siltstone 10%.

2' Shale, dark maroon, dolomitic with minor green shale. The whole interval appears to have been brecciated by thin anhydrite-filled fractures and consists of individual 'chunks' of shale with very thin-paper thin anhydrite layers between. Some shale is more compact, some is soft and bentonitic.

NOTE: At 3930 attempts were made to stop lost circulation. Two cement plugs and several AM-9 chemical grout plugs were run. Lost circulation still continued, with about 14 gallons lost of every 15 gallons pumped into the hole.

DRILLED 3930 - 3948'.

CORE #371 3948 - 3951' Cut & Recovered 3'

3' Shale, medium green, dolomitic, slightly anhydritic, thinly interbedded with siltstone, light grey-green, dolomitic, argillaceous. Interbedding is irregular and wavy dipping 40 - 50°. Bedding is contorted in places with some brecciation and minor faulting. Core has been shot through and brecciated in places by veins of late anhydrite up to ¼" thick, white to pale orange. Anhydrite follows bedding in places and in other places cuts across bedding in irregular patterns.

CORE #372 3951 - 3969' Cut 18' Recovered 15'

NOTE: This core consists of recoveries from 3 short runs.

5' Shale, dark red and green, dolomitic, bentonitic, with thin veins of anhydrite, white to pale orange. Core is all broken to a rubble probably because of bentonite with water caused shale to swell.

10' Shale, mainly green as in Core #371 with siltstone, grey-green, brecciated by anhydrite, pale orange to light grey (approx. 20% anhydrite). Core is mostly full gauge but broken up where more bentonitic shale occurs.

CORE #373 3969 - 3982' Cut & Recovered 13'

13' Shale, green with some dark reddish brown shale and minor red shale with a few interbeds of siltstone, grey-green, dolomitic. Shale is dolomitic, thinly and irregularly bedded generally but dark red brown shale is dense resembling mudstone. Shale is cut by crooked irregular seams, vugs and irregular beds of anhydrite up to ¼" thick, pale orange to white. (less than 10% anhydrite). Few thin beds of more bentonitic shale marked by crumbled disintagrating core.

CORE #374 3982 - 3990' Cut & Recovered 8'

3' Shale, green and reddish brown, dolomitic, mottled in places. But by thin veins of anhydrite, pale orange - white, generally at steep angles (60°), core is compact and not badly broken.

5' Shale, green and brownish red, bentonitic and broken to a rubble. Anhydrite veins present as above. Core very hard to remove from barrel.

CORE #375 3990 - 3998' Cut & Recovered 8'

8' Shale, green with interbeds and mottles of reddish brown shale, dolomitic, bentonitic. Few irregular beds of siltstone, light grey-green, argillaceous, dolomitic. Shale bedding is mostly irregular but in places is regular - dipping about 30°. Core is cut by steep angled anhydrite filled fractures, a few vugs and thin crooked veins of anhydrite (5 - 10% anhydrite, 5 - 10% siltstone).

CORE #376 3998 - 4008' Cut & Recovered 10'

10' Shale, green with interbeds and mottles of reddish shale as above. Anhydrite occurs as above. Shale mostly broken to rubble and was difficult to recover from the barrel.

CORE #377 4008 - 4019' Cut & Recovered 11'

11' Shale green and red as above with minor irregular siltstone interbeds and steep angled anhydrite fractures (up to ½") as above. Shale bedding generally irregular but one section dips only 5 - 10° to the core.

CORE #378 4019 - 4034' Cut & Recovered 15'

1.5' Shale, dark red, dolomitic with occasional thin crooked seams of anhydrite white to pale orange.

6.5' Breccia: angular fragments of pale grey-green silty, argillaceous dolomite in a matrix of shale grey-green - dark grey, dolomitic. Few inclusions of anhydrite white, pink to pale orange. Anhydrite is of 2 ages some older which was present before brecciation, some post-brecciation. Estimate 60% dolomite, 30% shale, 10% anhydrite. In the lower 4' shale is mostly dark grey, more abundant and brecciated fragments are smaller. Estimate shale 50%, anhydrite 30% and dolomite 20% in lower 4'.

2' Mudstone, dark grey to black, dolomitic with thin veins and vugs of anhydrite white to pale orange.

5' Anhydrite dark brown, resinous in places, massive, with thin irregular broken beds of shale, dark grey. Lower 6" is breccia of anhydrite fragments - some dolomitic in shale matrix. Core breaks mainly along occasional thin continuous bands of dark grey shale (1/8 - 1/16").

CORE #379 4034 - 4049' Cut & Recovered 15'

7' Breccia: fragments of light grey-green, silty dolomitic anhydrite and green shale in a matrix of dark grey-green dolomitic shale. Traces of angular red shale fragments.

8' Anhydrite dark brown, vesinous with thin irregular beds of shale, dark grey-green to black and light brown soft shale. In few places anhydrite is brecciated by light brown shale and is broken to a rubble.

CORE #380 4049 - 4068' Cut & Recovered 19'

8' Breccia: fragments and broken beds of anhydrite, dark brown, microcrystalline, slightly dolomitic and silty in a matrix of shale, light to dark grey, bentonitic and dolomitic. Irregular late fractures and seams filled with anhydrite white, chalky.

7' Shale, dark grey, dolomitic, tending to a mudstone with occasional fragments of dolomitic anhydrite, light grey and a few crooked minor

fractures filled with white anhydrite.

4' Breccia: as in 8' interval above.

CORE #381 4068 - 4088' Cut & Recovered 20'

20' Breccia: Fragments and broken beds of dolomitic anhydrite in a matrix of dark grey to grey brown, dolomitic shale. Fragments vary in size from microscopic to 5 - 6" across. Some extremely contorted patterns have been formed. Core breaks along thin shale partings which appear contemporaneous with brecciation. Not some later shale-filled fracturing. These dip at various angles but mostly 15 - 30°. Most partings have a hard black shiny argillaceous lining. In lower 2' partings are beds of soft, dolomitic, bentonitic light grey-brown shale. Estimate 65% anhydrite, 35% shale.

CORE #382 4088 - 4116' Cut 28' Recovered 23'

NOTE: Upper 20' of core slipped out of barrel. An unsuccessful re-run was made and 8 more feet penetrated. Pipe was pulled out of hole and core recovered from the drilling rods.

13' Breccia: angular fragments of dolomitic anhydrite, silty in part in a matrix of dark grey to light grey-brown shale, similar to core #381 above. Light grey shale is soft and disintegrates rapidly in warm HCl. Estimate 60 - 70% anhydrite, 30 - 40% shale.

10' Shale, very dark grey-green, dolomitic, contains a few brecciated fragments of brown dolomitic microcrystalline anhydrite. When surface of core is wet faint patterns show distorted bedding, even brecciation prior to consolidation. Anhydrite is present in thin steep fractures and in the occasional vug. Estimate 90% shale, 10% anhydrite.

Drilled 4116 - 4124'.

CORE #383 4124 - 4144' Cut & Recovered 20'

20' Breccia: fragments and distorted beds of anhydrite, grey-brown, dolomitic in a matrix of shale, dark grey, dolomitic with thin irregular beds of light brown shale. The light brown shale is soft, bentonitic, very slightly pyritic and contains small fragments of harder shale and anhydrite. It is soft and coats entire core with brown mud. Most abundant in upper 12' of core (10 - 15%).

CORE #384 4144 - 4166' Cut 22' Recovered 9'

2' Breccia: small angular fragments of anhydrite in matrix of shale, dark grey-green, dolomitic, Core about 60% shale. Some pink anhydrite and glassy salt (halite) in lower 6". Abundant soft green clay also in lower 6". Core is bandly disintegrated and washed under gauge in lower 6' due to salt removal.

7' Salt: glassy halite and red-orange halite and potassium minerals sylvite (some cornollets?) with interbeds of anhydrite, grey-brown, dolomitic and shale, grey-green, dolomitic. Core leached.

CORE #385 4166 - 4186' Cut 20' Recovered 10'.

5' Salt, as above.

5' Shale, with thin anhydrite interbeds. Dip is about 45°. Shale is cut by thin beins and vugs of salt, bright orange halite and potassium rich sylvite and ~~cornollets?~~ carnallite ?

CORE #386 4186 - 4204' Cut 18' Recovered 2'

2' Debris of broken up anhydrite, shale and salt.

CORE #387 4204 - 4209' Cut 5' Recovered 0'

CORE #388 4209 - 4216' Cut 7' Recovered 0'

4216 - 4248 (32') drilled with diamong drilling bit. From drilling time and pump pressures interpretive lithology is:

4216 - 4235' Salt with minor shale and anhydrite.

4235 - 4240' Shale and anhydrite interbeds.

4240 - 4245' Salt.

4245 - 4248' Shale and anhydrite interbeds.

4248 - 4298' (50') drilled with tricone bit. No sample returns. From drilling time interpretive lithology is:

4248 - 4270' Shale and anhydrite interbeds.

4270 - 4291' Salt with minor shale and anhydrite stringers.

4291 - 4298' Shale and anhydrite interbeds.

CORE #389 4298 - 4302' Cut & Recovered 4'

2' Anhydrite, medium grey-brown, microcrystalline, mostly massive. At 4300' a thin 3" zone of breccia zone of dolomite fragments (80%) in a matrix of salt and anhydrite. Dolomite is dark brown and light brown, cryptocrystalline, argillaceous, slightly anhydritic, salt is pale orange - potassium salts and halite.

2' Shale, dark grey-green, dolomitic, slightly bentonitic with bedding planes dipping about 45^{o}. Salt, pale orange, potassium rich sylvite? and halite occur as fracture fillings generally running at steep angles to the core. Salt has a fibrous crystal structure, and has been leached so that fractures appear as open work at the core surface with orange potassium salts and halite exposed deeply within. Leaching salt in hot water leaves a pale orange, argillaceous residue (mostly floating) and a few glassy anhydrite crystals.

CORE #390 4302 - 4306' Cut 4' Recovered 0'

CORE #391 4306 - 4321' Cut & Recovered 15'

15' Interbedded shale (60%), dolomite (20%), anhydrite (10%) with thin interbeds and fracture fillings of salt. Bedding planes dip about 45°. Fracture planes are steep and often perpendicular to the bedding. In places the thinly bedded dolomite is brecciated with a shale or salt matrix. Shale is grey-green, dolomitic, slightly bentonitic (few thin streaks are soft and more bentonitic). Dolomite is thinly bedded, argillaceous, light brown, slightly anhydritic, cryptocrystalline. Anhydrite is brown, microcrystalline, dolomitic. Few vugs of white anhydrite.

CORE #392 4321 - 4339' Cut & Recovered 18'

18' Interbedded shale (50%), dolomite (30%) and anhydrite (10%) with interbeds and fracture fillings of salt. Bedding is thin ¼ - ½" average and steep dipping 45°- 60°. Fracture planes are also steep, often perpendicular to bedding. In places shale is grey-green dolomitic, generally bentonitic, dolomite is grey, argillaceous and very anhydritic in places grading to a dolomitic anhydrite. Anhydrite interbeds are light grey-brown, microcrystalline and dolomitic. Fracture planes are filled with pale orange sylvite-halite and anhydrite and sometimes with white anhydrite. Salt is more abundant in upper 8' and scarce in lower 10'. Anhydrite fracture fillings more abundant in lower 10'. Core was jammed in the barrel by swelling bentonitic shale and was very difficult to remove, being badly broken in the process.

CORE #393 4339 - 4342' Cut & Recovered 3'

3' Shale (50%) green, bentonitic, dolomitic as above with interbeds (40%) anhydrite, grey-brown, dolomitic and minor light brown anhydritic dolomite. One thin interbed of pale orange salt. Few thin fractures filled with anhydrite. Bedding planes steep - dip about 60°.

CORE #394 4342 - 4362' Cut & Recovered 20'

3' Shale, grey-green with interbeds of anhydrite. Traces of pale orange salt (halite and sylvite) and white anhydrite filling fractures. Dip is steep about 60°.

10' Breccia: Anhydrite, brown, microcrystalline with fragments and interbeds of dolomite medium to light brown, granular in part, slightly argillaceous, anhydritic, with surface porosity from leached salt. Interior of core is tight. Lower 3' is dolomite, granular, tan, with anhydrite and salt inclusions. Shale (6") grey-green at 4351'.

7' Anhydrite (90%) dark brown, microcrystalline with minor dolomite, brown and few thin shale interbeds. Some irregular bedding marked by thin kark streaks. Vugs up to ½ - 1", filled with white salt. Lower 6" is grey-green shale, with thin anhydrite and white glassy salt interbeds (halite).

CORE #395 4362 - 4382' Cut & Recovered 20'

1' Shale, grey-green with interbedded salt and anhydrite.

17' Salt, glassy, halite with few thin interbeds of anhydrite and shale especially in lower 1'. Salt is leached to about ½ diameter and is very pale orange in lower 1' due to potassium content(?).

2' Shale, grey-green with anhydrite, dolomitic interbeds and pale orange salt (halite and potassium minerals) interbeds and fracture fillings. Dip about 20 - 30°.

CORE #396 4382 - 4402' Cut & Recovered 20'

10' Shale, anhydrite interbeds as above. Some salt filled steep fractures have been leached. Anhydrite is brecciated in places in a shale matrix.

7' Salt white and glassy (halite).

3' Shale - anhydrite interbedded as above. Some very thin beds of pale brown-red shale. Minor

anhydrite brecciation as in 4382 - 92'.

CORE #397 4402 - 4412' Cut & Recovered 10'

2.5' Shale - anhydrite interbeds. Few steep fracture filled with pale orange salt and anhydrite. Bedding dip is 10 - 15°.'

5.5' Salt with numerous very thin shale and anhydrite stringers.

2' Shale, grey-green, bentonitic. Stringers of pale orange salt.

CORE #398 4412 - 4416' Cut & Recovered 4'

4' Thin interbeds of shale (50%), anhydrite (30%), and dolomite (10%), with thin stringers and fracture fillings of pale orange salt. Shale is grey-green and dolomitic, bentonicit. Dolomite is grey-brown, anhydritic and cryptocrystalline, Anhydrite is brown and microcrystalline. Some minor fracturing and faulting. Dip is about 20°.

CORE #399 4416 - 4428' Cut & Recovered 12'

2' Anhydrite and shale thinly interbedded with minor salt.

10' Salt, pale orange halite & potassium salts (sylvite) with thin interbeds of anhydrite.

CORE #400 4428 - 4448' Cut 20' Recovered 7½'

7½' Salt, pale orange and white halite and potassium salts with thin ¼" and less shale and anhydrite interbeds. Coring time suggests entire 20' is salt.

CORE #401 4448 - 4464' Cut 16' Recovered 12'

12' Salt as above. Coring time suggests entire 16' is salt.

CORE #402 4464 - 4467' Cut & Recovered 3'

3' Shale, green and red, dolomitic, bentonitic in part. Thin interbeds of anhydrite, grey-brown, microcrystalline and salt reddish-brown, argillaceous. Surface of thin salt beds has been leached leaving a tan soft argillaceous residue. Some steep fractures filled with orange salt. Bedding dips 15 - 25°.

CORE #403 4467 - 4478' Cut 11' Recovered 10'

5' Shale, grey-green, bentonitic in part, thinly bedded with dips about 15°, and anhydrite dense, bedding shows some distorted patterns. Minor dolomite, interbedded with anhydrite. Some steep fractures lined with pale orange salt most of which has been leached.

5' Salt, pale orange potassium salts and some white halite with minor interbeds of shale green, and anhydrite grey-brown dolomitic. Interbeds are up to 2" thick but most are ¼ - ½".

CORE #404 4478 - 4500' Cut 22' Recovered 15'

4' Shale, dark green, dense dolomitic with thin interbeds of microcrystalline anhydrite, grey-brown, very dolomitic. Dip about 15°, cut by steep fractures filled with orange salt, halite and possibly some potassium minerals, leaching salt in water yields a floating orange argillaceous residue.

2' Dolomite and anhydrite very irregularly interbedded. Dolomite is brown, granular in part, argillaceous, anhydritic and appears porous on the surface due to salt leaching. Residue yields 10% argillaceous material and anhydrite. Lower 6" is very irregularly, bedded with waxy patterns in the bedding.

9' Shale, grey-green, becoming interbedded with dolomite and anhydrite in the lower 5'. Lower 5' contains interbeds ¼ - ½" of dolomite, cryptocrystalline, reddish-brown, and salt rich argillaceous material, pale tan colour. Surface of salt bed has been leached leaving a tan argillaceous soft residue. Heating a

sample in water produces this same residue.

7' Salt, missing. Assumed to be salt from coring time.

CORE #405 4500 - 4520' Cut 20' Recovered 17'

1' (3'missing from this interval). Salt, pale orange halite and some potassium salts with thin interbeds of shale and anhydrite. Leached to about 1/3 size.

3' Thinly interbedded shale, dolomite, anhydrite and minor salt. Salt has been leached from core giving surface porosity to some beds.

12' Shale (60%) dark gren, dolomitic, with interbeds of dolomite (20%), light-medium brown and anhydritic with lenses, fragments, and interbeds to anhydrite (15%). Bedding is regular dipping about 20^{o}. Some early faults (small near vertical displacement) are evident and some late, steep orange halite and sylvite filled fractures are present.

CORE #406 4520 - 4524' Cut 4' Recovered 6"

6" Shale, grey-green, dolomitic with thin dolomite interbeds. Steep salt and anhydrite filled fractures.

CORE #407 4524 - 4540' Cut 16' Recovered 4½'

4½' Shale (60%) green, dolomitic, dense with thin interbeds of dolomite (25%), grey-brown, cryptocrystalline dense and anhydrite (10%) grey-brown. Some large (2"-3") irregular fragments of anhydrite imbedded in the shale. Trace of red shale thinly bedded near base of core. Few thin interbeds of salt pale orange potassium rich and 3 - 4 steep fractures filled with orange halite, sylvite and anhydrite.

CORE #408 4540 - 4545' Cut & Recovered 5'

5' Shale, grey-green, dolomitic, silty in part, with thin interbeds and irregular fragments of grey-brown anhydrite. Bottom 2" is red

dolomitic shale with green mottles and thin anhydrite interbeds. Few steep fractures filled with pale orange anhydrite and trace salt (halite and potassium minerals).

CORE #409 4545 - 4555' Cut & Recovered 10'

1' Shale, red, dolomitic, thinly interbedded with anhydrite and hard, silty dolomite. Few interbeds of red anhydrite.

4' Shale, green, dolomitic, slightly silty with interbeds of dolomite and anhydrite. Bedding irregular but generally dips 10 - 15°.

1' Dolomite, grey, microcrystalline, sitly, slightly argillaceous, very hard and dense.

4' Shale, upper 4" green and bentonitic, remainder is brown, silty, dolomitic, weel indurated, interbedded with thin beds (up to 2" thick) dolomite (40%), hard, silty microcrystalline and thin beds anhydrite (10%) grey-brown.

CORE #410 4555 - 4575' Cut & Recovered 20'

1' Shale, dark green, dolomitic with interbeds of dolomite, silty and minor anhydrite.

4' Dolomite, dark brown, argillaceous, hard with irregular interbeds and imbedded fragments of anhydrite, light brown-grey. Occasional patches of dolomite, brecciated by anhydrite. Core breaks along few very dark brown, argillaceous partings slightly pyritic and almost bituminous(?). No cut.

2½' Anhydrite, light brown-grey, microcrystalline with interbeds of dolomite grey-brown and minor shale, dark green. Occasional thin crooked seams of anhydrite cut through the interbeds. Dip is 10 - 15°.

4½' Shale, dark grey-green with few irregular fragments of anhydrite imbedded.

8' Dolomite (60%) medium grey, micro-crypto-crystalline, anhydritic, silty, argillaceous, very hard with interbeds of shale (30%), dark green, dolomitic and irregular patches and

thin interbeds of anhydrite. Shale is fractured in places by thin anhydrite filled breaks.

CORE #411 4574 - 4594' Cut & Recovered 19'

1'	Dolomite, with anhydrite interbeds as in 8' above.
1'	Shale, dark green, dolomitic, bentonitic in part with thin interbedded anhydrite (less than 5%). Bedding dips about 10°.
3'	Dolomite, light grey-brown, microcrystalline slightly argillaceous, very hard, silty to sandy. One steep fracture breaks the interval. No cut.
11'	Shale, dark green to dark brown and slightly dolomitic, anhydritic, bentonitic in part (5%) occasional interbeds of anhydrite. Few white anhydrite and pale orange potassium salts and halite - lined fractures cutting the core at various angles. 2" anhydrite bed at 4591', 2" bed anhydrite at 4592'.
3'	Dolomite (90%), dark grey-brown, argillaceous, silty, hard with occasional interbed of shale dark green. Very faint cut on dolomite fracture and bedding planes.

CORE #412 4594 - 4609' Cut & Recovered 15'

1'	Dolomite, grey-brown as above with occasional anhydrite bed. (Deepest thin bed of anhydrite at 4595'). Interval is cut by late fractures and early faults. Faint cut is obtained from some bedding and fracture planes.
6½'	Shale, grey, dolomitic with few thin crooked anhydrite-filled fractures.
7½'	Dolomite, grey-brown, microcrystalline, very argillaceous, slightly silty, few interbeds of shale, green. Some steep white anhydrite filled fractures. Lower 3' (4606 - 4609') has spots of gas bleeding from bedding planes and fractures. No immediately visible oil but after 3 - 4 hours the surface of the core was coated with patches of very light condensate which gives a good fluorescence.

CORE #413 4609 - 4621' Cut 12'

NOTE: Pipe twisted off at 4189' while cutting last foot of core #413. Last foot took 18 minutes of coring time - and was really milling of pipe at the break.

To depth of 4621' have penetrated 187' of relatively pure salt beds in the interval 4146 to 4500'. Of these 187' salt:

93' was orange coloured - and contained some potassium minerals as well as halite.

70' was never recovered.

24' was halite with little or no potassium.

CORE #414 4619 - 4633' Cut & Recovered 14' 100%

Coring times 6, 11, 8, 9½, 7, 7, 9, 10, 12, 11, 11, 13, 12, 12½, 6+.

3'5"	Dolomite, pale brown, medium grained, rare shale partings, a few irregular selenite veins.
2' 6"	Shale, black to green, microscopic, discontinuous, white selenite laminae.
6"	Dolomite, brown, medium grained inter-bedded with dark grey shale.
1' 1"	Chert, replacing dolomite, medium grained, thinly bedded light and dark brown, bedding disrupted. Some irregular selenite(?) veins also chert replaced. Pyritous, areas of pale brown, unreplaced dolomite remain.
5' 10"	Shale, black.
5"	Dolomite, pale brown, medium grained, pyritous shale partings. Selenite veins.

The fractures are gassy. Dip about 10°.

CORE #415 4633 - 4648' Cut 15' Recovered 16' 100%(?)

Coring times 8, 10, ?, 9, 8, 7½, 10, 8, 9, 8, 8½, 7, 4, 5, 5.

16'	Shale, black with ¼" to 1" brown dolomitic layers, sometimes nodular. Very gassy.

CORE #416 4648 - 4664' Cut 16' Recovered 15' 93%

Coring times 6+, 14½, 11, 8, 8½, 9½, 9, 10½, 9, 9½, 10, 12, 9, 10, 7, 4+.

2' 7"	Shale, black slightly dolomitic.
10"	Dolomite, fine grained, dark grey, very argillaceous, occasional shale bands, black.

4' 0" Shale, as above 2' 7".

7' 7" Interbedded shale, black, dolomitic and dolomite, dark grey, argillaceous; dolomite fine grained sometimes nodular. Rare white selenite veins, some fractures.

