

McDERMOTT GEO NORTH

FOR

BY McDERMOTT

632-11-4-7



REPORT ON

McDERMOTT GCO NORTHUP TAYLOR LAKE Y. T. K-15

located at

Latitude  $65^{\circ} 54' 39''$  North & Longitude  $133^{\circ} 03' 00''$  West

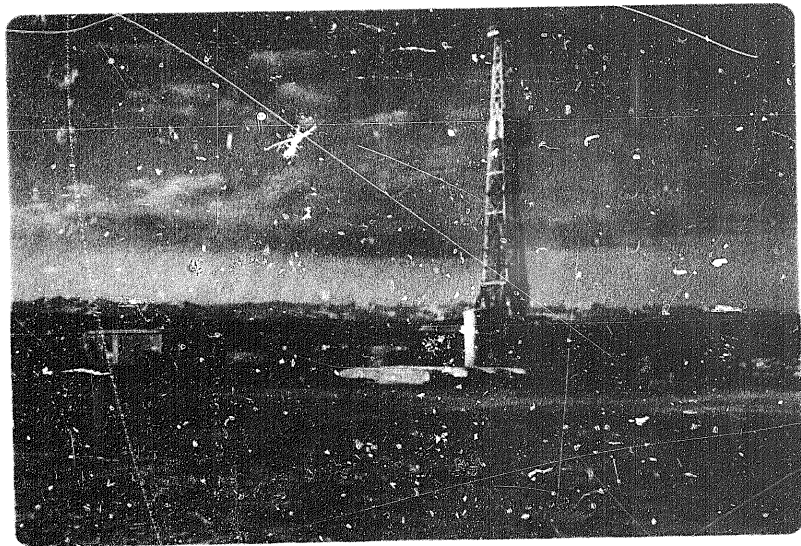
in the

Yukon Territory

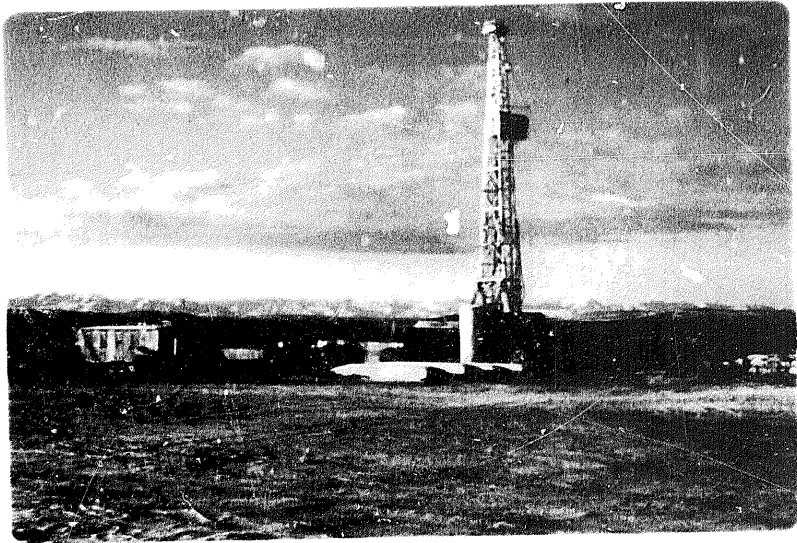


Submitted by

*Fred J. Halkow*  
Fred J. Halkow  
15 May, 1969



McDERMOTT GCO NORTHUP TAYLOR LAKE Y.T. K-15



McDERMOTT GCO NORTHUP TAYLOR LAKE Y.T. K-15



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INTRODUCTION

McD GCO Northup Taylor Lake Y. T. K-15 is located on latitude  $65^{\circ} 54' 39''$  North and longitude  $133^{\circ} 03' 00''$  West and is 172 miles south of Inuvik and 186 miles west-north-west of Norman Wells. It is just inside the Yukon Territory and in close proximity to the mouth of Taylor Creek on Snake River. It was a wildcat well that had the Bear Rock Fm. as the prime objective and the first significant porosity in the Ordovician as the ultimate objective. All other potential horizons were also to be evaluated. Control was weak and was based on outcrop sections 35 miles to the south in the MacKenzie Mountains and on two wells i. e. Shell Peel R Y. T. I-21 40 miles to the northwest and Atlantic Columbian Carbon Arctic Ontaratue 1-1-34 , 42 miles to the northeast.

The rig, camp, ancillary equipment, trucks, mud, cement and other supplies were barged down the MacKenzie River in the summer of 1968 and landed at a point approximately 60 miles downstream from Ft. Good Hope to await freeze-up. Road-building commenced in early December 1968 and the location 185 miles away was reached on January 9, 1969. A 5800 ft. airstrip was built, the rig, camp, equipment and supplies moved in and more fuel flown in by DC-4 aircraft. A DC-3 flew in additional supplies and groceries and rotated personnel on a 4 week in, 2 week out basis.

The well was spudded on February 5 and steady progress was made until total depth was reached on March 22. There were no major mechanical breakdowns nor fishing operations although persistent excessive hole deviation necessitated retarding the penetration rate somewhat. No lost circulation conditions were encountered and a polymer-type mud maintained hole in good condition throughout the drilling operations. All prospective horizons were fully evaluated by sample examination, log examination and drill stem tests. No coring operations were carried out.

The well produced or indicated formation water on all tests and as no commercial gas or oil was encountered the well was abandoned on March 29, 1969 at a total depth of 7804 feet. The rig and camp was then moved back to the landing on the MacKenzie River to await re-assignment or to be barged back to Hay River in the summer of 1969.



PERTINENT WELL DATA

WELL NAME: McD GCO Northup Taylor Lake Y. T. K-15

LOCATION: Unit K, Section 15, Grid 66° 00' & 133° 00'  
Latitude 65° 54' 39" North & Longitude  
133° 03' 00" West.  
Reference Marker: Shot Point #19,  
Shell Seismic line #5-642.