Very gassy, especially on fractures.

CORE #417 4663 - 4678' Cut 15' Recovered 16'? 100% (badly shattered).

Coring times 8, 14, 14, 12, 11, 11, 11, 12, 10, 11½, 10, 3+, 9+, 11, 17.

16' Interbedded black dolomitic shale and dolomite argillaceous, dark brown medium to fine grained sometimes nodular in the shale. Rare sub-horizontal vugs partly or entirely filled by coarse white dolomite crystals. Some nodules are perfectly round 1/8 - 2" in diameter and are surrounded by deflected shale laminations. Fractures sparse, irregular. Fractures and shale partings very gassy, fluoresce white.

CORE #418 4680 - 4695' Cut 15' Recovered 15'3" 100%

Coring times 12, 12, 12, 10, 10, 10, 10, 9½, 8, 9½, 13, 10, 11, 12, 10, 5.

15' 3" Dolomite, dark grey, argillaceous, silty, banded and laminated dark to medium as argillaceous content varies, bands irregular wavy, often discontinuous. Fine grained, with irregular pale grey nodules, elongate in the bedding plane up to ½" thick, maximum width greater than the core. White, irregular, coarse grained dolomite patches, usually with central vugs occur infrequently, usually they are elongate in the bedding plane. They occur both in the nodules and in the rock surrounding them but individual patches do not cross from nodule into the rock. Very rarely the coarse dolomite is a fill to steep fractures transgressing both textures.
Gassy, mainly on shale partings (the rock is almost fracture free) scanty white fluorescence

CORE #419 ? - 4710' Cut ?, Recovered 15'

Coring times 11, 11, 13, 13, 11, 10, 11, 9½, 7½, 7½, 7, 7½, 7, 7, 8.

3"	Shale, black, calcareous with abundant Discina sp. on bedding planes.
5"	Limestone, argillaceous silty, grey-green with white calcite nodules, medium grained, irregular up to ¼" thick, elongate in the bedding plane, wider than the core. Fossil fragments, briefly calcareous brachiopod shells are common. Rare patches of coarse grained white dolomite transgress and obliterate all other textures.
5"	Shale as above 3".
4"	Limestone white nodules as above in 5" band in green shale. Shale non-calcareous.
5' 6"	Shale, green and black interlaminated, non-calcareous.
5' 0"	Limestone white, fine grained nodules with minor interbeds of green and black interlaminated shale with calcareous organic fragments.
10"	Shale, black, argillaceous, calcareous with fossil fragments, mainly brachiopod shells. Occasional white limestone nodules as above 5' 0".
2' 3"	As above 5' 0".
	Very minor amounts of gas, very sparse white fluorescese. Dip about 10°.

CORE #420 4710 - 4725' Cut 15' Recovered 15' 11" (100%?)

Coring times 8, 12½, 11, 10, 10, 11½?, 7½, 8, 9, 9, 11, 11, 11, 10, 7.

3'	Limestone, white, fine grained, bioclastic (brachiopods?, ostractods?) in uneven beds

and nodules ¼" to 1" thick, elongate parallel to bedding. Interbedded with shale black or grey, beds slightly thinner than the limestone beds, fossil fragments common. Dolomite, white, finely crystalline is common to abundant in the shale. Pyrite stringers and blebs are found.

1' 3" Shale, interlaminated green to black, non-calcareous, rare pale buff bands, possibly bentonitic.

6" As above 3'

1' 7" Shale, green non-calcareous, with a few white, fine grained limestone bands ½" wide.

2' 6" As above 3'.

1' 9" Shale, brown, pyrite streaks abundant, slightly calcareous.

1' 0" As above 3' with veins of coarsely crystalline dolomite. Fractures, trace of gas.

4' 4" Shale, green, pyrite streaks occur, fossil fragments occur, calcareous.

CORE #421 4725 - 4740' Cut 15' Recovered 14' 6" (97%)

Coring times 8, 10, 9, 7, 9, 8, 6, 7, 7, 6, 6, 7, 10, 10, 5½+.

3" Limestone, white, fine grained with few fossil fragments, nodular in shale, green fossil fragments common, pyritous.

1' 11" Shale, green, slightly calcareous, Discina sp.? abundant on bedding planes.

8" As above 3". Diastem.

4" Limestone as above, dolomitized with streaks of iron oxide commence at top, possible solution effects.

2' 6"	Shale as above.
4"	Limestone, grey, fine grained, patchy dolomitized, dolomite white, fine grained, eroded burrowed bedding plane.
2'	Shale, green with laminae of fine grained white dolomite decreasing downwards.
6'	Shale, green pyritous.

CORE #422 4740 - 4755' Cut 15' Recovered 14' 7" 97%

Coring times 9, 15, 10, 12, 10, 13, 10, 13, 14, 12, 10½, 10½, 11½, 11½, 13.

1' 4"	Shale, black, slightly pyritous, slightly calcareous.
1' 6"	Shale, black, calcareous, some fossil remains, occasional nodules of limestone which is white fine grained. Nodules up to 2" thick.
1' 4"	Shale, black, calcareous, silty.
1' 0"	As above 1' 6". blk sh
0' 7"	As above 1' 4". blk sh
1' 5"	Limestone, white, fine grained, nodular with minor black shale partings and beds. Shale calcareous with fossil shells, and blebs of coarse grained calcite (vug fillings?). The limestone nodules have a system of fractures, filled with coarsely crystalline calcite, which does not extend into the shale.
9"	As above 1' 4". blk sh
1' 3"	As above 1' 5". LS
8"	As above 1' 4". blk sh
1' 5"	As above 1' 5" ls
8"	As above 1' 4". blk sh

1' 3" As above 1' 5", a few vugs lined with coarse grained calcite in the shale. 15

1' 5" As above 1' 5". 15

Smelled strongly of gas on recovery.

CORE #423 4755 - 4770' Cut 15' Recovered 15' 4" 100%

Coring times 19, 13, 11, 13, 10, 10, 14, 10, 8½, 7, 7, 7, 6, 6, 4½.

1' 0" Black shale, silty, calcareous, fossiliferous with limestone nodules, white, microcrystalline, fossiliferous.

5' 3" As above, nodules very rare.

1' 10" Limestone, white, microcrystalline, fossiliferous with rare argillaceous laminae and rare interbeds of black shale, fossiliferous with sparse dolomite rhombs, fine grained. A sub-horizontal, complex fracture or vug partly spar-filled has an abundant light green oil stain and is slightly gassy.

7' 3" Dolomite, black, argillaceous bands and laminae, fine to coarsely crystalline, Rare vugs up to ¼" across lined by spary dolomite. A well developed vertical fracture system exists, it is only partly filled by dolomite. An oil cut similar to that of the light green oil in the interval above has been seen on the fractures and occasionally in the vugs.

Smelled strongly of gas on recovery.

CORE #424 4770 - 4780' Cut 10' Recovered 2' 6" 25%

Coring times 7, 6, 5½, 5, 5, 8, 11, 13, 11½, 14, 14.

2' 6" Black shale, dolomite crystals common, medium grained, rare white, fine grained, fossiliferous dolomite bands, up to 1" thick, some silicified streaks in the dolomite. Vertical fractures common with oil cut.

CORE #425 4780 - 4795' Cut 15' Recovered 15' 6"(?) 100%

Coring times 14, 14, 12½, 11, 12½, 14, 14½, 13, 10, 14, 15, 11½, 10½, 10, 10.

2' 3" Dolomite, light grey, finely crystalline with minor dark grey, argillaceous bands. Vertical fractures partly open, partly filled by drusy dolomite giving up gas and light brown oil. Slightly pyritous, especially on fracture margins.

1" Dolomite, light grey, finely crystalline with glauconite grains, rare shells, some blebs of pyrite.

Sharp uneven bedding plane, no obvious erosion.

13' 2" Dolomite, pale grey, fine to coarsely crystalline with darker bands of irregular argillaceous laminae, rare vugs up to ¼" across largely filled by drusy dolomite. Vertical fractures common, some oblique fractures. Oil cut and gas occur in the fractures and in some vugs, gas is also seeping from the argillaceous laminations. The bedding planes are approximately horizontal.

CORE #426 4795 - 4807' Cut 12' Recovered 11' 10" 100%

Coring times 7, 17, 14, 14, 15, 18, 17, 21½, 18, 27, 14, 15.

3' 2" Shale, green; dolomite, fine grained white interlaminated in the shale in groups of laminae ¼" to 2" thick. The laminae are irregular and are not continuous horizontal. Two types of terminations may be seen: -

1. The laminae curve down in a parallel set to truncate against a lower plane shale or dolomite lamination.

2. The set of laminae are abruptly replaced horizontally by dolomite free shale. The laminae group often thins slightly and its upper surface curves down towards the ends of the set. Sometimes

the succeeding layers of sediment have dropped down over the dolomite free parts of the underlying succession. Probably this is due to partial solution of dolomite from an unconsolidated sediment very close to the surface. The sets of undisturbed laminae below truncated sets indicates that the process is discontinuous and does not occur below a certain definite depth. The maximum thickness of a set of truncated laminae and the distorted sediment above it is about 1". Probably this represents the thickness of the sediment column in which the process takes place.

Note: - The downward truncation of the dolomite against a plane mimics an inverted current bed set.

CORE #427 4807 - 4821' Cut 14' Recovered 14' 9"(?) 100%

Coring times 21, 22½, 16½, 17, 15, 15, 16½, 14, 15½, 14½, 17, 17, 14, 13.

14' 9" Shale, grey green with dolomite streaks and rare dolomite nodules finely crystalline, white up to 1" thick.

CORE #428 4821 - 4836' Cut 15' Recovered 16'(?) 100%

Coring times 30, 17, 12½, 17, 15, 16, 15½, 17½, 11, 18, 16, 15, 17, 13, 12.

2' 0" Shale, grey, pyritous streaks.

6' 4" Shale green, slightly dolomitic, pyritous streaks. Rare laminae and thin beds of white, fine to coarsely crystalline dolomite, some bands are made of horizontal clusters of pipes about 1/16" in diameter either burrow filling or replacement.

7' 8" Shale, green and red, pyritous.

Oblique fractures common. dip about 5 - 10o.

CORE #429 4836 - 4851' Cut 15' Recovered 15' 4" 100%

Coring times 14, 24, 15, 16½, 17, 16, 15, 14, 14, 14, 15, 14, 15, 7, 7.

14' 7" Shale, grey green with minor maroon bands, pyritous, rare white dolomitic streaks.

5" Dolomite, white coarsely crystalline, glauconite abundant, shale laminations light grey common. Patchy reddish stain, sometimes disseminated, sometimes concentrated under the shale partings. Pyrite blebs common. Severe oblique fracturing. Oil cut with yellow fluorescese on the fractures, some of which bleed gassy, light brown oil.

2" Dolomite, white, very coarse grained. Fractured. Yellow fluorescent oil cut on fractures.

2" Dolomite, as above 2", shale microclasts common. Yellow fluorescent oil cut on fractures. Fractured to a fine rubble.

CORE #430 4851 - 4853' Cut 2' Recovered 1'8" (rubbly 100%

Coring times 6, 8½.

5" Siltstone, dolomitic, grey, light brown oil stain on oblique fractures, patchy.

1' 3" As above, pale grey, irregular argillaceous laminae, fractured to fine rubble, very scanty oil stain on fractures, yellow fluorescence.

CORE #431 4853 - 4855' Cut 2' Recovered 2' 2" 100%

Coring times 8½, 14.

2' 2" Siltstone, pale grey, dolomitic, abundant irregular, discontinuous argillaceous laminae. Fractures common to abundant oblique. Very scanty, yellow fluorescent oil cut on fractures.

CORE #432 4855 - 4861' Cut 6' Recovered 4' 66%

Coring times 11, 10, 10, 13, 22, 33.

3' 6"	Siltstone, light grey, very dolomitic, abundant, irregular, discontinuous argillaceous laminae. Fractured very scanty, yellow fluorescent oil cut on the fractures.
6"	As above fractured to fine rubble.
	Dip approximately 0°.

CORE #433 4861 - 4875' Cut 15' Recovered 15' 11"(?) 100%

Coring times 22, 15, 15, 16, 19, 19, 16½, 15, 16, 13, 11, 10½, 12, 12½.

1' 6"	Siltstone, very dolomitic, abundant argillaceous laminae. Oblique to vertical fractures common, fractures up to ¼" wide, filled with porous, fine rubble. Very patchy, yellow fluorescent oil cut.
6"	Siltstone, dark grey, argillaceous minor dolomitic laminae and streaks. Passing downwards into: -
4' 0"	Siltstone as above 1' 6". Passing downwards into: -
9"	Siltstone, as above 6". Passing downwards into: -
2' 0"	Siltstone as above 1' 6"
7' 2"	Siltstone as above 6".
	Dip 5 - 10°.

CORE #434 4875 - 4889' Cut 14' Recovered 14' 100%

Coring times 14½, 17, 14, 14, 12, 14, 10½, 10, 13, 12, 11, 16, 16, 11.

8' 9"	Siltstone, argillaceous, interbedded and interlaminated with shale, silty, dark grey. Beds and laminae irregular and discontinuous.

5' 3" Shale, grey to green, pyritous slightly silty, silt content decreasing downwards to nil in 3'. Zone shows a sharp contact with the above bed and truncated laminae. May be an erosional contact but there is also load casting on a small scale which may account for all the disturbance. Oblique fractures common, may be up to ¼" wide and filled with fine breccia.

Dip less than 5°.

CORE #435 4889 - 4905' Cut 16' Recovered 15' 4" 96%

Coring times 15½, 18, 18, 18, 16, 17, 12, 11, 13, 10, 10, 15, 16, 15, 16, 12½.

6' 10" Shale, green, pyritous streaks.

1' 6" Siltstone, dolomitic, argillaceous, fossiliferous, dark grey to green. Colour changes abrupt, horizontal and vertical. Some horizontal fractures, filled by drusy dolomite.

11" Dolomite, grey coarsely crystalline interbanded very coarsely crystalline. Argillaceous, especially in the more coarse parts.

2' 0" Siltstone as above 1' 6", less silty and dolomitic downwards.

4' 1" Shale, green, pyritous streaks.

Dip 10 - 0°. Occasional oblique, irregular fractures.

CORE #436 4905 - 4919' Cut 14' Recovered 15' 4"(?) 100%

Coring times 13, 19, 13, 10, 10, 8, 11½, 7½, 8, 5, 5½, 9½, 7½, 6.

3' 6" Shale, green, scattered, discontinuous laminae of fine white dolomite crystals.

9" As above, dolomite increases downwards to 90% bottom 1" glauconitic.

11' 1" Dolomite, dark grey to brownish red, coarse grained, occasional shale laminae. Rare vugs up to ½" across completely or partly filled by drusy dolomite. Vertical open fractures common. Gassy, white oil cut. This unit is separated from the above glauconitic dolomite by an irregular sharp bedding plane on which there is a lamination of green shale. The lower dolomite is penetrated by vertical and horizontal bodies of green dolomitic siltstone for at least 1". These do not obviously connect with the upper bed. Either: -

1. There is a non-sequence with a burrowed bedding plane or: -

2. This is a transitional continuous sequence of deposition modified by pressure solution at the transition.

CORE #437 4919 - 4932' Cut 13' Recovered 12' 92%

Coring times +3, 12, 12, 18, 12, 12, 11, 11½, 14, 9 10, 19, 27.

3' 3" Dolomite, grey to brown, argillaceous, coarse grained with pale mottles, elongate and circular about ¼" - 3/8" in diameter probably burrows. Occasional argillaceous partings. Frequent vugs up to 1" across complex shapes, bleeding a little light brown oil in some cases, all with white fluorescent oil cut. Irregular, vertical hair-line fractures common occasionally wider to about 1/16" filled partly by drusy dolomite. Basal ¼" glauconitic silty and contains brown weathered fragments of the underlying rock.
Diastem.

2' 5" Siltstone, very dolomitic, light grey, frequent, irregular, discontinuous darker argillaceous partings. At the top it is brown with iron oxide flecks, lower it is sparsely pyritous. Passed down into: -

1' 11" Siltstone, dark grey, very argillaceous, slightly dolomitic.

3' 4" Siltstone, light grey, dolomitic, occasional open vertical fractures (1/8") with yellow fluorescent oil cut.

1' 0" Siltstone as 1' 11" fractured to rubble. Scattered white and yellow oil stain.

CORE #438 4932 - 4947' Cut 15' Recovered 15' 3" 100%

Coring times 15, 13, 14, 14, 27, 13, 14, 11, 9½, 8, 9, 12, 9, ?, ?.

8" Siltstone, green to brown, argillaceous, dolomitic, glauconitic.

1' 2" Dolomite, brown, coarsely crystalline, irregular bodies of pale grey dolomitic siltstone, some argillaceous, irregular laminae, rare pyrite blebs.

1' 0" Siltstone, green, argillaceous, variably dolomitic, pyrite blebs, occasional bands of glauconite.

10' 8" Siltstone, grey, argillaceous, occasional irregular bodies of pale grey dolomitic siltstone, rare glauconite dispersed throughout. Occasional pyrite blebs. Occasional glauconite and pyrite rich laminae.

1" Siltstone, dark brown, argillaceous, pyrite blebs common. A basal lamination of darker brown shale separates this bed from the one below.

1' 8" Dolomite, coarse grained brown, occasional irregular argillaceous laminae. Burrows(?) ¼" wide filled by pale grey dolomitic siltstone occur in the top 6".

Vertical hair-line fractures occur in the more dolomitic parts, some have a white fluorescent oil cut and occasionally bleed gas and light brown oil. Dip 5 - 15°.

CORE #439 4947 - 4962' Cut 15' Recovered 15' 5" 100%

Coring times 7½, 7, 6, 5, 5½, 4½, 5, 4½, 4, 2½, 3, 2½, 2, 2½, ?.

1"	Dolomite, coarse grained, grey with dark brown argillaceous laminae, pyrite blebs.
5"	Siltstone, light grey, dolomitic, fossil fragments common, glauconitic.
¼"	Siltstone, green, highly glauconitic, with reworked grains of brown shale and pyrite, fossil fragments common.
1' 0"	As above 5"
	Burrowed surface.
¼"	Shale, brown, with pyrite blebs. Penetrated by the following siltstone.
8' 4"	Dolomite, brown, coarsely crystalline with brown intercrystalline and irregular dark brown laminae of silty shale. Top 4" with bodies of pale grey silty, slightly glauconitic dolomite, 1/8" to ½" irregularly rounded (burrows from above bed?). Fossil fragments common. Occasional high angle and oblique fractures with very sparse white fluorescent oil cut.
4' 7½"	Sandstone, white, fine grained, quartzitic, grains angular, rare pyrite blebs, occasional argillaceous laminae. Rare oblique fractures, sometimes slickensided, with white fluorescent oil cut.

CORE #440 4962 - 4977' Cut 15' Recovered 15' 6" 100%

Coring times 3, 2, 3, 2, 3, 4, 2½, 4, 4, 3, 6, 6, 11, 11, 5.

11' 0"	Sandstone, white, quartzose, fine to medium grain, quartzose cement. Argillaceous laminae sparse at top, increase downwards some high angle fractures.

2' 0" Sandstone, pale grey, very argillaceous,

2' 6" Shale, green, silty, with crush zones on oblique fractures.

CORE #441 4977 - 4992' Cut 15' Recovered 15' 11" (rubbly) 100%

Coring times 8, 7, 4, 4½, 2, 2½, 4, 5½, 2, 2½, 2, 2, 3, 4, 6.

1' 6" Shale, green with interlaminated white siltstone.

1' 1" Sandstone, fine to very coarse well rounded grains in fine quartz silt matrix. Green to white due to variable amounts of glauconite present as grains and disposed in the matrix.

9" Shale, green.

1' 0" As above 1' 1" bed maximum grain size of sand, medium, maximum grain size of glauconite grains, coarse; pyritous.

9" Sandstone, mottled light to dark grey. Fine to coarse well rounded quartz grains in sparse quartz silt matrix. Colour lamination due to variation in argillaceous content, lamination disturbed by burrowing. Bottom contact highly irregular burrowed, burrows penetrate 2½" into lower bed.

1' 3" Sandstone, white, fine to coarse, well rounded quartz grains in fine quartz silt, some pyrite blebs, rare glauconite grains near the top.

3' 4" Sandstone, sparse fine to coarse, well rounded quartz grains in abundant quartz silt, rare glauconite, variable argillaceous laminations disrupted by burrowing.

2' 0" As above 1' 3" bed, argillaceous laminations present, disrupted by burrowing.

4' 5" Sandstone, current bedded in 1" to 3" sets, finely interbedded fine silty sandstone and coarse to fine silty sandstone, occasional argillaceous laminae.

CORE #442 4992 - 5007' Cut 15' Recovered 15' 8" 100%

Coring times 4, 5, 5, 5, 5, 5, 5, 4, 8, 6, 5, 5½, 5, 5, 4.

8' 8"	Sandstone, fine to coarse grained inter-laminated silty, current bedded in ½" to 8" sets. Slightly pyritous. White quartzose cement.
5' 6"	Sandstone, white, fine to coarse grained occasional dark streaks, quartzose cement.
1' 6"	As above bands of pink staining. Quartzose cement.

Open vertical fractures are common throughout, no oil stain or gas. Lost circulation 30% from 4999'6".

CORE #443 5007 - 5020' Cut 13' Recovered 13' 100%

Coring times 4, 4, 6, 4½, 4, 5, 9, 8, 10, 11, 10, 10½, 9.

1' 11"	Quartzose cemented sandstone, white, well rounded medium to coarse grained.
3' 4"	Quartzite, fine grained, hard, pink. Occasional beds of 1" - 2" thickness uncemented, white unconsolidated containing clasts of quartzite disoriented and unsorted.
1' 0"	Sandstone to pebble conglomerate, well rounded in white quartz silt matrix, uncemented, pink to pale yellow.
6' 2"	Graded green-yellow shale through dark green argillaceous silt to red, fine grained quartzose sandstone, sharp lower boundary. 3/16" to 5¼" thick, sand part absent to 5".
Note: -	Uncemented parts may be developed from fractured intervals, their boundaries are steep and irregular. Dip 20 - 30°.

CORE #444 5020 - 5035' Cut 15' Recovered 14' 9" 100%

Coring times 13, 10, 10, 9, 9, 8, 10, 10, 8, 9, 8½, 9, 8, 8, 7.

14' 9" Interbedded pale green-yellow shale and dark green siltstone to sandstone beds. The basal siltstone to shale contacts are abrupt. The underlying shale may show small burrows and filled cracks. The upper shale siltstone contact is sharp to gradational and is not burrowed or cracked. The grain size of the siltstone may increase downward to well rounded. The shale units are 1/8" to 1½" thick. The siltstone is absent to 5". There is no apparent relation between the thicknesses of the two lithologies. The siltstone is sometimes stained maroon in bands and patches.

Crush zones occur up to ½" wide with lithology bands displaced across them and buckled close to them. Dip 15 - 30° variation due to wedging of some silt beds across the core.

CORE #445 5035 - 5042' Cut 15' Recovered 7' 2" 50%

Coring times 4, 11, 14, 12, 15, 10, 12, 10, 10, 11, 8½, 10½, 10½, 9½, 8.

7' 2" Graded sequences green-yellow shale and dark green siltstone to sandstone as in cores #443 and #444. Purple mottling found on shale as well as on siltstone. Occasionally the siltstone beds are green-yellow. Sequences up to 10" thick, usually shale is a minor part of each sequence. Erosional and land structures occur at the base of some sequences. Crush zones are thin (1/10") rare and not conspicuous.

CORE #446 5050 - 5058' Cut 8' Recovered 7' 4" 92%

Coring times 8, 8, 10, 11, 13, 12, 17, 23.

7' 4" As above Core #445. Fracturing severe in silt bands, usually a more plastic

deformation in the shales. High angle reverse faults 45°.

CORE #447 5058 - 5075' Cut 15' Recovered 6' 40%

Coring times 15, 13, 8½, 7, 9, 7, 4, 5, 9, 15, 14, 12, 11, 10, 7.

6' As above Core #445. Fracturing of shale and siltstone by 45° reverse faults.

Note: - Burrows filled by siltstone in the shale. These appear to be 'crumpled' in a zig-zag pattern, the total depth reached has a 1:3 ratio to the length of the burrow measured around the zig-zag . Possibly this shows the relative compaction of the shale to the siltstone during lithification.

CORE #448 5075 - 5090' Cut 15' Recovered 15' 100%

Coring times 12, 10, 10, 11, 13, 13, 12, 9, 10, 11, 13, 12, 12, 10, 6.

15' Interbedded shale and siltstone. Shale is dark red and green, silty, micromicaceous. Siltstone is red and green, micromicaceous, quartzose, argillaceous, non-calcareous, non-dolomitic. Beds are mostly a graded sedimentary sequence and average 1" - ½" with the thickest about 6". Bedding dip is 10 - 20° but is curved and irregular in places. Closed fractures are numerous in places and some show small fault displacement. A few thin beds of badly broken shale - siltstone may be fault planes. Red colouring (about half of core) affects both shale and siltstone and is irregular. In places it follows bedding planes, in places it follows fractures or mud cracks, in places it mottles the core.

CORE #449 5090 - 5105' Cut & Recovered 15' 100%

Coring times 5?, 12, 12, 10, 12, 11, 10, 11, 11, 10, 12, 13, 12, 11, 10.

15' Graded interbeds of silty shale and siltstone as above. Siltstone has small inclusions glauconite? Fractures are abundant running in all directions (most are steep) and most are lined with pale green clay. Some graded sequences are as thin as ½" - ¼". A few very small ¼" angular fragments of siltstone to very fine sandstone with silica cement and a few dark red, and green inclusions are imbedded in shale and bedding curves around them. Dip is as above.

CORE #450 5105 - 5119' Cut 14' Recovered 13½' 96%

Coring times 8, 11, 10, 10, 11, 10, 8, 10, 11, 11, 7, 8, 9, 17. (Core jammed)

13½' Thin interbeds of shale and siltstone to very fine grained sandstone. Shale is

mostly green, with red only in the interval 5111 - 5114'. Shale is dark brown to black in the top 3' and bottom 2' of core. Some shale beds have silt-sand filled mud cracks and worm burrows(?) Siltstone to very fine sandstone beds are dark green and light brown. The light brown siltstone has siliceous matrix with dark green (glauconite?) and some red inclusions. Green siltstone is more argillaceous, micromicaceous. Bedding dip 10 - 20°. Fracturing not as abundant as in above core. Bedding is thin avg. about 1". Some thin badly broken rock and soft clay may be fault planes. Core is approximately 55% siltstone and sandstone.

CORE #451 5119 - 5127' Cut & Recovered 8' 100%

Coring times 12, 17, 14, 15, 11, 10, 13, 10, 17, 10 (2' tally error?).

5' Interbedded shale and siltstone. Most beds 1 - ½" thick. One shale bed 6" thick. Shale is dark grey to brown-black and silty. Siltstone is grey, argillaceous with a rare trace of pyrite. Shale has numerous silt-sand filled mud cracks and burrows(?). Bedding dips 10 - 20°. Some early fractures show fault movement. Core about 55% shale.

3' Shale grey-green, silty with few thin siltstone interbeds, brown, argillaceous, near the base. Many thin clay-filled fractures.

CORE #452 5127 - 5139' Cut & Recovered 12' 100%

Coring times 12, 7, 8, 9, 11, 11, 11, 10, 9, 10, 10, 9.

12' Thin (1 - ½") interbeds of shale and siltstone - sandstone. In top 6' shale is grey-green, in lower 6' shale is dark grey-green to black. Siltstone is grey. Mud crack fillings and fractures present as above. A network of small fractures in interval 5128-29'. A steep fault at 5134' shows about ¼" fault displacement.

CORE #453 5139 - 5149' Cut & Recovered 10' 100%

Coring times 6, 10, 8, 8, 12, 10, 10, 12, 11, 18.

10' Thin interbeds of sandstone-siltstone and shale. Shale is green and dark brown to black. Siltstone interbedded with black shale is light grey, sandy, quartzise, siliceous cement, quartzite(?), a few dark green inclusions (glauconite?) very slight trace of pyrite and rare bits of calcareous cement or inclusions. The siltstone interbedded with green shale is green-brown, sandy, argillaceous, micromicaceous, very slightly pyritic and is softer than the grey siltstone. Thickest siltstone bed is grey and 5" thick at 5145'. Fractures and minor faulting present as above. Mud crack fillings and/or burrows in the shale also present. Bedding dips 10 - 20°. Core is 50 - 60% shale.

CORE #454 5149 - 5162.5' Cut & Recovered 13½' 100%

Coring times 15, 13, 12, 15, 12, 16, 13, 14, 13, 13, 13, 13, 13, 12, 8.

13½' Shale with siltstone-sandstone interbeds. Shale is dark brown-black, very fissile, micromicaceous, silty in part, non-clacareous, non-dolomitic. Core breaks readily along shale bedding planes some of which are slickensided. Core is "poker chip" in places where bedding is thin. Siltstone very fine sandstone is light medium grey, quartzose, siliceous cement (quartzite?), has a few dark brown argillaceous? inclusions, and is very slightly pyritic. Few steep fractures closed with clay. Few sand-silt filled mud cracks and burrows(?) in the shale. Most beds are thin - under 1". Dip is about 15 - 25°. Core approximately 60% shale.

CORE #455 5162.5 - 5169' Cut & Recovered 6½' 100%

Coring times 14, 13, 15, 15, 16.

6½' Shale with siltstone-sandstone interbeds in a mainly gradational sequence as above. Core about 60% shale.

CORE #456 5169 - 5173' No recovery

Coring times 6, 13, 26, 19.

CORE #457 5173 - 5180' Cut 7' Recovered 6' 86%

No coring times recorded.

6' Shale with siltstone-sandstone interbeds. Shale is dark brown - black (gives brown powder when scratched), very fissile in places breaking into thin flakes or thicker "poker chips", non-calcareous, non-dolomitic, some of bedding planes slickensided. Siltstone-sandstone is light grey to grey-brown, quartzose with silica cement, few tiny brown inclusions, chert or shale?, dark brown siltstone is argillaceous. Core is badly broken up along shale bedding planes. Dip is 10 - 20°. Interval about 60% shale.

DEPTH CORRECTION - Had one 12' rod less in the hole. Go from 5180 to 5168'.

CORE #458 5168 - 5173' Cut 5' Recovered 4' 80%

Coring times 6, 8, 10, 9, 10.

4' Shale with siltstone-sandstone interbeds. Shale is dark brown to black with numerous slickensided bedding planes. Siltstone-fine grained, sandstone is quartzise, grey-brown to light grey, siliceous cement. At 5172' a 2" bed of light grey siltstone to fine grained sandstone has traces of intergranular and vuggy porosity (1 - 2%).

A faint fluorescence is present around the porous areas but no cut was obtained.

CORE #459 5173 - 5188' Cut & Recovered 15' 100%

8½'	Siltstone - fine grained sandstone with shale interbeds as above. About 30% of interval is shale. Trace of poor vuggy porosity at 5178' in a 2" bed of light grey sandstone to siltstone with questionable fluorescence and no cut. A ¼" band of green waxy shale is at base of interval.
5' 8"	Siltstone to fine grained sandstone, red to grey, ferruginous, silica cement, interbedded with a few thin beds of shale, red, fissile, splintery, slightly micro-micaceous, slightly silty. About 15 - 20% of interval is shale. Siltstone-sandstone cut by near vertical fractures (thickest is about ¼" wide) filled with white calcite. Some fractures are open. Occasional very thin (1/8") bands of light green waxy shale with some red mottling cross the core dipping 10 - 15°.
10"	Thin interbeds of siltstone-sandstone and black shale. Shale has many silt-sand filled mud cracks and worm burrows?

CORE #460 5188 - 5193' Cut & Recovered 5' 100%

Coring times 14, 16, 9, 13, 16.

1"	Siltstone, grey-green, argillaceous, sandy, siliceous cement. ¼" band of black shale at base.
4' 5"	Ferruginous very fine grained sandstone, silty interbedded with shale. Sandstone is quartzose, light grey to red to pale purple, siliceous cement, with thin steep fractures filled with calcite. Shale is dark red, splintery, 5190 - 5190.5' is broken putty-like shale possibly a fault plane? Upper 10" (5188.1 - 5188.9) has generally red shale with sandstone-siltstone

filled mud cracks and burrows(?). Lower 2" is irregularly bedded red sand/shale with inclusions and interbeds of green waxy shale. A few thin (1/8") bands of green shale are present throughout the interval.

6" Siltstone to very fine grained sandstone, green, quartzose, siliceous cement, micromicaceous, very slightly pyritic with rare very thin fracture planes (dolomite filled?). Interbedded with light green and dark grey-black shale.

CORE #461 5193 - 5209' Cut 10' Recovered 9½' 95%

Coring times 11, 11, 12, 7, 13, 14, 18, 15, 26, 11.

9½' Thinly interbedded siltstone, very fine grained sandstone and shale. Siltstone very fine grained sandstone is light and medium grey, quartzose, siliceous matrix quartzitic(?) very slightly pyritic. Shale is black fissile brittle in places with many slickensided bedding planes. Shale contains many irregular shaped silt-sand filled mud cracks and burrows(?). Bedding is thin with most beds under ½" thick. Shale is broken up along shale bedding planes into thin poker chips. Dip is generally 10 - 20°. Some shale-silt contacts are graded.

CORE #462 5203 - 5209' Cut 6' Recovered 4' 66%

Coring times 16, 13, 19, 12, 18, 15.

4' Thinly bedded siltstone - very fine grained sandstone and black shale as above. Core is badly broken up.

CORE #463 5209 - 5218' Cut & Recovered 9'

Coring times 17, 16, 13, 23, 13, 12, 8, 10, 13.

9' Thinly bedded siltstone to very fine grained sandstone, grey, quartzisc, siliceous cement, very slightly pyritic and shale black, thinly bedded, fissile. Most beds

show grading from silt to shale. Shale contains silt-sand filled mud cracks and burrows(?) and isolated fragments and lenses of grey siltstone-sandstone. Core is badly broken up along shale bedding planes and along occasional steep fractures in the siltstone.

CORE #464 5218 - 5223' Cut & Recovered 5' 100%

Coring times 7, 12, 13, 7, 8.

8" Siltstone-shale sequence as above. 1" bed of grey siliceous siltstone at base.

½" Shale pale green, soft waxy fissile with few irregular lenses of siltstone and dark green shale. Rough (unconformable?) contact with unit above.

3½" Siltstone to very fine grained sandstone, grey-green siliceous cement, hard, interlayered with green waxy shale and red splintery shale. Lower ½" is soft putty-like red shale. Fault plane?

3' Siltstone - very fine grained sandstone grey to pale red, quartzose, siliceous cement speckled with small (1/8") inclusions of darker red ferruginous material. Interval is broken by fractures and most fracture planes are coated with a slightly calcareous red argillaceous veneer. Base of interval has a 2" zone of red and black shale.

2' Siltstone - very fine sandstone, grey to grey-green with interbeds of black shale.

CORE #365 5223 - 5236' Cut & Recovered 13' 100%

Coring times 13, 13, 17, 10, 9, 11, 13, 15, 12, 12, 15, 14, 11.

13' Interbedded shale and sandstone-siltstone. Shale is black, fissile, splintery in places and non-clacareous. Sandstone-siltstone is quartzose, siliceous cement, dark grey and light grey, quartzite(?) in part, very slightly pyritic. Sandstone-siltstone is

fractured in places and fracture plane line with a very thin film of white-glassy dolomite. Traces of pyrite are associated with fractures. Shale has silt and sand filled mud cracks and burrows(?). Some beds are thicker than above cores ranging up to 4" - 5" but still most beds are thin. Dip is 10 - 20°. Core is about 60% siltstone-sandstone.

CORE #466 5236 - 5243' Cut 7' Recovered 2½' (36%)

Coring times 10, 11, 11, 13, 16, 15, 12.

2½' Sandstone-siltstone and shale interbeds as above. Core is badly broken up. (The core barrel became unlatched and the core was recovered from the drill pipe).

CORE #467 5243 - 5246' Cut 3' Recovered 2' 66%

Coring times 5, 8, 6.

2' Sandstone-siltstone interbedded with black shale as in Core #465.

CORE #468 5246 - 5261' Cut 15' Recovered 13½' 90%

Coring times 9, 12, 15, 12, 14, 11, 14, 10, 10, 12, 6, 9, 10, 6, 5.

6½' Interbedded siltstone-very fine sandstone, medium-dark grey, some light grey, quartzose, siliceous cement, quartzitic, very slightly pyritic. Shale dark grey to black, fissile, mostly very thin bedded. Shale contains silt and sand filled mud cracks and/or burrows. Few steep fractures mainly in siltstone, lined with white dolomite. Interval is 60 - 70% siltstone-sandstone.

2' Siltstone - very fine sandstone, quartzitic, very light grey siliceous, hard with only 3 - 4 thin (¼") shale beds. Bedding dips 10 - 15°. Many open steep parallel fractures dipping 45 - 60°.

1½' Interbedded shale and siltstone-sandstone in thin bedded graded sequences as in 6½' above.

1½' Siltstone to very fine sandstone, light grey, quartzose, siliceous, dense. Several open fractures dipping 45 - 60°.

2' Shale, black with grey siltstone-sandstone interbeds in graded sequences. Bed thickness varies 2" to ¼". Many sand-silt filled mud cracks and burrows(?). Small drag fold in bedding 1' from base of core. Several small closed fractures with random orientation.

CORE #469 5261 - 5274' Cut & Recovered 13' 100%

Coring times 10, 10, 10, 10, 10, 11, 13, 13, 11, 11, 10, 19, 12.

13' Siltstone-fine grained sandstone, medium grey, quartzose, siliceous cement, interbedded with shale, dark grey to black. Silt-sand beds average 2 - 4". Shale beds are thinner. Shale has many silt-sand filled mud cracks and burrows(?) and isolated pieces of grey siltstone-sandstone imbedded. Few dolomite-filled fractures and a few apparently open, steep fractures in the siltstone-sandstone, especially in the lower 4' of core. Bedding dips 20 - 30°. Core broken along shale beds and fractures. Longest pieces are 3" - 4".

CORE #470 5274 - 5285' Cut & Recovered 11' 100%

Coring times 9, 7, 9, 10, 10, 10, 10, 11, 11, 11, 11.

2½' Siltstone - fine grained sandstone, medium to dark grey, interbedded with shale, black as above.

1' 4" Light grey quartzose, siltstone to sandstone, quartzite(?), siliceous cement, hard dense, fractured with few steep breaks, some open, some dolomite lined.

8' 2" Interbeds of medium-dark grey siltstone to fine grained sandstone, siliceous cement and black shale-fissile and brittle in places.

CORE #471 5285 - 5288' Cut & Recovered 3' 100%

Coring times 11, 15, 13.

2' 8" Siltstone to fine grained sandstone, quartzite(?) light grey quartzose, siliceous, slightly pyritic. Bedding planes marked by thin dark (argillaceous?) bands, about 1/16" thick, dipping 20 - 30°. Fractured with steep angled breaks some open some filled with white to pink dolomite.

4" Shale, black with thin bed of dark grey siliceous silty sandstone. Entire core is badly broken up.

CORE #472 5288 - 5294' Cut & Recovered 6' 100%

Coring times 10, 13, 14, 15, 13, 11.

6' Interbedded black shale and siltstone-sandstone, medium to light grey. Shale contains fragments and thin lenses of siltstone-sandstone and also mud cracks and burrow fillings(?) of siltstone-sandstone. 5292.5 - 5293.5' is light grey hard, dense siliceous siltstone-sandstone with steep fractures, some open. Large pyrite mass (1" diameter) in siltstone at 5290'. About 25% of core is shale.

CORE #473 5294 - 5302' Cut & Recovered 8' 100%

Coring times 10, 16, 15, 15, 13, 15, 15, 17.

4' 4" Siltstone to fine grained sandstone, medium grey, minor light grey, siliceous cement, quartzose with thin black shale interbeds. Shale has several irregular inclusions of siltstone-sandstone (mud cracks, burrows(?) isolated fragments) Shale beds are thin, fissile and core is

broken along them. Large (3/4") patch of pyrite at 5294.5' at a shale-light grey sandstone contact. Siltstone to sandstone is fractured with steep breaks - most closed. Bedding over most of interval is marked by thin (1/10") dark argillaceous bands spaced 1/8" - 1/4". Dipping 20 - 30°.

1' 2" Sandstone, very fine grained, silty, light grey, quartzose, siliceous cement with mottles of light grey to white spots ¼" - 1/8" across. These consist of very fine grained quartz grains in a creamy dolomitic matrix. They are arranged randomly and speckled over the entire interval. (Organic origin?) (Compare to ferruginous spots in the interval 5218 - 5221. Core #464). Several steep fractures mostly dolomite filled across the core. Bedding marked by 3 or 4 thin argillaceous zones. Core breaks along fracture planes rather than along bedding.

2' 6" Siltstone - fine grained sandstone, medium grey with interbeds of black shale. Fractures present but well sealed.

CORE #474 5302 - 5310' Cut 8' Recovered 8½' 100%+

Coring times 12, 9, 9, 11, 17, 13, 15, 19.

8½' Siltstone to very fine grained sandstone, light grey and dark grey-brown quartzose, siliceous cement, tight, hard with few steep closed fractures. Trace of pyrite usually associated with the fractures. Interbwdded with shale, black, fissile, brittle and hard in places nearby bituminous(?) leaving a dark smudge on finger when rubbed. Some slickensided shale partings. Thin beds of shale with irregular inclusions (mud crack fillings, burrows and isolated fragments) of grey siltstone to sandstone.

5306.5 - 07.5' is mostly shale with thin interbeds and fragments of grey and grey-brown siliceous sandstone.

5309 - 5310' is mainly silty sandstone, medium-dark grey with very thin 1/16-1/8" shaly interbeds occurring approx. every ¼". Dip is 10 - 15°.

CORE #475 5310 - 5324' Cut & Recovered 14' 100%

Coring times 8, 11, 10, 9, 8, 9, 11, 10, 11, 9, 8, 7, 5, 6.

2'	Sandstone, very fine grained, silty, medium-dark grey, siliceous cement, quartzose, interbedded with shale black fissile thin bedded (¼"). Shale contains many irregular fragments, mud crack and burrow fillings(?) of grey siltstone-sandstone. About 30% of interval is shale.
6"	Sandstone very fine grained, silty, light grey, quartzose, siliceous cement, hard, brittle (quartzite?) slightly pyritic. Fractures steep and most are dolomite lined.
4' 8"	Interbedded shale black and grey silty sandstone. About 3 thin (1") shale beds are crumbled and appear to have swollen in water. Shale has zones of irregular sandstone-siltstone fragments, mud crack fillings and thin beds. Two thin sandstone beds are fractured with steep dolomite filled breaks.
1' 10"	Light grey sandstone, very fine grained, silty, quartzose, siliceous cement, hard, brittle (quartzite?) badly broken by steep fractures. On fracture plane has large red patch of iron (?) staining. Few thin (1/8") black shale beds.
2' 6"	Interbedded shale and silty sandstone. Lower 1' is badly broken with fragments of sandstone imbedded in shale-possibly a fault zone with much soft grey clay and slickensided black shale surfaces. Interval 30 - 40% shale.
2' 6"	Light grey, siliceous sandstone, silty, (quartzite?) fractured. Trace surface porosity where fracture filling or shale fragments have eroded out.
1'	Black shale, sandstone interbeds, badly broken up.

CORE #476 5324 - 5330' Cut 6' Recovered 9" 13%

Coring times 7, 13, 12, 17, 15, 12.

9" Badly broken pieces of sandstone very fine grained, medium grey-brown and dark brown-black, brittle shale.

CORE #477 5330 - 5338' Cut 8' Recovered 7' 88%

Coring times 6, 9, 11, 14, 11, 19, 11, 11.

7" Shale, black, blocky in part, fissile streaks, with interbeds of sandstone, very fine grained, silty, medium-dark grey. Few thin irregular sandstone lenses at base of interval.

7" Sandstone, light grey, very fine grained, silty, quartzose, siliceous cement, hard, brittle (quartzite?). Broken by several steep fractures lined with white and trace pink dolomite and minor glassy selenite. Traces pyrite associated with fracture planes. Few small black shale inclusions in lower 2".

7" Shale, black, very fissile with thin (¼") irregular beds and lenses of silty sandstone. Shale appears to have been affected by water and is crumbling. Medium grey bed of sandstone, very fine grained, silty in middle of interval.

16" Sandstone, medium grey, silty, quartzose, siliceous cement broken by steep dolomite-lined fractures. Pyrite traces along fractures. Few thin interbeds of black shale. Medium grey sandstone seems finer grained more silty than the light grey.

14" Shale, dark grey-black, fissile, brittle with many smooth and some slickensided contacts. Many inclusions of thin beds, lenses and fragments of silty sandstone and the shale has moulded around these. Interval contains two 2" sandstone beds.

25" Sandstone, very fine grained, silty, medium grey, siliceous cement, quartzose, broken by several steep fractures, most are dolomite lined, traces of pyrite mainly along fracture planes. Small linear shale inclusions mark bedding planes dipping about 30°.

8" Shale, black with irregular inclusions and thin beds of sandstone, medium grey, silty. Shale has broken up badly along bedding planes. Some sandstone-siltstone filled mud cracks and burrows(?) in one thin bed.

CORE #478 5338 - 5349' Cut & Recovered 11' 100%

Coring times 9, 9, 10, 10, 10, 11, 10, 12, 18, 12, 18.

1' Sandstone, very fine grained, medium grey-brown, silty, argillaceous, slightly pyritic, siliceous cement in part. Two thin shale partings and few irregular shale fragments imbedded in the sandstone.

18" Sandstone, light grey, silty, siliceous quartzose in beds of 1" - 2" separated by black shale beds 1/2 - 3/4" thick. Sandstone is fractured with steep breaks most of them sealed. Shale has many sandstone inclusions i.e. mud cracks and burrow fillings(?), thin beds, lenses and irregular fragments.

3" Sandstone, light grey, silty, siliceous, hard, brittle, quartzitic, fractured and broken with steep dolomite lined breaks.

1" Sandstone, very fine grained, medium grey, argillaceous, siliceous cement in part. Bedding planes show cross-bedding.

2" Sandstone, light grey, siliceous, silty, hard, quartzitic, striped with thin dark argillaceous bedding planes dipping 15 - 25°.

7' 8" Interbedded black shale and medium grey, argillaceous, silty sandstone. Sandstone thinly banded by dark argillaceous bedding planes. Interval is about 40 - 50% shale. Beds are up to 5" thick but most are thinner. Sandstone not too badly fractured because argillaceous content makes it more pliable. Shale has many sandstone inclusions, mud crack fillings, lenses, irregular beds and angular fragments. Shale bedding curves around these inclusions.

At 5348' a 4" zone of shale-sandstone rubble may indicate a fault plane. No fluorescence.

4" Sandstone, light grey, silty, siliceous, hard, brittle, quartzitic, broken by steep fractures. Thinly banded by very thin argillaceous bedding planes.

CORE #479 5349 - 5359' Cut & Recovered 10' 100%

Coring times 11, 10, 12, 13, 13, 10, 10, 10, 11, 8.

2' Sandstone, very fine grained, silty, quartzose, siliceous cement, argillaceous in part, micromicaceous, interbedded with shale, black, fissile, carbonaceous? in part, bedding planes smooth some slickensided. Shale contains inclusions of sandstone-fragments, mud crack fillings. Lower 2" is very irregularly bedded, broken shale and sandstone fragments with pockets of light grey clay, possibly a fault plane. Appear to have swollen in water.

3½' Sandstone, very fine grained, silty, light grey - some medium grey, siliceous cement, hard, brittle, quartzitic with few thin ½" shale beds and irregular shale inclusions. Lower 5" is more shaly with one ½" bed of fragmented shale and sandstone with grey clay - fault plane? Few thin steep fractures.

4½' Sandstone, very fine grained, medium-dark grey, silty, quartzose, siliceous cement in part, slightly argillaceous, micromicaceous, banded with thin dark bedding planes. Some cross bedding at 5356'. Several thin black shale interbeds

with sandstone inclusions and some with gradational contacts with sandstone. Interval 20 - 25% shale. Possible 2" fault plane at 5358'. Fractures 5357 - 5357.5'.

CORE #480 5359 - 5369' Cut 10' Recovered 10½' 100%

Coring times 14, 17, 11, 13, 13, 13, 13, 14, 12, 18.

13" Sandstone, light grey, silty, quartzose, siliceous cement, hard, brittle, fractured with steep breaks. Thin shale beds near base. Shale is black, thickest bed is about 2". Shale contains irregular fragments, thin beds, lenses, mud crack and burrow fillings of sandstone.

9" Sandstone, dark-medium grey, silty, quartzose, argillaceous, siliceous in part, ungraded sequence with thin black shale beds. Few steep fractures.

4" Sandstone, light grey, siliceous cement, hard. Fractured.

18" Sandstone, dark-medium grey, silty, argillaceous, interbedded with thin black shale beds in graded sequences. Sandstone is fractured.

5" Light grey, siliceous, sandstone, silty, hard, fractured.

9" Sandstone, very fine grained, silty, medium-dark grey with black shale interbeds. One 1" shale bed is swollen and crumbled, black, carbonaceous?, slickensided bedding planes.

10" Sandstone, very fine grained, silty, light grey, siliceous cement with thin ¼" shale bed near the top. Fracture runs length of interval is lined with thin 1/32-1/16" bed white-pale red dolomite. Few red ferruginous (rust?) spots on fracture planes.

3' Sandstone, medium grey, interbedded with thin black shale beds in partly graded sequence. A 5" bed in centre of interval consists of fragmented shale-sandstone and

may be a fault plane. Other shale beds contain interbeds and lenses, mud crack fillings, fragments of sandstone. About 15% of interval is shale.

10" Sandstone, very fine grained, silty, light grey, siliceous cement, hard, brittle. Fractured.

1' Interbedded sandstone, medium grey, argillaceous with shale, black platy, carbonaceous, and one thin bed of light grey siliceous sandstone.

CORE #481 5369 - 5375' Cut 6' Recovered 8" 11%

Coring times 13, 15, 16, 18, 18, 18.

6½" Sandstone, light grey, very fine grained, silty, siliceous cement, hard, brittle, fractured, broken fragments of sandstone, very fine grained, silty, medium grey, argillaceous with traces of black shale on some surfaces.

1½" Sandstone, very fine grained, silty, very pale grey-green, separated by a paper-thin white, very fine grained silty sandstone. Both sandstones have siliceous cement and are flecked with small red ferruginous, argillaceous inclusions. Pale green sandstone has rare glauconite grains and some clay matrix.

CORE #482 5375 - 5377' Cut 24" Recovered 22" 92%

Coring times 5, 5.

22" Sandstone, very fine grained, silty, very light grey, white siliceous quartzose, few tiny red argillaceous(?) patches and streaks. Bedding quite indistinct but probably dip 30 - 45° outlined by faint reddish lines. Core broken by fractures dipping 45° (approx.). Fractures near base lined by thin veneer of pale green sandy clay with angular fragments of sandstone imbedded (fault plane?). Other fracture planes have ref ferruginous(?)

staining. Trace of calcite in one fracture plane. Thin ¼" band of pale green sandstone, very slightly glauconitic, siliceous cement, near the base of the core. Other irregular breaks near horizontal appear sealed. No fluorescence or staining.

CORE #483 5377 - 5392' Cut 15' Recovered 22" 12%

Coring times 3(?), 7, 10, 8, 6, 7, 9, 8, 7, 6, 8, 7, 10, 7, 6.

22" Sandstone, very fine grained, silty, light grey to pale purple, siliceous with ferruginous red flecks and inclusions. Steep fractures lined with veneer of red argillaceous clay.

CORE #484 5392 - 5392' 3" Cut & Recovered 3" 100%

No times recorded.

3" Sandstone, very fine grained, silty, siliceous quartzose, light-medium grey, very slightly pyritic, no visible bedding, hard, brittle, tight, steep fracture present.

CORE #485 5392'3" - 5402' Cut & Recovered 9' 9" 100%

Coring times 8, 12, 11, 9, 28 (not accurate) 9, 8, 10, 11, 12.

1" Sandstone, light-medium grey, siliceous as above.

5" Sandstone, very fine grained, silty, argillaceous, medium grey grading to black shale, silty. Few argillaceous beds at base of interval dipping 20° (approx.).

9" Sandstone, very fine grained, silty, light grey, hard, brittle, quartzitic.

3' 6" Sandstone, medium grey,green, argillaceous, few 1" shale beds near top and bottom of interval. Shale has sandstone inclusions.

Shale bed 4" from top of interval and one at the base are possible fault planes of fragments of shale and sandstone, swollen by water (bentonitic?).

3' Sandstone, dark grey-brown, very fine grained, silty, siliceous cement, slightly pyritic. Appear to have been fractured almost to a breccia by a network of dark grey-brown dolomite lined breaks. Some linear and angular vugs at surface of core where intersecting fractures have freed chips of sandstone. Grades downward in lower 1' to a light grey, siliceous, brittle sandstone, fractured by white and minor pink dolomite lined breaks. Abrupt angular unconformity contact with next unit.

6" Breccia, large (2") fragments of slightly dolomitic siliceous, dark grey to black sandstone, surrounded by black shale.

1½' Thin (1/8 - 1/4") interbeds of black shale and dark grey-brown sandstone, very fine grained, dipping 10 - 20°.

CORE #486 5402 - 5416' Cut & Recovered 14' 100%

Coring times 7, 13, 14, 11, 12, 15, 14, 13, 11, 12, 10, 8, 7, 6.

6' 6" Sandstone, very fine grained, silty, light grey to dark grey, siliceous, quartzitic, thinly interbedded with dark grey-black shale. Bedding dips 10 - 20°. Beds are mostly under 1" thick. Shale contains irregular fragments, thin beds, lenses, of sandstone. Core broken into "poker chips" along shale bedding planes.

10" Shale, dark grey-black, blocky, silty with thin silty interbeds. Fractured by near vertical break.

5" Shale, very pale green, soft bentonitic, putty-like consistency, much grey-geen clay.

1' 4" Sandstone, light grey-very fine grained, siliceous with thin interbeds and irregular inclusions of black shale.

1' Sandstone medium grey-green, very fine grained, silty, siliceous, fractured.

3" Shale, black, fissile, badly broken swollen by water, crumbly. Thin sandstone bed in middle of interval.

3' 8" Sandstone, mostly light grey, very fine grained, silty, siliceous, brittle, fractured with steep breaks in upper 2'. Few thin beds of black shale. Dip 10 - 20°. Shale more abundant in lower 1½'. Less than 10% shale.

CORE #487 5416 - 5419' Cut & Recovered 100%

Coring times 30(?), 9, 9.

3' Sandstone, medium to light grey, very fine grained, siliceous cement, quartzose, hard, dense, fractured. Few thin shale beds in middle 12". Shale is black and has sandstone inclusions, thin beds, fragments, lenses and mud crack fillings.

CORE #488 5419 - 5428' Cut & Recovered 9' 100%

Coring times ?, ?, ?, 10, 11, 12, 11, 12, 10.

9' Interbeds of sandstone, light-medium grey, very fine grained, silty, siliceous cement, quartzitic hard and shale black. 10 - 15% of interval is shale. Shale contains fragments, thin beds, lenses, irregular masses, mud crack fillings(?) of sandstone. Bedding is thin averaging 1" - 3". Several sandstone beds fractured.

CORE #489 5428 - 5438' Cut & Recovered 10' 100%

Coring times 9, 12, 12, 14, 14, 13, 17, 14, 26, 13.

10' Sandstone, very fine grained, very silty, medium grey, siliceous cement, quartzitic, thinly interbedded with shale black, micromicaceous in part. (10 - 15% shale).

Shale contains irregular inclusions of sandstone. Beds dip 10 - 20°. Some steep fractures in sandstone beds.

CORE #490 5438 - 5442' Cut 4' Recovered 3½' 87½%

Coring times 15, 18, 20, 11.

1' 8"	Interbedded sandstone, grey, silty, very fine grained, siliceous cement, fractured with interbeds of black shale (10 - 15% shale). Shale contains thin beds and irregular fragments of sandstone, mud crack fillings? thin lenses. Small reverse fault series noted in a sandstone lense at 5439.5'.
10"	Shale, black as above, and sandstone. Sandstone is fractured and broken to a breccia and shale fills in around the fragments. Shale in one 2" zone is badly crumbled and may have been a fault zone. Some light grey sandy clay pockets are present in the broken shale bed.
12"	Sandstone, light grey, very fine grained, silty, siliceous cement, hard, dense, fractured. Fracture planes have a trace of a red ferruginous?, argillaceous veneer.

CORE #491 5442 - 5446' Cut 4' Recovered 3' 75%

Coring times 15, 9, 11, 13.

7"	Sandstone, light grey, very fine grained, silty, siliceous cement, hard, fractured with few red spots on the fracture planes as above.
2' 5"	Sandstone, grey, very fine grained, siliceous, thinly interbedded with shale black. Lower 1' of core broken to rubble. Shale contains irregular sandstone inclusions, thin beds, lenses, fragments and mud crack fillings(?).

CORE #492 5446 - 5450' Cut & Recovered 4' 100%

Coring times 9, 12, 13, 15.

1' 8"	Sandstone, light grey, very fine grained, silty, abundant siliceous cement, quartzitic, hard. Appears to have been sheared horizontally and obliquely and the shear and fracture planes marked by white sandy silica, cherty in places which is often slickensided. Some surface vugs where fractures intersect and loose pieces of core have fallen out. Interval broken up into small pieces. Few thin black shale beds.
1' 10"	Shale black, fissile, broken and crumbled, irregular inclusions and interbeds of sandstone, grey, siliceous, thickest is 2" and broken by a network of fractures. Dip of beds is steep 45 - 50°. Shale bedding planes very smooth. Interval is badly broken but is probably about 60% shale.
6"	Shale, pale green, waxy, fissile, bentonitic, soft, slightly silty with glassy quartz grains. Few thin seams of thin, pale green shale present in lower 1' of unit above.

CORE #493 5450 - 5451' Cut & Recovered 1' 100%

Coring time not recorded.

1'	Badly smashed shale, dark grey-black and sandstone, grey, silty. Dip is steep 45 - 60°.

CORE #494 5451 - 5453' Cut 2' Recovered 1' 50%

Coring times 14, 12.

1'	Smashed up shale and sandstone as aobve. Dip is steep 45 - 60°.

CORE #495 5453 - 5460' Cut & Recovered 7' 100%

Coring times 13, 15, 13, 14, 8, ?, ?.

4"	Sandstone, light grey-brown, very fine grained, silty, silica cement, quartzitic, broken by irregular seams of white sandy silica, almost brecciated.
1' 6"	Sandstone, grey, very fine grained, silty, siliceous cement. Interbedded with black shale (50%). Interval is badly broken. Dip changes from 45 - 60° at top to about 20°at base. Dip is about 20° over the rest of the core.
5' 2"	Sandstone, grey as above, interbedded with thin black shale beds (10 - 15% shale). Shale has many sandstone inclusions lenses, fragments, mud crack and burrow(?) fillings. Lower 2' mostly light grey-brown sandstone, very fine grained, silty, siliceous cement, quartzitic, fractured.

CORE #497 5468 - 5475' Cut & Recovered 7' 100%

Coring times 13, 12, 12, 11, 13, 19, 12.

7'	Sandstone, medium-light grey, very fine grained, silty, siliceous cement, slightly pyritic, hard, interbedded with (20%) shale, black, fissile in part. A 4" fractured (open) sandstone band in the upper part of the interval is medium grey

and banded with many thin dark bedding planes which show a steep sided slump fracture(?) and minor cross bedding. 5469 - 5470' is mostly black shale with some sandy interbeds. Shale contains inclusions of sandstone interbeds, lenses, fragments, mud crack fillings, burrows(?). Several sandstone beds are fractured with mostly closed breaks.

CORE #498 5475 - 5486' Cut & Recovered 11' 100%

Coring times 13, 12, 11, 11, 11, 13, 11, 10, 12, 16, 17.

11' Interbedded grey sandstone and black shale (10%). Sandstone is light, medium grey, very fine grained, silty, slightly quartzitic, slightly pyritic. Much of sandstone is banded with thin, closely spared, dark "pencil line" bedding planes. Shale interbeds are thin and in places show a graded sequence to sandstone. 5479 - 80' has a graded sequence in which grey sandstone grades upward to black shale over 6". Shale contains many inclusions of sandstone, lenses, mud crack fillings, burrows(?), and irregular fragments. Thickest continuous sandstone bed is 8" in the interval 5477 - 5478' and is fractured by steep closed breaks. 5485 - 5485.5' is a badly broken zone of black shale with pockets of grey clay. This may be a fault plane.

CORE #499 5486 - 5501' Cut & Recovered 15' 100%

Coring times 18, 13, 11, 11, 11, 13, 13, 10, 11, 7, 10, 9, 8, 10, 5.

14' 9" Interbedded grey sandstone and black shale (10 - 15%).
Sandstone is light to dark grey, very fine grained, silty, siliceous cement, quartzitic in part, slightly pyritic. Sandstone grades in few places to shale black, fissile in part, but in most cases the contact is abrupt. Bedding is thin, under 1" average. Sandstone is marked by dark wavy "pencil line" shale

bedding planes rarely showing cross bedding. Dip is approximately 20°. Thicker sandstone beds are fractured. Shale contains fragments, lenses and mud cracks, burrows(?), fillings of sandstone. Shale beds all under 2" thick and show very smooth bedding surfaces and some slickensiding.

3" Sandstone, light grey, very fine grained, silty, very siliceous, quartzite(?), pyritic, fractured with white calcite lined breaks.

CORE #500 5501 - 5504' Cut 3' Recovered 2' 66%

Coring times 6, 9, 6.

12" Sandstone, light grey, very fine grained, hard, quartzitic, siliceous cement, bedded irregularly with pale brown, sandy pyritic chert which becomes predominent near base. Chert is mottled and streaked with grey-blue fracture and bedding planes in places. Interval is broken by thin calcite filled fractures and is badly broken.

12" Quartzite, black-dark grey-green, cut by steep fractures filled with calcite and some pale green soft "soapy" mineral(?). Fractures are oriented randomly - some steep, some apparently following bedding. Some fracture planes are slickensided. Bedding not too evident but likely dips about 10 - 20°. Thick (¼") steep fracture filled with white calcite, dolomite(?) and quartz slightly pyritic cuts through the interval.

CORE #501 5504 - 5511' Cut & Recovered 8' 100%

Coring times 13, 15, 13, 12, 15, 15, 15.

4' Quartzite, black, very dark green as above.

4' Quartzite, light grey-dark blue-grey, mottled, grading to a lighter grey-brown slightly pyritic, sandy chert and siliceous sandstone, in the lower 3'. Bedding

dips 20 - 30°. Core cut by a branching network of very thin dolomite and minor calcite filled fractures.

CORE #502 5511 - 5526' Cut & Recovered 15' 100%

Coring times 9, 9, 9, 9, 9, 7, 8, 8, 8, 8, 7, 8, 8, 8, 9.

1' Quartzite, light grey and sandy pale brown chert, slightly pyritic as above.

14' Sandstone light grey-dark grey, very fine grained, silty, siliceous, quartzitic, thinly interbedded with black platy shale. Bedding planes in sandstone marked by numerous closely spaced waxy "pencil-line" bedding planes usually 1/8 - 1/16" apart. Some shale beds up to ¼ - ½" with irregular sandstone inclusions. Few closed fractures in the interval. Dip os 15 - 25°. Irregular patch of white dolomite with imbedded sandstone at 5515'.

CORE #503 5526 - 5541' Cut & Recovered 15' 100%

Coring times 14, 13, 14, 11, 12, 11, 9, 9, 8, 9, 8, 7, 9, 9, 6.

7' 10" Sandstone, light-medium grey, very fine grained, silty, siliceous cement, quartzitic, slightly pyritic with thin interbeds shale black, platy with very smooth bedding planes. Shale contains few irregular fragments, lenses, mud cracks fillings of sandstone. Shale bedding curves around these fragments forming nodules and "limps" on shale bedding planes. Most sandstone beds are thin, under 1". Shale beds are very thin 1/8 - 1/4". Less than 10% of interval is shale.

2' 2" Sandstone, grey-green, very fine grained, silty, siliceous quartzose, slightly pyritic, finely interlaminated with grey-green slightly waxy shale. Few thick black shale interbeds near base of interval.

5' Sandstone grey quartzitic interbedded with black shale as in 7' 10" above.

CORE #504 5541 - 5551' Cut & Recovered 10' 100%

Coring times 8, 7, 7, 6, 7, 9, 8, 8, 10, 18.

3' 4" Sandstone light grey, very fine grained, silty, very finely interbedded with black shale. About 50% of interval is shale in beds 1/16 - 1/8" thick. Shale is fissile and platy so core broke easily along these thin shale beds. Irregular sandstone fragments usually imbedded in thicker shale beds. Steep ¼" bed of drumbled shale at base of interval may be a fualt plane.

1' 2" Sandstone, light grey, very fine grained, silty, siliceous, slightly pyritic and fractured by steep dolomite filled breaks.

5' 6" Sandstone and shale in thin interbeds as in 3' 4" above. Two possible fault planes in interval 5548 - 49' are ¼" bands of badly broken shale and clay. Few thin steep fractures filled with white pyritic dolomite.

CORE #505 5551 - 5566' Cut & Recovered 15' 100%

Coring times 11, 11, 11, 9, 10, 9, 8, 8, 8, 8, 8, 8, 7, 6, 6.

12' 7" Interbedded sandstone, grey and shale black. Shale is predominant in upper 1' (50 - 60%) sandstone becomes more predominant in remainder (approx. 60% sandstone). Bedding is thin 1/16 - 1/8" and well outlined by thin dark bedding planes. Dip is inconsistent but is approximately 10 - 15°. Trace of cross bedding shale has many sandstone inclusions, fragments, lenses, mud crack fillings, burrow fillings(?). Three thick (1½" - 2") sandstone beds in lower 3' of interval. Few fractures present. One fracture cuts bedding but has been displaced in a later fault movement parallel to the bedding.

2' .5" Sandstone, light grey, very fine grained, silty, silica cement, slightly pyritic, gractured by steep breaks, some open. Rare thin pale grey-green shale lenses but no continuous beds. Sandstone bedding is indistinct - appears massive.

CORE #506 5566 - 5581' Cut & Recovered 15' 100%

Coring times 6, 7, 6, 6, 6, 7, 6, 5, 7, 6, 7, 6, 6, 7, 5.

4" Sandstone, light grey as above with few thick argillaceous bedding planes.

14' 8" Sandstone, grey, very fine grained, silty, siliceous with (10%) thin black shale interbeds. Thickest shale beds are about 1" but most are thinner - many paper thin. Shale is black, fissile to blocky with very smooth bedding planes in fissile shale. Bedding is wavy to irregular. Dip 10 - 30°. Many sandstone inclusions in shale beds, irregular fragments, lenses, mud crack fillings and burrow(?) fillings. Shale curves around these inclusions. Few steep fractures - generally closed. One open fracture at 5573'.

CORE #507 5581 - 5589' Cut 8' Recovered 9' 100%+

Coring times 12, 6, 7, 5, 8, 6, 6, 9.

9' Thin interbeds sandstone and shale as above. Sandstone is grey, very fine grained, silty, siliceous cement and slightly pyritic. Shale is black fissile, mainly but blocky in part with irregular inclusions of sandstone.

Interval 5583-84' is mostly uniform grey shale with thin black "pencil-line" bedding planes.

5586 - 87' is mostly light grey, siliceous sandstone (quartzite?) hard and fractured with several steep breaks - one open, remainder closed.

CORE #508 5589 - 5593' Cut 4' Recovered 3½' 88%

No coring times recorded.

3½' Thin interbeds of sandstone and shale, fractured, dip 20 - 30°.

CORE #509 5593 - 5597' Cut 4' Recovered 2½' 62%

No coring times recorded.

2½' Thin interbeds sandstone and shale as above. In upper 1', beds are contorted and dip 45 - 55°. In lower 1½' bedding is more regular and dip is about 30°.

CORE #510 5597 - 5602' Cut & Recovered 5' 100%

Coring times 9, 14, 13, 16, 12.

5' Sandstone and shale thinly interbedded as above. Dip approximately 25°. Small vug with quartz crystals and red (ferruginous?) staining at top of interval (5597').

CORE #511 5602 - 5611' Cut & Recovered 9' 100%

Coring times 9, 7, 8, 6, 8, 7, 7, 9, 9.

8½' Sandstone, grey with thin (less than 1") shale interbeds. Dip is 20 - 30°. Irregular sandstone inclusions in the shale (mud crack fill, fragments, lenses, burrow fill?). Thin ¼" possible fault plane at 5607' parallel to bedding with broken shale fragments and some grey clay. Few pyrite nodules. Some steep (60°) fractures most closed but few are open.

6" Siltstone, grey-green, slightly argillaceous, siliceous cement, dense, tight with occasional thin 1/16 - 1/8" beds of shale grey-green, slightly sandy shale.

CORE #512 5611 - 5622' Cut & Recovered 11' 100%

Coring times 14, 10, 11, 11, 11, 10, 10, 9, 17, 9, 8.

20" Siltstone, grey-green as above.

10' 4" Sandstone, grey, very fine grained, silty, siliceous cement, hard, slightly pyritic, thinly interbedded with shale dark grey-black. Interbeds are generally very thin 1/16 - 1/8". Thickest sandstone beds are about 1" and even these have a micro-bedding of paper-thin shale. Several fragments of sandstone surrounded by curving shale beds. Bedding is both wavy and straight, generally dipping 15 - 25°. Shale percentage is approximately 20 - 30%. Shale bedding planes are very smooth. Few steep thin fractures lined with slightly pyritic, white, dolomite and minor quartz.

CORE #513 5622 - 5634' Cut & Recovered 12' 100%

Coring times ?, 17, 10, 9, 9, 10, 13, 7, 7, 7, 7, 17.

2' 8" Sandstone, light to medium grey-brown, very fine grained, silty, silica cement, slightly argillaceous, slightly pyritic, very hard, with abundant very thin interbeds of grey-black shale. Shale beds are only paper thin and sandstone beds are 1/16 - 1/8". Estimate 30 - 35% of interval is shale. A few sandstone fragments are imbedded in the shale and bedding planes curve around them. Few possible slump features indicated by distorted and faulted bedding. Dip approximately 15°.

3' Sandstone, light grey-green, very fine grained, occasional fine grained, silty - abundant silica cement (rock borders on a quartzite), very hard, dense, with a few pale grey-green waxy shale interbeds. Less than 10% shale. Dip 15 - 20°.

6' 4" Sandstone, medium grey-brown, interbedded with shale as in 2' 8" interval above. Dip about 20°. Shale content approximately 20%.

CORE #514 5634 - 5645' Cut & Recovered 11' 100%

Coring times 7, 9, 11, 12, 11, 16, 11, 12, 12, 12, 14,

7' Sandstone, light grey to dark grey, very fine grained, silty, siliceous cement, slightly pyritic thinly interbedded with approximately 20% black platy shale. Dip 15°. Few sandstone fragments imbedded in shale. Few thin closed fractures. (No mud cracks or burrow fillings(?) which have been usually present in this type of sediment).

4' Sandstone, very fine grained, silty, grey-green, slightly argillaceous, siliceous cement, hard, brittle, thinly bedded in spots by thin grey-green shale beds. Estimate less than 10% shale. Fractured in several places by steep ¼ - 1/8" slightly pyritic white dolomite and quartz filled breaks. Few open fractures. Dip is about 15°.
Steep "S"-shaped abrupt contact with grey sandstone unit above.

CORE #515 5645 - 5660' Cut 15' Recovered 14' 93%

Coring times 3(?), 7, 11, 10, 8, 7, 7, 8, 7, 7, 5, 8, 8, 10, ?.

14' Sandstone, grey-green, very fine grained, silty, siliceous cement, argillaceous in part, slightly dolomitic with many very thin grey-green shale beds. Thin shale bed ¼" at 5655.5'. Shale bed (3") at 5658' grades downward to a sandstone. Several steep fractures, some dolomite filled, some open, break the core. Slump features(?) large rounded 2" - 3" fragments of lighter grey-green sandstone imbedded in a darker grey-green more argillaceous sandstone at 5651.5 - 5652'. Dip is approximately 15 - 20°.

CORE #516 5660 - 5675' Cut & Recovered 15' 100%

Coring times 7, 8, 7, 7, 9, 7, 10, 9, 6, 7, 5, 5, 6, 6, 5.

6" Sandstone, grey-green as above, grading downward in the lower 5" to a sandstone grey with numerous fragments and lenses of black shale, grey-brown, and black sandstone making a conglomerate.

7' 8" Shale, grey-green, hard, platy with thin interbeds of sandstone, grey-green and minor brown colour, slightly dolomitic, very fine grained, silty, occasional medium grain quartz, slightly argillaceous, silica cement, extremely well cemented, grading to a quartzite in places. Occasional chert pebble, smoky, black, imbedded. Sandstone beds are 1" to ¼" thick. About 45% of interval is sandstone. In lower 6" the dip steepens from a consistent 15° to about 60°. A few thin beds waxy, grey-green shale in lower 6".

5' 10" Sandstone with 15 - 20% shale interbeds. Sandstone is grey-green, very fine grained, silty, occasional medium grained quartz, siliceous cement, slightly argillaceous in part, very hard, well indurated grades to a quartzite in places. Few pale green grains (glauconite?) and occasional brown chert pebble imbedded.
Shale is grey-green, dense, hard, slightly dolomitic in places. Lower 3½' section consists of a series of thin ½" beds of "micro" conglomerate (quartz, sandstone, dolomite fragments imbedded in darker green sandstone) grading upward to argillaceous sandstone or shale. Sequence may be 2 - 6" apart. Bedding is wavy but generally dips 15°.
Several dolomite and quartz filled fractures. Thick 1 - 2" white dolomite (fracture filling?) crosses the core at 5670 - 5671'. Sides of the fracture appear to have been brecciated and there are fragments of sandstone and shale imbedded in the dolomite. Some vuggy porosity in the dolomite filling. No cut.

CORE #517 5675 - 5690' Cut 15' Recovered 11' 73%

Coring times 6, 7, 5, 7, 7, 8, 6, 8, 9, 8, 8, 7, 12, 14, 15.

11' Sandstone, grey to grey-green with minor grey-brown, slightly dolomitic, very fine grained, silty, silica cement, hard, brittle with very thin (1/16") interbeds of shale, grey-green, hard (about 10% of core is shale) Bedding is wavy and in places irregular. Some beds of "micro" conglomerate with small fragments of light grey-green sandstone in a darker sandstone matrix. The conglomerate grades upward to finer sand and shale. Some steep open fractures, lined with white dolomite, later selenite in a fracture 5681-5682' overlying the dolomite lining.

CORE #518 5690 - 5692' Recovered 5' 10" (3'8" #517, 2'2" #518)

Coring times 22 minutes for 2 feet.

4' 2" Sandstone, grey-green, very fine grain, silty, slightly argillaceous in part, silica cement, hard with few rounded inclusions and thin beds of sandstone very fine grained silty pale brown dolomite, tight. Few steep white dolomite filled fractures.

1' 8" Sandstone, pale grey-brown, very fine grained, silty, dolomitic, tight with abundant thin bands of grey-green sandstone in the lower 6".

CORE #519 5692 - 5706' Cut 14' Recovered 14'8" 100%+

Coring times 7, 9, 8, 8, 9, 8, 7, 7, 8, 7, 8, 9, 7, 8.

8' 1" Sandstone, grey-green, very fine grained, silty, siliceous cement, argillaceous in part with thin beds and elongate fragments of sandstone, light grey-brown dolomite. Few thin shale partings. Thin (¼") soft waxy shale bed 9" from top of core and 1" shale bed soft, broken at 20" from top of interval. Contact of light grey/grey-green sandstone usually contains a thin brecciated zone of fragments of light grey sandstone in a matrix of darker grey-green. Light grey dolomitic sandstone becomes more abundant in lower 4' of interval making nearly 50%.

6' 7" Sandstone, light grey-brown, dolomitic, very fine grained, silty, grading in places to a sandy, silty, slightly argillaceous dolomite, hard, dense. One thin stringer and several irregular lenses of dolomite white, crystalline. Stylolite at 5702. Top of unit is broken and brecciated with irregular vertical stringers and filling of dark grey-green sandstone to a depth of approximately 3".
Bedding marked by wavy thin dark planes dipping about 15°.

CORE #520 5706 - 5719' Cut & Recovered 13' 100%

Coring times ?, ?, ?, 10, 12, 9, 8, 10, 10, 9, 9, 8, 9.

13' Sandstone, grey-green to grey, very fine grained, silty, dolomitic, siliceous cement, slightly glauconitic(?), slightly argillaceous, grading in places to dolomite, light grey, very silty, cryptocrystalline, tight. This rock types have gradational boundaries in places and abrupt contacts in other places often with brecciated fragments of light grey dolomite imbedded in grey-green more argillaceous sandstone.

Most dolomitic intervals 5710-5711.5' (1½')
5713-5714' (1')
5715'5"-5719' (3½')

Few thin shale beds (less than 10% of core) throughout. Shale is grey-green, platy, slightly dolomitic, some very smooth surfaced, wavy bedding planes. Few steep dolomite filled fractures.

CORE #521 5719 - 5730' Cut & Recovered 11' 100%

Coring times 11, 10, 11, 10, 11, 10, 10, 9, 8, 9, 10.

6' 6" Dolomite, cryptocrystalline, light grey-brown, very silty-sandy, grading to dolomitic sandstone, grey-green. Occasional very thin shale partings. Bedding dip 15°. Few steep (60°+) fractures-dolomite lined. Sandstone has more green dolour than sandy dolomite.

3' 6" Breccia, large fragments of grey-brown sandy-silty dolomite in a matrix of white (trace of pink) crystalline dolomite. Probably represents a large fracture filling but appears like breccia in core. Contact with unit above is steep - about 60°, with unit below is a steep (45°) green shale-lined break.

1' Sandstone, very fine grained, silty, grey-green, dolomitic with steep dolomite lined fractures.

CORE #522 5730 - 5745' Cut & Recovered 15' 100%

Coring times 6, 5, 4, 6, 5, 7, 6, 5, 7, 7, 7, 8, 6, 6, 5.

15' Sandstone, very fine grained, silty, grey-green, very dolomitic, siliceous cement, grading to interbeds of dolomite, light grey, very silty, micro-cryptocrystalline. Several steep dolomite-filled fractures. Thick 3/4" fracture filled with white crystalline dolomite runs length of the top 3' of core.

Approximate breakdown.
5730 - 5735' predominantly sandstone
5735 - 5740' predominantly dolomite
5740 - 5742' predominantly sandstone
5742 - 5744'6" predominantly dolomite
5744'6"-5745' predominantly sandstone.

CORE #523 5745 - 5760' Cut & Recovered 15' 100%

Coring times 10, 9, 7, 7, 8, 8, 8, 8, 6, 6, 7, 6, 6, 7, 5.

15' Sandstone, silty, light grey, siliceous cement, dolomitic (25-30%), slightly pyritic, few pale green grains (glauconite?), hard, brittle. Occasional shale band, green, very hard, silty, core is about 10% shale. Shaliest section is 5754.5 - 5756'. Bedding is wavy in part but generally dips 15°. Few graded beds from micro-conglomerate with occasional fragments of a lighter sandstone, grading up to a shale. Some of sandstone

may be a silicified carbonate as it has pelletoid or oolitic texture. Few thin dolomite fractures.

CORE #524 5760 - 5775' Cut & Recovered 15' 100%

Coring times 7, 9, 8, 10, 7, 9, 8, 10, 9, 10, 8, 9, 8, 8, 8.

15' Sandstone, very fine grained, silty, light grey to grey-green, dolomitic (25-30%), some siliceous cement, few pale green glauconite(?) grains, slightly pyritic, very hard, brittle. Occasional shale band, green, slightly dolomitic, silty, hard, indurated, almost slaty as it sometimes breaks across bedding planes in irregular chunks. Shaliest sections are 5763-63.5', 5767-5769', 5772.5-5773'. Estimate 10% of core is shale. Sandstone appears to have been, in places, a silicified carbonate of pelletoid-oolitic texture. Some graded beds from sandstone up to shale. Few steep dolomite filled thin fractures.

CORE #525 5775 - 5781' Cut 6' Recovered 7' 100%+

Coring times 6, 8, 9, 9, 8, 6.

7' Sandstone as above, silty, dolomitic (30% approx.) glauconitic(?), slightly pyritic. Few thin shale bands. Few thin ½" - 1" beds of "micro" conglomerate, small 1/8 - ¼" fragments of quartz, sandstone, siltstone, black and red chert (some banded like agate) in a matrix of dolomitic sandstone. Sandstone has an oolitic-pelletoid texture in several places suggesting a silicified carbonate. Steep dolomite filled fractures throughout the core. About 2" normal fault displacement noted along a fracture plane at 5780'.

CORE #526 5781 - 5796' Cut & Recovered 15' 100%

Coring times 5, 9, 8, 10, 8, 9, 10 10, 10, 10, 9, 12, 9, 9, 9.

15' Sandstone, very fine grained, silty, grey to grey-green, with some green mottling, very dolomitic (30 - 40%), slightly pyritic, few

pale green glauconite(?) grains. Has silicified pelletoid-oolitic texture in places suggesting a silicified carbonate. Interbedded with few thin (from 2" to paper thin) beds of green slightly dolomitic shale, hard. Steep thin fractures throughout the core filled with white dolomite. On fracture in lower 1½' is about 3/4" thick. In places, deposition is cyclic, with base of cycle at sandy "micro" conglomerate, small 1/8 - 1/16" fragments of sandstone, siltstone, few pellets, oolites(?) in siliceous cement grading up through siltstone to shale over an interval of 1" - 2".

CORE #527 5796 - 5805' Cut & Recovered 9' 100%

Coring times 5, 6, 7, 6, 7, 7, 10, 8, 7.

9' Sandstone, very fine grained, silty, grey-grey-green, some green mottling, slightly pyritic, glauconitic, very dolomitic (30-40%) some siliceous cement. One thin 2" shale bed, hard, green, slightly dolomitic, slightly silty at 5801'. Few elongate shale fragments alligned parallel to bedding scattered through the core. Pelletoid and oolitic(?) texture, present in thin bands throughout the core. Few red chert fragments predominant mainly in thin bands of "micro" conglomerate. Few very thin steep fractures. Bedding dip 15°.

CORE #528 5805 - 5820' Cut & Recovered 15' 100%

Coring times 8, 7, 8, 9, 7, 7, 7, 7, 8, 10, 8, 7, 7, 7, 7.

15' Sandstone as above, dolomitic. Thin shaly beds and partings throughout core. Shaliest section 5807 - 5808.5'. Core about 10% shale. Pelletoid bands, with minor chert are present as above. Approx. 10 - 25% of core may be silicified carbonate. Steep fractures present with ¼" thick break filled with dolomite at 5809 - 5810'.

CORE #429 5820 - 5835' Cut & Recovered 15' 100%

Coring times 5, 7, 9, 11, 6, 8, 8, 9, 7, 7, 7, 8, 8, 8, 8.

15' Sandstone and silicified carbonate as above. Few thin bands of green shale, hard, slatey, in places breaking across bedding planes. Scattered green shale lenses and inclusions. About 10% shale in core. Much of core consists of graded sequences averaging 1" - 3" in length.

CORE #530 5835 - 5850' Cut & Recovered 15' 100%

Coring times 10, 10, 8, 8, 9, 8, 9, 8, 8, 10, 9, 8, 10, 9, 9.

15' Sandstone, very fine grained, silty, slightly argillaceous, dolomitic, siliceous cement, with interbedded silicified carbonate(?) pelletoid and oolitic texture, dolomitic grey-green (approx. 20%). Also thin bands most under 1" thick of "micro" conglomerate, small fragments of sandstone, siltstone and chert, red and dark brown, glauconite in grey-green silicified sandstone or carbonate matrix. Shale interbeds are green, slightly silty, slightly dolomitic, very hard, breaks across bedding planes often. Shaliest sections are 5837'1" to 5837'3", 5838'7" to 5839'4", 5842'9" to 5843'2", 5844'9" to 5845'5", 5846'5" to 5848'.

CORE #531 5850 - 5855' Cut & Recovered 5' 100%

Coring times 6, 11, 9, 9, 9,

1' Sandstone, siltstone, grey-green, siliceous cement, few pale green grains glauconite(?) and thin shale interbeds. Thin, under 1" interbeds of silicified carbonate of pelletoid-oolitic texture. Approximately 20% of core is silicified carbonate - difficult to estimate. The interbeds are sandy, silty, dolomitic, glauconitic, have few red chert inclusions and are hard. Lower 2" are a "micro" conglomerate of light grey and dark grey sandstone-siltstone fragments in a matrix of green-grey siltstone-sandstone and silicified pelletoid-oolitic carbonate. Several sandstone-siltstone fragments in the conglomerate are

rectangular shape (1/16 - 1/8" wide by up to ½" long) suggesting a broken bed. Thin shale interbeds.

4' Shale, green, slightly dolomitic, silty, mostly very hard with 40 - 50% thin beds of light grey-green sandstone-siltstone. About 1" of softer waxy green shale at top of interval (5851'). Bedding dip 15 - 20°.

CORE #532 5855 - 5857' Cut & Recovered 2' 100%

Coring times 11, 11.

2' Sandstone, very fine grained, very silty, grey-green, minor brown, siliceous cement, glauconitic, very slightly dolomitic, grades in places to quartzite, interbeds of green shale (30%) slightly dolomitic, slightly micromicaceous, hard. Thin 1" bed of "micro" conglomerate. 3" from base of core consists of fragments of sandstone, siltstone and grey, green and brown, chert, brown and red-orange, green shale and glauconite(?) in a matrix of grey-green siliceous, slightly dolomitic sandstone. Few thin white, dolomite-filled fractures mainly in upper 7". Bedding is wavy to irregular.

CORE #533 5857 - 5860' Cut & Recovered 3' 100%

Coring times 10, 15, 11.

3' Sandstone, as above, very silty, grey-green, and some brown, siliceous, glauconitic, occasional small chert grains red. Thin shale interbeds make 10 - 20% of the core. Two thin "micro" conglomerate bands as above at 3" and 15" from bottom of core. Bedding more regular than above dipping 15°.

CORE #534 5860 - 5871' Cut & Recovered 11' 100%

Coring times 12, 11, 8, 10, 11, 11, 12, 10, 15, 10, 18.

11' Sandstone, siltstone, green-grey, siliceous cement, slightly dolomitic, glauconitic, traces of very fine red chert grains inter-bedded with approximately 20% green, slightly

dolomitic shale. From 5862.5-5869' are several bands of light grey, dolomite, cryptocrystalline, very silty, sandy (40%) slightly argillaceous, grading to dolomitic sandstone-siltstone and shale. Few thin bands of "micro" conglomerate with fragments of multi coloured sandstone-siltstone, shale, chert in a matrix of grey-green sandstone-siltstone. Thin 4" bed at 5870.5' of green chert, appears to have been a "micro" conglomerate that was silicified. Breaks with continual fracture. Few steep fractures 1/8" filled with slightly pyritic white dolomite. Bedding dip approximately 15°.

CORE #535 5871 - 5886' Cut & Recovered 15' 100%

Coring times 5, 9, 11, 8, 11, 8, 7, 12, 11, 9, 8, 9, 8, 8, 8.

4" Sandstone, very fine grained silty, grading to quartzite, dark green-grey-green, pyritic, hard, with few shale interbeds.

14' 8" Shale green, slightly dolomitic, silty, slightly micromicaceous in part, interbedded with thin irregular beds and lenses of sandstone, siltstone, grey-green, slightly dolomitic, very siliceous, glauconitic, slightly pyritic. At 5884.5' are two thin beds of sandstone with mud crack-worm burrow(?) fillings of sandstone in grey-green shale. This structure is characteristic of grey sandstone, black shale, interbeds above 5600'.

5877 - 5878' about 8" of this interval is light grey and light grey-green dolomite, silty, slightly argillaceous with thin dark grey shale interbeds.

5879' thin 1" bed of pale green shale, soft putty-like, consistency is a possible fault plane.

Core is about 55% shale. Core breaks fairly easily along shale bedding planes which dip pretty consistently at about 20°. Numerous thin dolomite filled fractures. One thicker fracture fill at 5871.5' is ½" of pyritic white dolomite.

CORE #536 5886 - 5901' Cut & Recovered 15' 100%

Coring times 6, 8, 10, 9, 6, 6, 5, 4, 5, 7, 8, 7, 7, 5, 5.

3' 2"	Shale, green with thin interbeds (30-40%) sandstone, grey-green, very fine grained, siliceous as above. Few dolomite filled fractures.
5' 2"	Sandstone, grey-green with shale beds (30%) . grey-green. Graded contact with unit above.
5'	Shale green, grading in lower 3' of interval to black shale. Black shale is fissile with very shiny bedding planes, very slightly to non-dolomitic, has very thin interbeds of grey siltstone with silica cement.
5"	At 5899.4' is an abrupt colour change from black shale to 5" light grey-green sandstone, silty, siliceous cement, slightly dolomitic, slightly argillaceous, grading downward to a grey-green very fine grain sandstone.
3"	Shale grey-green, waxy, splintery, non-dolomitic, broken up badly - may be a fault plane. Abrupt 45° contact with unit below.
6"	Sandstone, grey-green, very fine grained, silty as above with few dark grey shale beds in lower 1". Thin even 1/8" bed of black shale at base of unit.
6"	Siltstone, grey, dolomitic, sandy, siliceous with two steep fractures, dolomite lined. Few black shale interbeds.

CORE #537 5901 - 5911' Cut & Recovered 10' 100%

Coring times 7, 6, 7, 7, 5, 5, 7, 6, 7, 6.

10'	Thinly interbedded grey siltstone-sandstone and black to dark brown shale (25 - 30%).

Sandstone-siltstone is siliceous, very hard verging on a quartzite, slightly pyritic, non-dolomitic except fracture fill. Shale is dark brown-black hard in part, slightly pyritic, fissile. Bedding is irregular in places with few mud crack-burrow(?) fillings of sandstone in the shale. Dip is about 20°.

Bedding is very thin - under ½" mostly. One graded bed at 5907 - 08' grades from grey sandstone up to dark shale. Few very thin fractures filled with dolomite. Normal fault. Steep dipping, shows about 2" displacement in top foot of core.

CORE #538 5911 - 5919' Cut 8' Recovered 7' 87½%

Coring times 4(?), 17, 13, 12, 11, 10, 9, 10.

6' 9" Sandstone-siltstone, argillaceous, grey, grading in upper few inches to grey-green, siliceous, slightly pyritic, hard, with thin interbeds of pale green shale. Two feet from top of interval is 3" bed of soft pale green shale crumpled, may be a fault plane. Lower 2' of interval grades to a black shale - grey sandstone sequence. Shale is black, fissile, very brittle, hard. Few mud crack-burrow(?) fillings in lower 2'. Core breaks along thin black shale partings which have smooth shinny bedding planes. Few steep fractures dolomite filled in lower 2'.

3" Grey-green shale-siltstone-sandstone sequence an abrupt colour change from above unit.

CORE #539 5919 - 5930' Cut & Recovered 11' 100%

Coring times 16, 15, 15, 13, 14, ?, 17, 14, 12, 15, 18.

11' Thin interbeds of sandstone-siltstone and shale in top 3'. Colour is predominantly grey-green and the siltstone-sandstone is more argillaceous. In lower 8' colour is black shale and light grey sandstone-siltstone which is more siliceous than the grey-green sand-siltstone. Bedding wavy and irregular with mud crack-worm burrow(?) fillings in lower 8'. Dip varies 15 - 25°. Few steep very thin closed fractures.

CORE #540 5930 - 5945' Cut & Recovered 15' 100%

Coring times 5, 12, 9, 11, 11, 14, 13, 10, 10, 9, 11, 11, 11, 13, 11.

15' Thinly interbedded black shale and grey sandstone - siltstone. Most beds under ½". Two light grey intervals 5938'5" - 5939' and 5943 to 5945' are siltstone to very fine grained sandstone, argillaceous (10 - 15%) siliceous cement with occasional thin light. grey-green shale laminations. At 5941' a thin 2" band of broken shale and siltstone may be a fault zone. Rare steep closed fractures.

CORE #541 5945 - 5959' Cut & Recovered 14' 100%

Coring times 9, 11, 12, 15, 13, 13, 12, 11, 12, 10, 10, 10, 13, 13.

11' Siltstone-sandstone, very fine grained, light grey to dark grey, argillaceous, with occasional thin black shale interbeds as above. Approximately 10 - 15% shale. Few mud crack-worm burrow(?) fillings.

2' Conglomerate, grading upward evenly to a medium-coarse grained quartzose sandstone. Conglomerate consists of fragments up to ½" diameter of milky and white quartz, dark grey to light grey sandstone and siltstone, black shale, minor chert brown and rare red in a matrix of dolomite and silica cement. Most fragments show some degree of rounding, but some shale fragments are angular. The sandstone phase approximately the upper 7" is light grey-white, glassy quartz grains, fine, medium-coarse grained subrounded in a matrix of dolomite and silica cement. Unit has abrupt thin shale lined contacts with rock above and below.

1' Siltstone-sandstone, dark grey, argillaceous with thin black, silty shale interbeds (25 - 30% shale).

CORE #542 5959 - 5965.5' Cut & Recovered 6½' 100%

Coring times 15, 11, 12, 10, 11, 10 (7).

6½' Siltstone-sandstone, medium to dark grey,

non-dolomitic, siliceous cement, argillaceous, grading to dark grey to black, silty shale (40 - 50%). Occasional ½ - ¼" dark chert fragment imbedded. Two conglomerate beds 3" - 4" thick consisting of fragments of sandstone, siltstone, shale, chert, in shades of grey (except rare red chert) in a siliceous dolomitic matrix. One band is in the interval 5959 - 5960', the other in the bottom 4" of core.

CORE #543 5965.5 - 5970' Cut 4½' Recovered 3½' 78%

Coring times (8) 23, 20, 15, 11.

3½' Conglomerate, fragments up to 2" across of dark grey to light grey siltstone, sandstone, shale, chert in a dolomitic siliceous matrix. Steep open fractures with patches of pyrite in fracture plane, break the interval.

CORE #544 5970 - 5985' Cut & Recovered 15' 100%

Coring times 9, 7, 7, 6, 6, 7, 7, 7, 8, 7, 9, 9, 8, 8, 9.

10' Conglomerate as above, Two 2' mostly black shale, hard, non-dolomitic, dipping 15 - 20° with thin beds conglomerate. Few thin closed dolomite filled fractures. Trace pyrite on fracture planes.

5' Shale, dark grey-black, with (45 - 50%) siltstone-sandstone interbeds. Small, roughly spherical dolomite nodules scattered through core give dimpled nodular appearance to some bedding planes. Dolomite is light grey-white. Few thin, slightly pyritic dolomite lined fractures.

CORE #545 5985 - 5996' Cut & Recovered 11' 100%

Coring times 11, 10, 10, 9, 10, 9, 8, 8, 8, 8, 7.

2' 5" Thin interbeds sandstone-siltstone, grey, siliceous, non-dolomitic, hard, (tends toward quartzite) with shale black-dark grey, hard, fissile in part with shiny black bedding planes. Several small roughly spherical (1/8-1/16" diameter) vugs filled with dolomite, light grey-

white that make dimpled nodular bedding planes and give sections of the core a spotted appearance. Large 1" pebble of siliceous sandstone-siltstone, light grey-white with some pelletoid-oolitic(?) texture imbedded in shale at approximately 5886.5' depressing bedding planes. Dip about 20°.

6" Quartzite, black, hard, speckled with dolomite filled vugs as above. Cut by several thin steep pyritic dolomite filled fractures.

8' Thin bedded sandstone-shale (10-15%) as above. Few small dolomite filled vugs as above. Cut by several steep dolomite filled fractures. Some with trace calcite lining. Some fillings ½ - 3/4" thick. Dolomite is white, trace pink, coarsely crystalline, slightly pyritic. Trace vuggy porosity, few vugs lined with glassy quartz crystals. Faint fluorescence due to mud additive. Dip in lower 8' about 25°.

WELL NAME	OWNER	YR CORE	TOP	BOTTOM	LOCATION	TYPE
COLVILLE E-15	MOBIL	70	4755		C-23669	MACRO

WELL NAME	OWNER	YR CORE	TOP	BOTTOM	LOCATION	TYPE
COLVILLE E-15	MOBIL	70	4945	4946	C-80501	T.SEC
			4954	4955	C-80501	
			4963	4964	C-80501	
			4965	4966	C-80501	
			4981	4982	C-80501	
			4984	4985	C-80501	
			4989	4990	C-80501	
			4991	4992	C-80501	
			4993	4994	C-80501	
			4995	4996	C-80501	
			4999	5000	C-80501	
			5004	5005	C-80501	
			5006	5007	C-80501	
			5007	5008	C-80501	
			5015	5016	C-80501	
			5018	5019	C-80501	

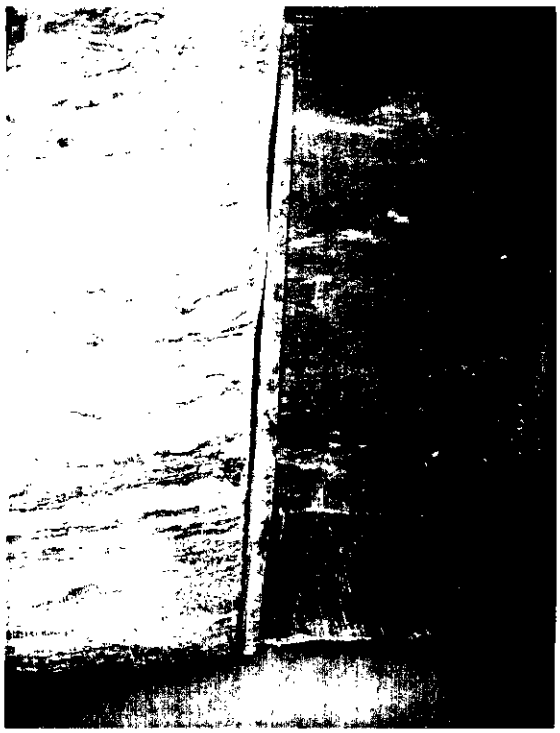
DEPARTMENT OF
ENERGY, MINES AND RESOURCES
MINISTÈRE DE L'ÉNERGIE,
DES MINES ET DES RESSOURCES

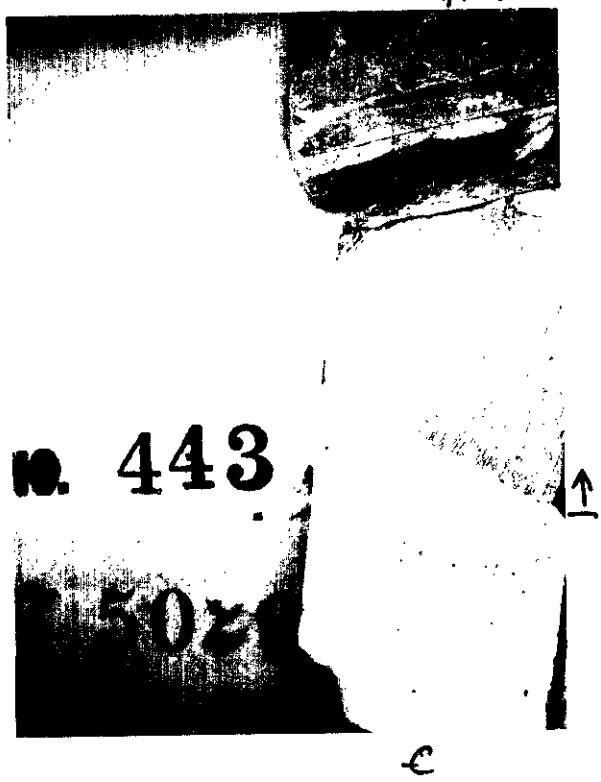
O H M S
SDSM

CANADA
POSTAGE PAID
PORT PAYÉ

To D. Myhr.
W. Benning
Photo:
Colville ~~Lake~~ E-15
Salmon R - Mt. Clap. Equiv

Proterozoic





CORE ANALYSIS REPORT

FOR

MOBIL OIL CANADA, LTD.

MOBIL COLVILLE E-15
WILDCAT - COLVILLE LAKE AREA
NORTHWEST TERRITORIES

CORE LABORATORIES - CANADA LTD.

Petroleum Reservoir Engineering

CALGARY - EDMONTON - REGINA

CORE LABORATORIES-CANADA LTD.

CODE KEY - MOBIL OIL CANADA, LTD.

(69) PHYSICAL DESCRIPTION

1 - Unconsolidated
2 - Rubble
3 - No Stain
4 - Fractured
5 - Missing

(70) BASIC LITHOLOGY

1 - Limestone
2 - Dolomite
3 - Evaporite
4 - Sand
5 - Shale

(71) QUALIFYING LITHOLOGY

1 - Limy
2 - Dolomitic
3 - Evaporitic
4 - Sandy
5 - Shaly

(72) TEXTURE

1 - Silty
2 - Fine
3 - Medium
4 - Coarse
5 - Conglomeratic

(73) POROSITY TYPE

1 - Intergranular
2 - Intergran/vugs
3 - Small vugs
4 - Large vugs
5 - Reefoid

NOTE: The designation -1.0 in data columns indicates not analysed for reasons other than dense, i.e. lost core, rubble, removed by client, no analysis by request, etc.

The designation -0.1 indicates a minimum value either measured or assumed due to core appearing dense.

Form No. 1062

1 / 2 / 3 4 5 6 7 8 9 10 11 12 13 14 15 / 16 / 17 18 / 19 / 20 / 21 / 22 23 24 25

Company MOBIL OIL CANADA, LTD. (17-18) Formation (22-25) Page 1 of 4

Well MOBIL COLVILLE E-15 Date Report AUGUST 19, 1970 File CNP-4-5155

Field, Province WILDCAT, COLVILLE LAKE AREA N.W.T. Fluid WATER BASE MUD (21) Analysts LS

Location 67°-20'N; 126° 15'W (1-16) Analysis FULL DIAMETER POROSITY (20) Remarks
SMALL PLUG PERMEABILITY

CORE ANALYSIS RESULTS

Sample Number	Depth Feet	Ft Rep.	Permeability to Air, Millidarcys			Permeability Feet	Porosity, Per Cent	Porosity Feet	Density, gm./cc.		Residual Saturations, Per Cent Pore Space			Visual Examination				
			K Max	K 90°	KV				Bulk	Grain	Oil	Total Water						
	(26-31)	(32-34)	(35-41)	(42-48)	(49-55)		(56-58)			(59-61)	(62-64)	(65-67)	(68)	(69)	(70)	(71)	(72)	(73)
CORE NO. 9 557' - 578' (REC. 21') (3 BOXES)																		
1	557.0-57.9	0.9	0.08	-1.0	-1.0	0.07	3.5	3.15	2.75	2.83	-1.0	-1.0		-	2	-	-	1
2	557.9-58.9	1.0	0.16	-1.0	-1.0	0.16	3.4	3.40	2.74	2.83	-1.0	-1.0		-	2	-	-	1
3	558.9-59.7	0.8	0.16	-1.0	-1.0	0.13	4.3	3.44	2.73	2.85	-1.0	-1.0		-	2	-	-	1
4	559.7-60.6	0.9	0.15	-1.0	-1.0	0.14	3.9	3.51	2.74	2.85	-1.0	-1.0		-	2	-	-	1
5	560.6-61.3	0.7	0.16	-1.0	-1.0	0.11	3.3	2.31	2.74	2.84	-1.0	-1.0		-	2	-	-	1
6	561.3-62.0	0.7	0.07	-1.0	-1.0	0.05	5.0	3.50	2.70	2.84	-1.0	-1.0		-	2	-	-	1
7	562.0-63.1	1.1	0.07	-1.0	-1.0	0.08	3.6	3.96	2.75	2.85	-1.0	-1.0		-	2	-	-	1
8	563.1-63.9	0.8	0.14	-1.0	-1.0	0.11	5.2	4.16	2.70	2.85	-1.0	-1.0		-	2	-	-	1
9	563.9-64.9	1.0	0.16	-1.0	-1.0	0.16	7.7	7.70	2.63	2.85	-1.0	-1.0		-	2	-	-	2
10	564.9-65.7	0.8	0.08	-1.0	-1.0	0.06	5.9	4.72	2.68	2.85	-1.0	-1.0		-	2	-	-	2
11	565.7-66.9	1.2	0.07	-1.0	-1.0	0.08	6.9	8.28	2.64	2.84	-1.0	-1.0		-	2	-	-	2
12	566.9-67.9	1.0	0.07	-1.0	-1.0	0.07	6.4	6.40	2.66	2.84	-1.0	-1.0		-	2	-	-	1
13	567.9-69.2	1.3	-0.1	-1.0	-1.0	-	5.8	7.54	2.67	2.84	-1.0	-1.0		-	2	-	-	1
14	569.2-70.1	0.9	0.16	-1.0	-1.0	0.14	6.9	6.21	2.65	2.85	-1.0	-1.0		-	2	-	-	2
15	570.1-71.1	1.0	0.07	-1.0	-1.0	0.07	5.3	5.30	2.70	2.85	-1.0	-1.0		-	2	-	-	1
16	571.1-72.3	1.2	0.08	-1.0	-1.0	0.10	6.0	7.20	2.67	2.85	-1.0	-1.0		-	2	-	-	1
17	572.3-73.3	1.0	0.08	-1.0	-1.0	0.08	5.2	5.20	2.68	2.83	-1.0	-1.0		-	2	-	-	1
18	573.3-74.3	1.0	0.16	-1.0	-1.0	0.16	4.0	4.00	2.74	2.85	-1.0	-1.0		-	2	-	-	1
19	574.3-75.0	0.7	0.08	-1.0	-1.0	0.05	4.2	2.94	2.72	2.84	-1.0	-1.0		-	2	-	-	1
20	575.0-75.7	0.7	-0.1	-1.0	-1.0	-	3.3	2.31	2.74	2.83	-1.0	-1.0		-	2	-	-	1
21	575.7-76.4	0.7	0.15	-1.0	-1.0	0.10	6.1	4.27	2.68	2.86	-1.0	-1.0		-	2	-	-	2
22	576.4-77.1	0.7	0.26	-1.0	-1.0	0.18	5.5	3.85	2.69	2.85	-1.0	-1.0		-	2	-	-	2
23	577.1-78.0	0.9	0.16	-1.0	-1.0	0.14	7.5	6.75	2.64	2.86	-1.0	-1.0		-	2	-	-	2

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

Company MOBIL OIL CANADA, LTD. (17-18) Formation (22-25) Page 2 of 4

Well MOBIL COLVILLE E-15 File CNP-4-5155

Sample Number	Depth Feet	Ft. Rep.	Permeability to Air, Millidarcys			Permeability Feet	Porosity, Per Cent	Porosity Feet	Density, gm./cc		Residual Saturations, Per Cent Pore Space			Visual Examination				
			K Max	K 90°	KV				Bulk	Grain	Oil	Total Water						
	(26-31)	(32-34)	(35-41)	(42-48)	(49-55)		(56-58)			(59-61)	(62-64)	(65-67)	(68)	(69)	(70)	(71)	(72)	(73)
CORE NO. 104 1581' - 1585' (REC. 4') (1 BOX)																		
FD24	1581.0-82.0	1.0	0.05	-1.0	-1.0	0.05	2.2	2.20	2.76	2.82	-1.0	-1.0		4	2	-	-	1
25	1582.0-82.8	0.8	-0.1	-1.0	-1.0	-	2.2	1.76	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
FD26	1582.8-83.6	0.8	0.20	-1.0	-1.0	0.16	3.8	3.04	2.73	2.83	-1.0	-1.0		4	2	-	-	1
27	1583.6-84.6	1.0	-0.1	-1.0	-1.0	-	4.0	4.00	-1.0	-1.0	-1.0	-1.0		4	2	-	-	2
-	1584.6-85.0	0.4	-1.0	-1.0	-1.0	-	-1.0	-	-1.0	-1.0	-1.0	-1.0		2	-	-	-	-
CORE NO. 105 1585' - 1590' (REC. 5') (1 BOX)																		
28	1585.0-85.8	0.8	5.71	-1.0	-1.0	4.57	4.7	3.76	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
29	1585.8-86.4	0.6	9.62	-1.0	-1.0	5.77	4.6	2.76	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
30	1586.4-87.0	0.6	0.53	-1.0	-1.0	0.32	5.7	3.42	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
31	1587.0-87.6	0.6	-0.1	-1.0	-1.0	-	4.4	2.64	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
32	1587.6-88.4	0.8	-0.1	-1.0	-1.0	-	2.4	1.92	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
33	1588.4-89.2	0.8	0.06	-1.0	-1.0	0.05	2.5	2.00	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
34	1589.2-90.0	0.8	0.35	-1.0	-1.0	0.28	1.5	1.20	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
CORE NO. 106 1590' - 1594' (REC . 4') (1 BOX)																		
35	1590.0-90.8	0.8	0.47	-1.0	-1.0	0.38	5.6	4.48	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
FD36	1590.8-91.9	1.1	-0.1	-1.0	-1.0	-	3.1	3.41	2.78	2.87	-1.0	-1.0		4	2	-	-	1
-	1591.9-92.2	0.3	-0.1	-0.1	-0.1	-	-0.1	-	-1.0	-1.0	-1.0	-1.0		2	-	-	-	-
37	1592.2-93.1	0.9	1.82	-1.0	-1.0	1.64	2.2	1.98	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
38	1593.1-94.0	0.9	-0.1	-1.0	-1.0	-	2.8	2.52	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
CORE NO. 107 1594' - 1598' (REC. 4') (1 BOX)																		
39	1594.0-94.5	0.5	-0.1	-1.0	-1.0	-	2.8	1.40	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
40	1594.5-95.1	0.6	-0.1	-1.0	-1.0	-	4.3	2.58	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3

1 / 2 / 3 4 5 6 7 8 9 10 11 12 13 14 15 / 16 / 17 18 / 19 / 20 / 21 / 22 23 24 25

Company MOBIL OIL CANADA, LTD. (17-18) Formation (22-25) Page 3 of 4

Well MOBIL COLVILLE E-15 File CNP-4-5155

Sample Number	Depth Feet	Ft Rep.	Permeability to Air, Millidarcys			Permeability Feet	Porosity, Per Cent	Porosity Feet	Density, gm./cc.		Residual Saturations, Per Cent Pore Space			Visual Examination				
			K Max	K 90°	KV				Bulk	Grain	Oil	Total Water						
	(26-31)	(32-34)	(35-41)	(42-48)	(49-55)		(56-58)			(59-61)	(62-64)	(65-67)	(68)	(69)	(70)	(71)	(72)	(73)
CORE NO. 107 (cont'd)																		
41	1595.1-95.7	0.6	0.82	-1.0	-1.0	0.49	2.8	1.68	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
42	1595.7-96.4	0.7	0.06	-1.0	-1.0	0.04	3.6	2.52	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
43	1596.4-97.2	0.8	0.23	-1.0	-1.0	0.18	2.6	2.08	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
44	1597.2-98.0	0.8	0.06	-1.0	-1.0	0.05	5.0	4.00	-1.0	-1.0	-1.0	-1.0		4	2	-	-	2
CORE NO. 108 1598' - 1604' (REC. 4') (1 BOX)																		
45	1598.0-98.8	0.8	-0.1	-1.0	-1.0	-	4.5	3.60	-1.0	-1.0	-1.0	-1.0		4	2	-	-	2
46	1598.8-99.5	0.7	-0.1	-1.0	-1.0	-	5.5	3.85	-1.0	-1.0	-1.0	-1.0		4	2	-	-	2
47	1599.5-00.3	0.8	0.06	-1.0	-1.0	0.05	5.3	4.24	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
48	1600.3-01.4	1.1	0.06	-1.0	-1.0	0.07	5.8	6.38	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
49	1601.4-02.0	0.6	-0.1	-1.0	-1.0	-	3.9	2.34	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
-	1602.0-04.0	2.0	-1.0	-1.0	-1.0	-	-1.0	-	-1.0	-1.0	-1.0	-1.0		5	-	-	-	-
CORE NO. 224 2313' - 2316' (REC. 3') (1 BOX)																		
50	2313.0-13.8	0.8	1.75	-1.0	-1.0	1.40	3.9	3.12	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
51	2313.8-14.9	1.1	0.06	-1.0	-1.0	0.07	2.5	2.75	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
52	2314.9-16.0	1.1	0.41	-1.0	-1.0	0.45	4.8	5.28	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
CORE NO. 225 2316' - 2324' (REC. 8') (2 BOXES)																		
53	2316.0-16.8	0.8	0.76	-1.0	-1.0	0.61	1.9	1.52	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
54	2316.8-17.6	0.8	3.45	-1.0	-1.0	2.76	3.7	2.96	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
55	2317.6-18.3	0.7	-0.1	-1.0	-1.0	-	1.4	0.98	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1
56	2318.3-19.6	1.3	0.30	-1.0	-1.0	0.39	6.2	8.06	-1.0	-1.0	-1.0	-1.0		4	2	-	-	3
57	2319.6-20.7	1.1	0.17	-1.0	-1.0	0.19	2.1	2.31	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1

1 / 2 / 3 4 5 6 7 8 9 10 11 12 13 14 15 / 16 / 17 18 / 19 / 20 / 21 / 22 23 24 25

Company MOBIL OIL CANADA, LTD. (17-18) Formation (22-25) Page 4 of 4

Well MOBIL COLVILLE E-15 File CNP-4-5155

Sample Number	Depth Feet	Ft. Rep.	Permeability to Air, Millidarcys			Permeability Feet	Porosity, Per Cent	Porosity Feet	Density, gm./cc.		Residual Saturations, Per Cent Pore Space			Visual Examination					
			K Max	K 90°	KV				Bulk	Grain	Oil	Total Water							
	(26-31)	(32-34)	(35-41)	(42-48)	(49-55)		(56-58)			(59-61)	(62-64)	(65-67)	(68)	(69)	(70)	(71)	(72)	(73)	
CORE NO. 225 (cont'd)																			
58	2320.7-21.6	0.9	-0.1	-1.0	-1.0	-	1.5	1.35	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1	
59	2321.6-22.6	1.0	0.06	-1.0	-1.0	0.06	1.9	1.90	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1	
60	2322.6-22.9	0.3	0.06	-1.0	-1.0	0.02	3.0	0.90	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1	
61	2322.9-23.8	0.9	0.06	-1.0	-1.0	0.05	1.4	1.26	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1	
FD62	2323.8-25.0	1.2	48.80	-1.0	-1.0	58.56	1.2	1.44	2.79	2.83	-1.0	-1.0		4	2	-	-	1	
CORE NO. 226 2424' - 2429' (REC. 5') (1 BOX)																			
63	2424.0-25.1	1.1	0.12	-1.0	-1.0	0.13	2.8	3.08	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1	
64	2425.1-26.1	1.0	1.35	-1.0	-1.0	1.35	2.0	2.00	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1	
65	2426.1-27.2	1.1	-0.1	-1.0	-1.0	-	1.9	2.09	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1	
66	2427.2-28.3	1.1	-0.1	-1.0	-1.0	-	1.7	1.87	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1	
67	2428.3-29.0	0.7	-0.1	-1.0	-1.0	-	3.5	2.45	-1.0	-1.0	-1.0	-1.0		4	2	-	-	1	

FD - Full Diameter Samples

Your. . .

Formation Testing Service Report

Depth Top Gauge 4534 Ft.		Blanked Off Yes	Date October 14, 1970		Ticket No. 32-19304
BT P.R.D. No. Otis #22556N		27613 24 Hr. Clock	Kind of Job Bottom Hole		HOWCO District High Level
Pressure Readings	Field	Office Corrected	Tester W. Wolodko		Witness D. Moore
Initial Hydro Mud Pressure		2300	Contractor Heath & Sherwood (Western) Ltd.		
Initial Closed in Pressure		1921	K B Elevation	Top Packer Depth 4518	Bottom Packer Depth
Initial Flow Pressure		1248	Total Depth 5996	Casing Perforations Top / Bottom	
Final Flow Pressure		1868	Interval Tested 4518 - 5996	Formation Tested	
Final Closed in Pressure		1876	Casing or ~~Hole Size~~ 2 7/8	~~Choke~~ Rathole Size 2 23/64"	
Final Hydro Mud Pressure		1883	Size Surface Choke 3/4	Size Bottom Choke 3/8	Size and Type Wall Packer 2 7/8"R3
Depth Centre Gauge Ft.		Blanked Off	Size Drill Pipe 2 1/4" - 2 3/4"	ID and Length Drill Collars Nil	
BT P.R.D. No.		Hr. Clock	Anchor I.D. / Size O.D.	Amount-Type of Cushion Nil	
Pressure Readings	Field	Office Corrected	Gauge Depth Temp. 74 °F meas. / °F est.	Mud Weight 8.7	Mud Viscosity 70
Initial Hydro Mud Pressure			All Depths Measured From K.B.		No. Folders Reproduced 10
Initial Closed in Pressure			Time Periods (Minutes) 1st Flow 3	Initial CIP 30	2nd Flow 180 Final CIP 60
Initial Flow Pressure			Recovered 2010	Feet of Drilling Mud	
Final Flow Pressure			Recovered 1800	Feet of Salt Water	
Final Closed in Pressure			Recovered	Feet of	
Final Hydro Mud Pressure			Recovered	Feet of	
Depth Bottom Gauge 4541 Ft.		Blanked Off Yes	Oil Recovery Degrees API	Water Recovery 178,000 PPM Specific Gravity NaCl 1.100	
BT P.R.D. No. Otis #28544N		24912 24 Hr. Clock	REMARKS: Tool open at 10:07 am with good air blow. Tool shut in at 10:10 am. Tool open at 10:40 am with good blow decreasing to very weak at end of flow period. Tool shut in at 1:40 pm. Pulled loose at 2:40 pm.		
Pressure Readings	Field	Office Corrected			
Initial Hydro Mud Pressure					
Initial Closed in Pressure					
Initial Flow Pressure	Stylus	Disengaged			
Final Flow Pressure					
Final Closed in Pressure					
Final Hydro Mud Pressure					

LEGAL DESCRIPTION 126 18' 25.60 67 14' 18.20

FIELD OR AREA COLVILLE LAKE

PROVINCE N.W.T.

MOBIL COLVILLE — Lease Name

E-15 — Well No.

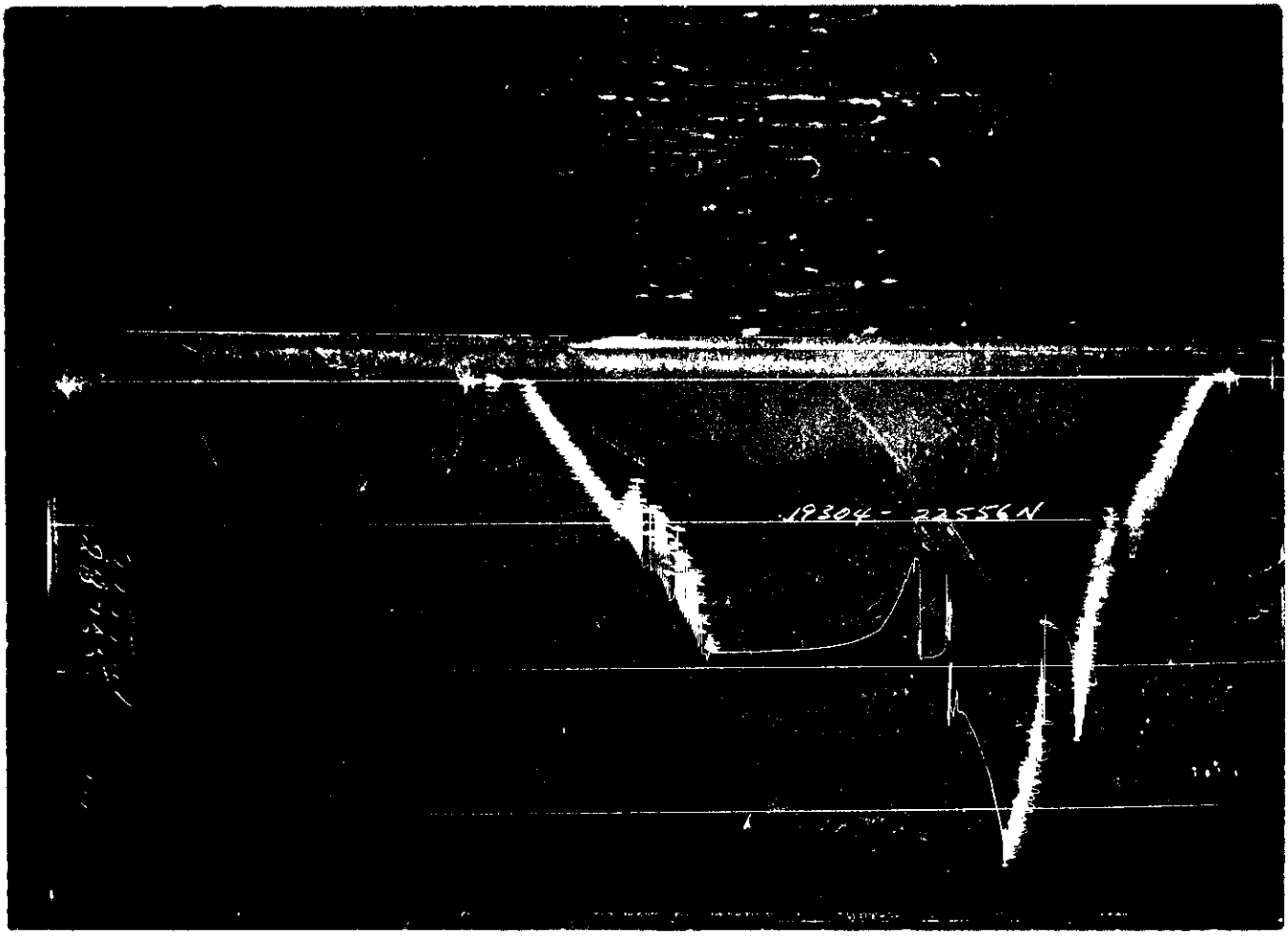
5 — Test No.

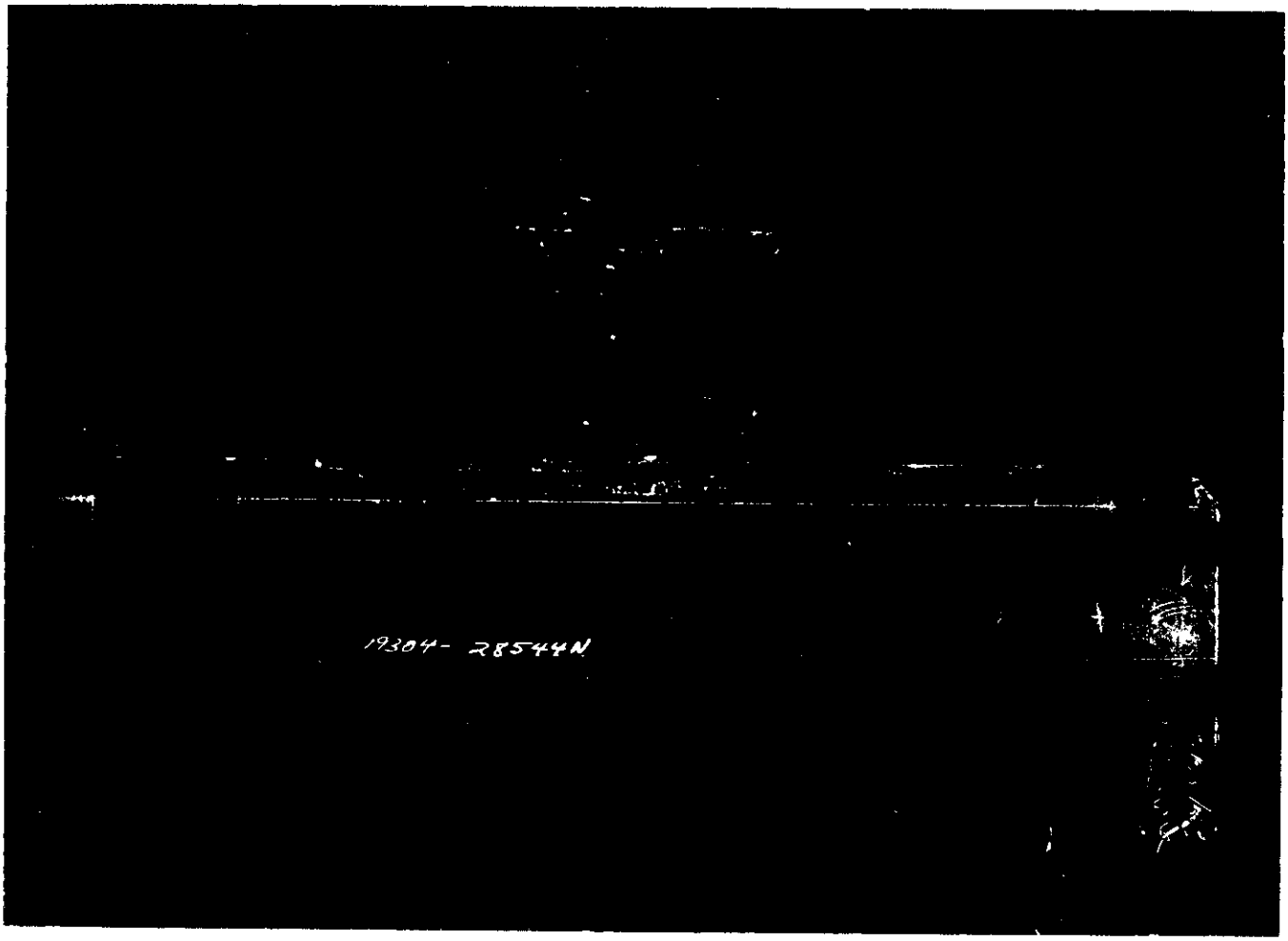
CALGARY — Owner's District

MOBIL OIL CANADA LTD. — Lease Owner

FORM 233-1

DRILL STEM TEST DATA


19304- 22556N


19304- 28544N

Your. . .

Formation Testing Service Report

Depth Top Gauge	4909 Ft.	Blanked Off	Yes	Date	September 8, 1970
BT P.R.D. No.	22556		27613 24 Hr. Clock	Kind of Job	Single Straddle
Pressure Readings	Field	Office Corrected		Tester	G. Wiggett
Initial Hydro Mud Pressure				Contractor	Heath & Sherwood (Western) Ltd.
Initial Closed in Pressure				K B Elevation	
Initial Flow Pressure	Clock	Stopped		Total Depth	4954
Final Flow Pressure				Interval Tested	4893 - 4925
Final Closed in Pressure				Casing or Hole Size	
Final Hydro Mud Pressure				Size Surface Choke	3/4
Depth Centre Gauge	Ft.	Blanked Off		Size Drill Pipe	2 3/4 - 2 3/16
BT P.R.D. No.			Hr. Clock	Anchor Size	I.D. O.D. 1 3/4"
Pressure Readings	Field	Office Corrected		Gauge Depth	Temp.
Initial Hydro Mud Pressure				All Depths Measured From	K.B.
Initial Closed in Pressure					Time Periods (Minutes)
Initial Flow Pressure				1st Flow	Initial CIP
Final Flow Pressure				Recovered	Feet of
Final Closed in Pressure				Recovered	Feet of
Final Hydro Mud Pressure				Recovered	Feet of
Depth Bottom Gauge	4916 Ft.	Blanked Off	Yes	Recovered	Feet of
BT P.R.D. No.	28685		24912 24 Hr. Clock	Oil Recovery Degrees API	
Pressure Readings	Field	Office Corrected		REMARKS:	Misrun. Unable to reach bottom.
Initial Hydro Mud Pressure					
Initial Closed in Pressure					
Initial Flow Pressure	Clock	Stopped			
Final Flow Pressure					
Final Closed in Pressure					
Final Hydro Mud Pressure					

Ticket No.	32-19729		
HOWCO District	High Level		
Witness	A. Mitchel		
Top Packer Depth	4893	Bottom Packer Depth	4925
Casing Perforations Top			
Bottom			
Formation Tested			
Liner or Rathole Size	2 23/64"		
Size Bottom Choke	-	Size and Type Wall Packer	2 1/4"ES
ID and Length Drill Collars	-		
Amount-Type of Cushion	Nil		
°F meas. °F est.		Mud Weight	8.5
Mud Viscosity	60		
No. Folders Reproduced	10		
2nd Flow	Final CIP		
Feet of			
Feet of			
Feet of			
Feet of			
Water Recovery Specific Gravity			

LEGAL DESCRIPTION 67 14' 18.20 126 18' 25.60

MOBIL COLVILLE — Lease Name
E-15 — Well No.
4 — Test No.
CALGARY — Owner's District
COLVILLE LAKE — FIELD OR AREA
MOBIL OIL CANADA LTD. — Lease Owner
N.W.T. — PROVINCE

FORM 233-1

DRILL STEM TEST DATA

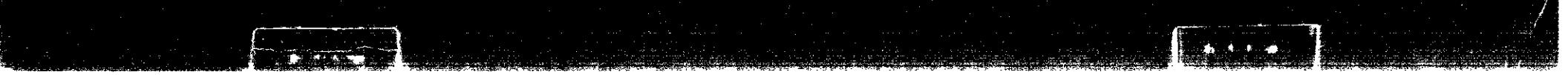
19730 - 22556

19729 - 28685

Halliburton

Your. . .

Formation Testing Service Report



Depth Top Gauge 652 Ft.	Blanked Off Yes	Date May 4, 1970	Ticket No. Nil
BT P.R.D. No. 2402	7904 12 Hr. Clock	Kind of Job Dual Bottom Hole	HOWCO District High Level
Pressure Readings / Field / Office Corrected		Tester W. Wolodko	Witness D. Moore
Initial Hydro Mud Pressure	286	Contractor Heath & Sherwood (Western) Ltd.	
Initial Closed in Pressure		K B Elevation / Top Packer Depth 534 / Bottom Packer Depth	
Initial Flow Pressure		Total Depth 660 / Casing Perforations Top / Bottom	
Final Flow Pressure		Interval Tested 534-660 / Formation Tested Ronning	
Final Closed in Pressure		Casing or Hole Size 4 1/4 / Liner or Rathole Size	
Final Hydro Mud Pressure	286	Size Surface Choke 3/4" / Size Bottom Choke 1/4" / Size and Type Wall Packer 3 1/2"ES	
Depth Centre Gauge Ft.	Blanked Off	Size Drill Pipe 3 1/2 / ID and Length Drill Collars Nil	
BT P.R.D. No.	Hr. Clock	Anchor I.D. Size O.D. / Amount-Type of Cushion	
Pressure Readings / Field / Office Corrected		Gauge Depth Temp. °F meas. °F est. / Mud Weight 8.5 / Mud Viscosity	
Initial Hydro Mud Pressure		All Depths Measured From K.B. / No. Folders Reproduced 10	
Initial Closed in Pressure		Time Periods (Minutes): 1st Flow / Initial CIP / 2nd Flow / Final CIP	
Initial Flow Pressure		Recovered Feet of	
Final Flow Pressure		Recovered Feet of	
Final Closed in Pressure		Recovered Feet of	
Final Hydro Mud Pressure		Recovered Feet of	
Depth Bottom Gauge 656 Ft.	Blanked Off Yes	Oil Recovery Degrees API / Water Recovery Specific Gravity	
BT P.R.D. No. 1575	8742 12 Hr. Clock	REMARKS: Misrun. Hydrospring would not open.	
Pressure Readings / Field / Office Corrected			
Initial Hydro Mud Pressure			
Initial Closed in Pressure			
Initial Flow Pressure	Chart Lost		
Final Flow Pressure			
Final Closed in Pressure			
Final Hydro Mud Pressure			

LEGAL DESCRIPTION 67 14 18.20 126 18'25.60

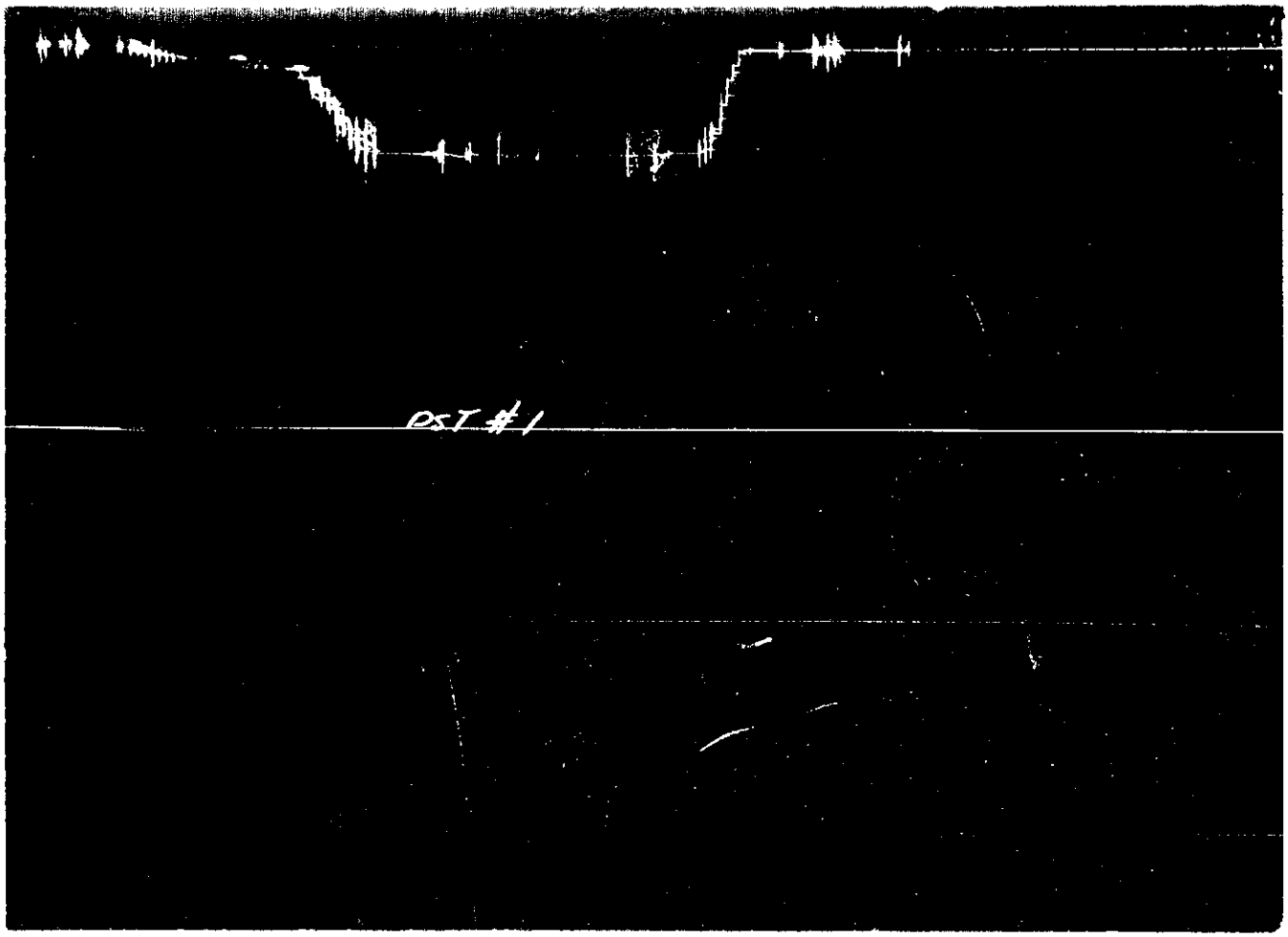
FIELD OR AREA COLVILLE

PROVINCE N.W.T.

MOBIL COLVILLE Lease Name / E-15 Well No. / 1 Test No. / CALGARY Owner's District / MOBIL OIL CANADA LTD. Lease Owner

FORM 233

DRILL STEM TEST DATA


DST #1

Halliburton

Your. . .

Formation Testing Service Report

Depth Top Gauge	652 Ft.	Blanked Off	Yes	Date May 5, 1970	Ticket No. 32-19301
BT P.R.D. No.	2402	7904 12 Hr. Clock		Dual Kind of Job Bottom Hole	HOWCO District High Level
Pressure Readings	Field	Office Corrected		Tester W. Wolodko	Witness D. Moore
Initial Hydro Mud Pressure	285	286		Contractor Heath & Sherwood (Western) Ltd.	
Initial Closed in Pressure	–			K B Elevation / Top Packer Depth 534 / Bottom Packer Depth	
Initial Flow Pressure	57	66		Total Depth 660 / Casing Perforations Top / Bottom	
Final Flow Pressure	57	66		Interval Tested 534–660 / Formation Tested Ronning	
Final Closed in Pressure	–			Casing or Hole Size 4 1/4 / Liner or Rathole Size	
Final Hydro Mud Pressure	285	283		Size Surface Choke 3/4" / Size Bottom Choke 1/4" / Size and Type Wall Packer 3 1/2" ES	
Depth Centre Gauge	Ft.	Blanked Off		Size Drill Pipe 3 1/2 / ID and Length Drill Collars Nil	
BT P.R.D. No.		Hr. Clock		Anchor I.D. / Size O.D. / Amount-Type of Cushion	
Pressure Readings	Field	Office Corrected		Gauge Depth Temp. / °F meas. / °F est. / Mud Weight 8.5 / Mud Viscosity	
Initial Hydro Mud Pressure				All Depths Measured From K.B. / No. Folders Reproduced 10	
Initial Closed in Pressure				Time Periods (Minutes) 1st Flow 3 Initial CIP 35 2nd Flow 15 Final CIP 60	
Initial Flow Pressure				Recovered 3 Feet of Fresh Water	
Final Flow Pressure				Recovered Feet of	
Final Closed in Pressure				Recovered Feet of	
Final Hydro Mud Pressure				Recovered Feet of	
Depth Bottom Gauge	656 Ft.	Blanked Off	Yes	Oil Recovery Degrees API / Water Recovery Specific Gravity	
BT P.R.D. No.	1575	8742 12 Hr. Clock		REMARKS: Tool open at 7:47 with weak blow.	
Pressure Readings	Field	Office Corrected		Tool shut in at 7:50. Tool open at 8:25	
Initial Hydro Mud Pressure	285	288		with weak blow dying in 5 mins. Tool shut	
Initial Closed in Pressure	–			in at 8:40. Pulled loose 9:40. Shutins	
Initial Flow Pressure	60	68		were missed. No weight indicator on rig.	
Final Flow Pressure	60	68			
Final Closed in Pressure	–				
Final Hydro Mud Pressure	285	283			

LEGAL DESCRIPTION

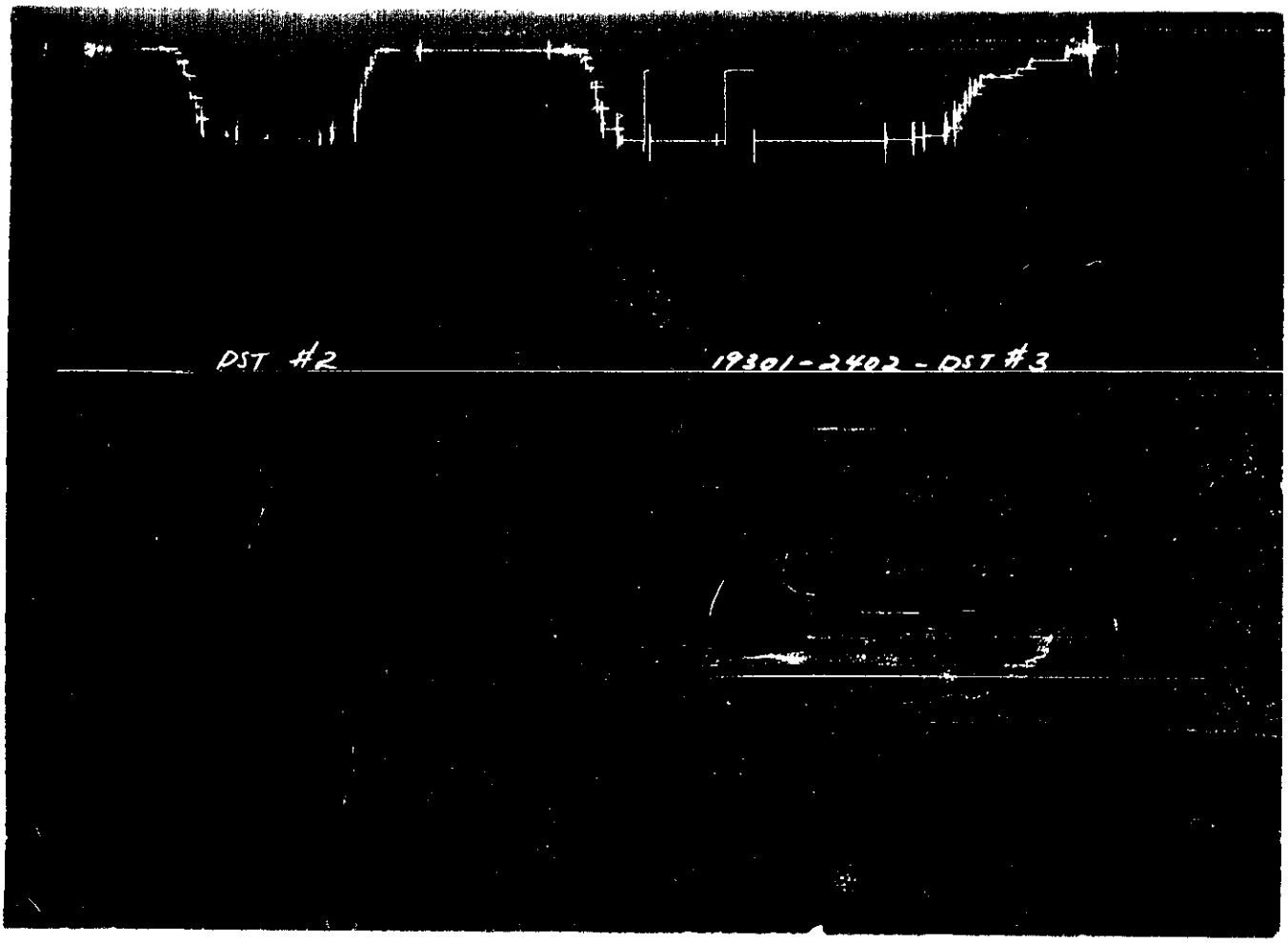
FIELD OR AREA COLVILLE LAKE

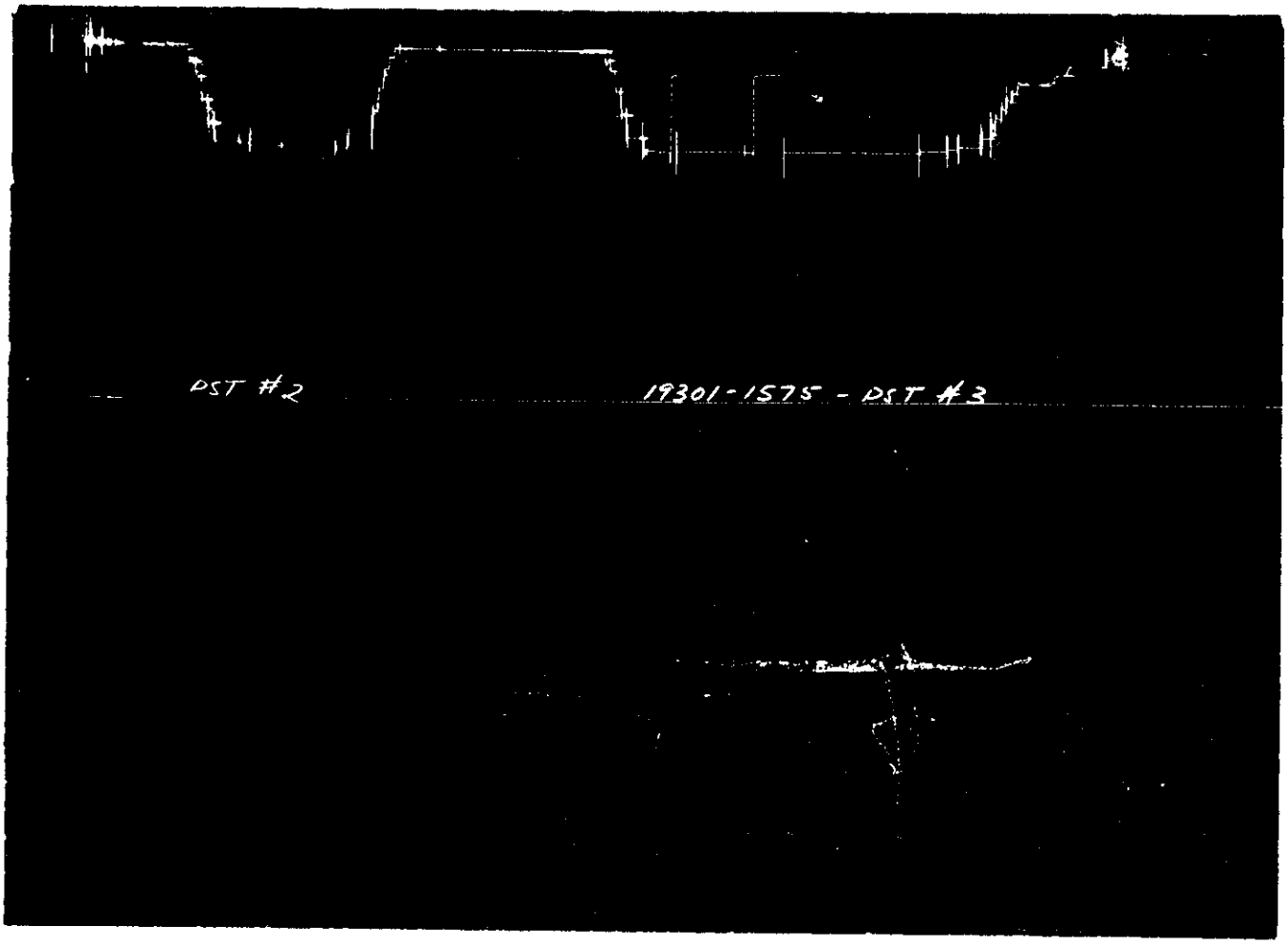
PROVINCE N.W.T.

Lease Name MOBIL COLVILLE Well No. E-15 Test No. 3 Owner's District CALGARY Lease Owner MOBIL OIL CANADA LTD.

FORM 233

DRILL STEM TEST DATA


DST #2
19301-2402 - DST #3


DST #2
19301-1575 - DST #3

Your. . .

Formation Testing Service Report

Depth Top Gauge	652 Ft.	Blanked Off	Yes	Date May 5, 1970	Ticket No. Nil
BT P.R.D. No.	2402	7904 12 Hr. Clock		Kind of Job Dual Bottom Hole	HOWCO District High Level
Pressure Readings	Field	Office Corrected		Tester W. Wolodko	Witness D. Moore
Initial Hydro Mud Pressure		282		Contractor Heath & Sherwood (Western) Ltd.	
Initial Closed in Pressure				K B Elevation	Top Packer Depth 534 Bottom Packer Depth
Initial Flow Pressure				Total Depth 660	Casing Perforations Top / Bottom
Final Flow Pressure				Interval Tested 534–660	Formation Tested Ronning
Final Closed in Pressure				Casing or Hole Size 4 1/4	Liner or Rathole Size
Final Hydro Mud Pressure		282		Size Surface Choke 3/4"	Size Bottom Choke 1/4" Size and Type Wall Packer 3 1/2"ES
Depth Centre Gauge	Ft.	Blanked Off		Size Drill Pipe 3 1/2	ID and Length Drill Collars Nil
BT P.R.D. No.		Hr. Clock		Anchor I.D. / Size O.D.	Amount-Type of Cushion
Pressure Readings	Field	Office Corrected		Gauge Depth Temp. °F meas. °F est.	Mud Weight 8.5 Mud Viscosity
Initial Hydro Mud Pressure				All Depths Measured From K.B.	No. Folders Reproduced 10
Initial Closed in Pressure				Time Periods (Minutes) 1st Flow / Initial CIP / 2nd Flow / Final CIP	
Initial Flow Pressure				Recovered Feet of	
Final Flow Pressure				Recovered Feet of	
Final Closed in Pressure				Recovered Feet of	
Final Hydro Mud Pressure				Recovered Feet of	
Depth Bottom Gauge	656 Ft.	Blanked Off	Yes	Oil Recovery Degrees API	Water Recovery Specific Gravity
BT P.R.D. No.	1575	8742 12 Hr. Clock		REMARKS: Misrun. Hydrospring would not open.	
Pressure Readings	Field	Office Corrected			
Initial Hydro Mud Pressure		284			
Initial Closed in Pressure					
Initial Flow Pressure					
Final Flow Pressure					
Final Closed in Pressure					
Final Hydro Mud Pressure		284			

LEGAL DESCRIPTION

FIELD OR AREA COLVILLE

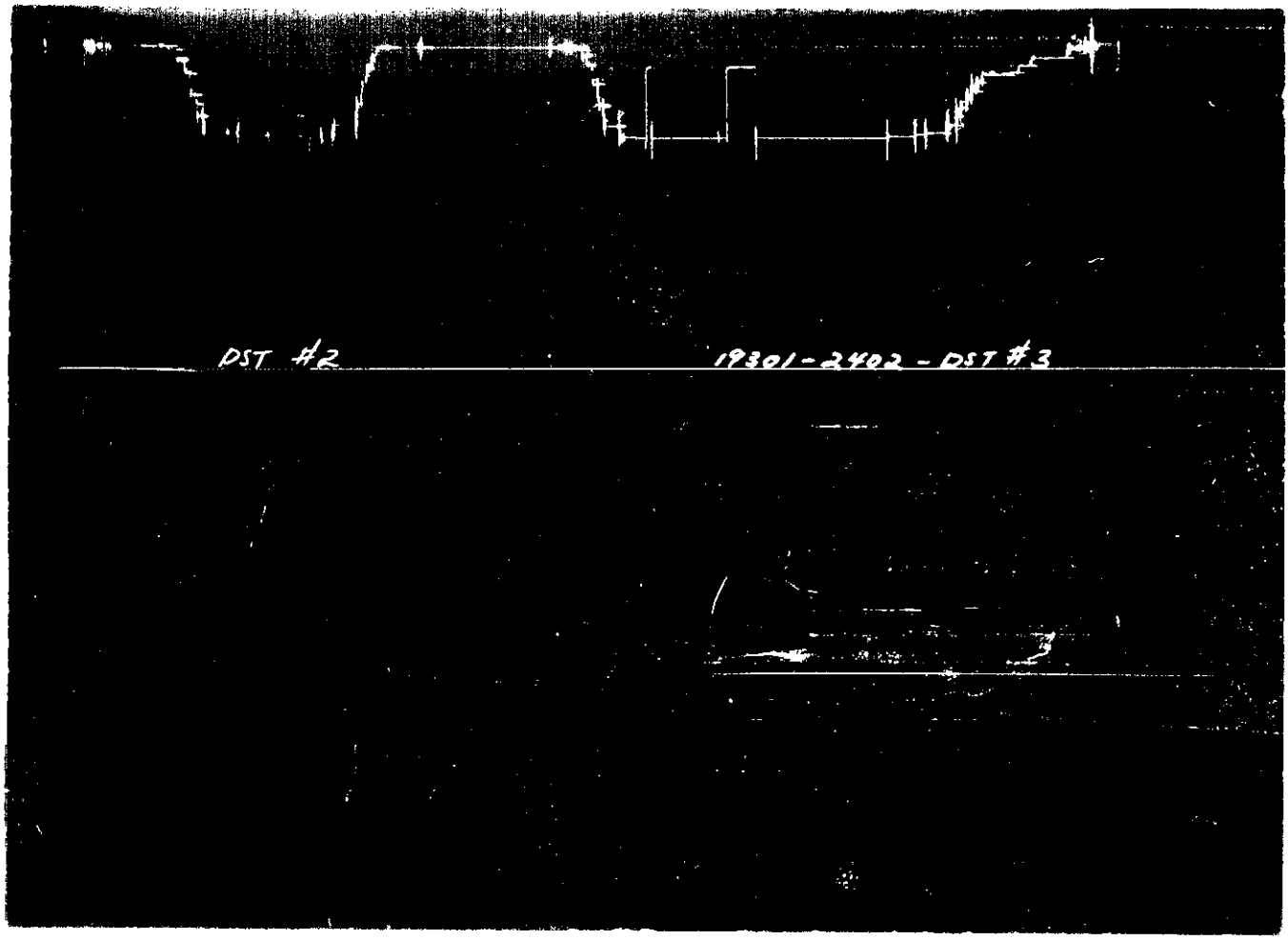
PROVINCE N.W.T.

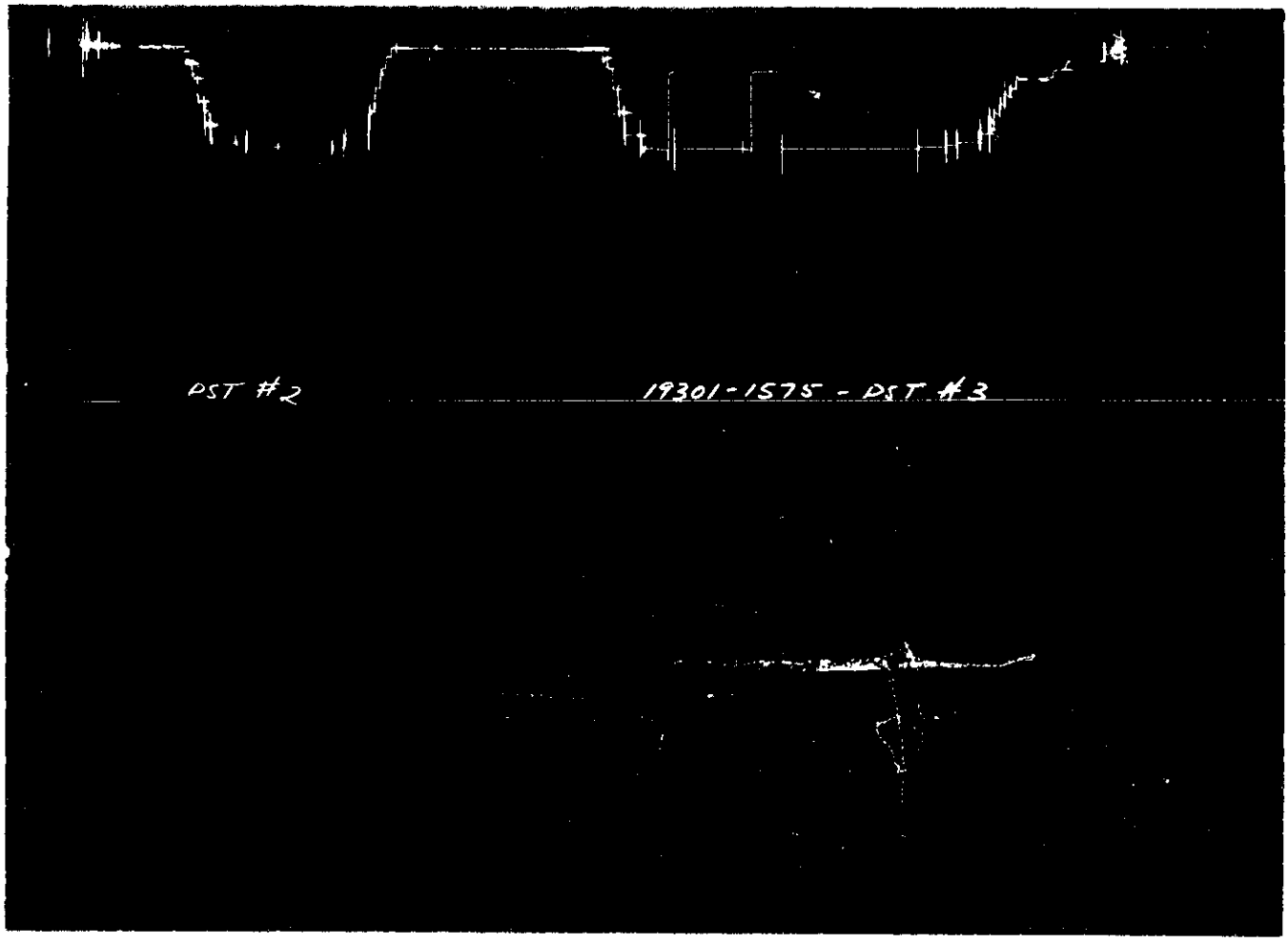
Lease Name MOBIL COLVILLE Well No. E-15 Test No. 2

Owner's District CALGARY Lease Owner MOBIL OIL CANADA LTD.

FORM 233

DRILL STEM TEST DATA


DST #2
19301-2402 - DST #3


DST #2
19301-1575 - DST #3

COUILLE E-15 Report No. E6-1973-MHF E-15

Report on 17 collections of Middle and Lower Cambrian fossils from the Mobil Coville E-15 well on the west side of Coville Lake (67° 14' 18" N; 126° 18' 25" W) N.W.T. The request for fossil identifications was made by W.S. MacKenzie in 1973. Footages in the left column are drilling depths from the top of the well indicating fossil horizons in the Mt. Cap Formation. (NTS 96 M)

"The relevant parts of any manuscript prepared for publication that paraphrase or quote from this report should be referred to the Eastern Paleontology Section, Ottawa, for possible revision."

GSC Field No.		GSC loc.
	Covered	
4,845' - 4,856'	cf. Elrathiella sp. Hyolithes sp.	C-23650
4,755'	Amecephalus sp. ?Albertella levis Walcott Glossopleura sp.	C-23669
4,758'	Glossopleura sp. Micromitra sp. undet. trilobite (New genus?)	C-23670
4,759'	Glossopleura sp. undet. trilobite (New genus?)	C-23671
4,760	Glossopleura sp. undet. trilobite (New genus?)	C-23672
4,811	Amecephalus sp.	C-23673
4,812	Amecephalus? sp.	C-23674
4,813	Amecephalus sp.	C-23675
4,819	Amecephalus sp. Caborcella? sp. Hyolithes sp.	C-23676
4,824	Amecephalus sp.	C-23677
4,825.	Amecephalus sp. Hyolithes sp.	C-23678
4,826	Amecephalus sp.	C-23679
4,827	Amecephalus sp. Hyolithes sp. Micromitra	C-23680

4,829	Amecephalus sp. Hyolithes sp.	C-23681
4,830	Amecephalus sp. Hyolithes sp.	C-23682
4,837	Amecephalus sp. Hyolithes sp.	C-23683

Early Middle Cambrian

Lower Cambrian Bonnia-Olenellus Zone

4,900	Micromitra sp. Olenellus sp.	C-23684
4,902	Olenellus puertoblancoensis (Lochman)	C-23685

Remarks: The boundary between the Lower and Middle Cambrian is within the 63-foot interval between localities C-23683 and C-23684. The presence of the Late Lower Cambrian trilobite Olenellus puertoblancoensis in locality C-23685 indicates that little or no Lower Cambrian strata were removed by Middle Cambrian erosion.

Amecephalus sp. in localities C-23683 through C-23673 indicates an early Middle Cambrian age, as this genus spans the earliest three zones in the Middle Cambrian. A wide tail (fr.) associated with Amecephalus heads at locality C-23679 and a Caborcella? sp. head with a relatively wide glabella at locality C-23676 suggest, but does not prove, a late Albertella Zone or a Glossopleura Zone age for strata at these localities.

The lithology and fossils in the present collection are similar to those seen in the Mt. Cap Formation at the site of the type Mcdougal Group on the Canol Road (64° 56'; 127° 16' W; GSC Paleo. report E-14-1969-WHF; GSC Paper 70-1, Pt. A, p. 110), N.W.T. It is tentatively postulated that the early Middle Cambrian Plagiura-"Poliella" Zone and part of the Albertella Zone is missing in the type Mcdougal section.

W.T. Dean

W.H. Fritz

W.H. Fritz.

Geological Survey of Canada
Eastern Paleontology Section
Ottawa, 15 March 1973.

MEMORANDUM

CLASSIFICATION

TO
A

L. P. Purcell

YOUR FILE No.
Votre dossier

OUR FILE No.
Notre dossier

FROM
De

T. G. Powell

DATE 26 August 1974

FOLD

SUBJECT
Sujet

Source Rock Analysis for Samples from Mobil Coleville E-15, D-45; Mobil Belot Hills M-62 and Aquitaine Old Fort Point E-30

Please find attached the results of source rock analyses on samples from the above wells. The criteria used to determine the source rock quality are 1 Organic carbon content; 2 Yield of extract per unit weight of organic carbon; 3 Percent saturated hydrocarbons in the extract.

During the extract work, only samples with greater than 0.5% organic carbon were extracted since this is considered to be the lower limit at which a rock is considered to be a likely source bed. On this basis, samples between 3409-3745 feet; 4597-4725 feet in the Coleville E-15 and 3-18-3062 feet in the Coleville D-45 well have sufficient carbon to constitute source beds. However, if the yield of extract in mg. per gram of organic carbon and percent saturates in the total extract are considered only samples in the range 4627-4725 in the Mobil Coleville E-15 can be considered to be source rocks at the present time. The yield of extract is greater than 100 mg. per gram of organic carbon and the saturated hydrocarbons from greater than 30% of the total extract. All other samples, which have been extracted, are considered to be in the under mature zone. There is some evidence that the proportion of n-alkanes diminish with depth in the interval 4597-4725 in the Coleville E-15 well. At this stage it is not clear whether this is a source related/maturation/or alteration phenomenon and it is receiving further attention.

Note: Rocks with extract yeilds greater than 100 mg. per gram of organic carbon with saturates forming greater than 30% of the extract are considered to form within the oil window.

T. G. Powell

TGP*aew

Attach.

Mobil Coleville E-15

Depth. ft.	Organic Carbon %	Extract mg. per gram Org.C	Saturates in Extract %
3081-3093	0.17	-	-
3409-3424	0.85	8.5	20
3565-3567	0.90	7.3	-
3577-3588	0.85	7.5	27
3658-3660	0.96	6.7	-
3721-3745	1.31	3.9	-
3761-3766	0.43	-	-
3767-3770	0.06	-	-
3827-3839	0.10	-	-
3921-3930	0.07	-	-
4012-4019	0.05	-	-
4298-4302	0.17	-	-
4319-4330	0.35	-	-
4407-4412	0.60	0.0	-
4467-4472	2.64	0.0	-
4545-4548	0.05	-	-
4548-4550	0.10	-	-
4597	0.56	16.1	33
4601-4608	0.81	31.8	43
4627-4631	0.51	166.8	36
4648-4655	0.66	130.8	48
4659-4661	1.28	284.8	59
4695-4705	0.87	66.8	50
4720-4725	0.50	168.1	77
4750-4751	0.15	-	-
4750-4755	0.16	-	-
4801-4808	0.09	-	-
4879-4882	0.22		
4905-4920	0.09	-	-
4974-4977	0.10		
5015-5018	0.07		
5123-5127	0.22		
5127-5133	0.05		

Mobil Coleville D-45

Depth ft.	Organic Carbon %	Extract mg. per gram Org.C	Saturates in Extract %
3018-3024	0.51	9.6	-
3059-3062	0.56	8.5	
3062-3082	0.44		
3110-3115	0.39		
3156-3159	0.28		

Aquitaine Old Fort Point E-30

1325-1336	0.06		
2571-2572	0.57	4.04	

Mobil Belot Hills M-62

2801-3803	0.19		