ELEVATIONS: 1525 feet Ground (based on above Reference  
Marker)  
1538 feet Kelly Bushing

DRILLING AUTHORITY: No. 330 issued November 25, 1968

CLASSIFICATION: Wildcat

DATE SPUDDED: At 4:00 p.m. February 5, 1969

DATE COMPLETED  
DRILLING: At 11:45 p.m. March 22, 1969

RIG RELEASED: At 2:00 a.m. March 29, 1969

TOTAL DEPTH: 7804 ft. (Driller) 7801 ft. (Log)

STATUS: Dry and abandoned

TOTAL RIG TIME: 53 days

TOTAL HOURS ON  
BOTTOM: 797 1/2 hours

AVERAGE PENETRATION  
RATE: 9.0 ft. per hour.

TOTAL NO. of BITS USED: 22 on main hole & 7 on surface hole.

HOLE SIZE: 17 1/2" @ 0 - 111; 12 1/4" @ 111-900;  
8 3/4" @ 900 - 7804.

CASING: Conductor Ran 4 jts 13 3/8", 48#,  
Sumitomo casing with show set at 111' K. B.  
and cemented with 100 sks. portland cement  
+ 95 sks. gyp-seal. Plug down at 11:00 p.m.  
February 6, 1969.

PERMIT # - 2448

4.

Surface.

Ran 29 jts; 904.33 ft., of 9 5/8", 36#, J-55, 8rd, Rge. 2, Mannesman surface casing with shoe set at 900 ft. K. B. and entire string cemented with 270 sks. Fondu cement + 160 sks. portland cement + 2% CaCl<sub>2</sub>. Plug down at 9:30 a.m. Feb. 13, 1969.

Production

Nil.

LOGGING:

On March 25, 1969, ran Schlumberger Borehole Compensated Sonic Log 3/Gamma Ray & Caliper.

Scale 2" = 100' Interval: 901-7799

Scale 5" = 100', Interval: 901-7799

(Note: Gamma Ray was carried up to 80' K. B.)

On March 25, 1969 ran Schlumberger Induction Electrical Log.

Scale 2" = 100' Interval: 905-7800

Scale 5" = 100' Interval: 905-7800

On March 25, 1969, ran Schlumberger Compensated Formation Density Log w/ Gamma Ray.

Scale 2" = 100' Interval: 905-7799

Scale 5" = 100' Interval: 905-7799

On March 25, 1969, ran Schlumberger Continuous Dipmeter

Interval: 901 to 7800

On March 25, 1969, ran Velocity survey with Schlumberger and Electronic Logging.

CONTRACTOR:

S & T Drilling (Western) Co. Ltd.  
Edmonton, Alberta

RIG:

Rig No. 1E

Drawworks - National 50A

Mast - Lee C. Moore '131'

Pumps - 2 National K-380

Motors - 750 H. P. G. E.

2 Cat D379 (550 h. p.)

Blow-out

Preventers - Schaffer Blind Rams

Schaffer Pipe Rams

Hydril GK-10

Boiler - Volcano 50 h. p. @ 95#

5.

TOOLPUSHER:

Victor Galenza

WELL-SITE SUPERVISION:

V. Hunter and Associates Ltd. Edmonton, Alta.  
F.J. Halkow, Calgary, Alberta

OPERATOR:

J. Ray McDermott Canada Ltd., Calgary, Alta.

PARTICIPANTS:

J. Ray McDermott Canada Ltd., Calgary, Alta.  
General Crude Oil Co. Calgary, Alberta  
Northup Petroleum Ltd. Calgary, Alta.



TABLE OF GEOLOGICAL FORMATIONS

K. B. Elevation: 1538 ft.

<u>FORMATION</u>	<u>Prognosed Depth</u>	<u>Sample Depth</u>	<u>E-log Depth</u>	<u>E-log Elevation</u>
Base Glacial Drift		± 110	110	+1428
MISSISSIPPIAN	2536	?	?	
UPPER DEVONIAN				
Imperial Fm.	2736		3455	-1917
Canol Fm.	4636	4310	4312	-2774
MIDDLE DEVONIAN				
Unnamed Shale	4736	not present		
Gayne Bituminous Shale	4836	not present		
Hume Limestone	4936	4451	4452	-2914
Hume Shale	5236	4840	4800	-3262
LOWER DEVONIAN				
Bear Rock	5536	5010	5000	-3462
SILURIAN-ORDOVICIAN	6436	6530	6550	-5012
Porosity	7236		7390	-5852
TOTAL DEPTH	7436	7804	7801	-6263

SUMMARY OF DRILL STEM TEST

<u>No.</u>	<u>Interval</u>	<u>Formation</u>	<u>Valve Open</u>	<u>Blow</u>	<u>Recovery</u>
1	2393-2418	Cret? Miss?	60 min.	air	100' mud + 400' gassy water
2	2824-3003	Cret? Miss?	60 min.	air	330' mud + 1240' gassy water
3	5880-6076	Bear Rock	90 min.	air	450' mud & 190' gassy salt water
4	7390-7804	Ordovician	90 min.	air	910' salty watery mud
5	5640-5740	Bear Rock	60 min.	air	1270' muddy salt water

- testing by Jonnston Testers Ltd.

SUMMARY OF CORED INTERVALS

No coring operations carried out.

SUMMARY OF LOST CIRCULATION ZONES

No lost circulation zones encountered.

SUMMARY OF DEVIATION SURVEYS

<u>Depth</u>	<u>Degrees Off</u>	<u>Depth</u>	<u>Degrees Off</u>
70 ft.	1/2 <sup>o</sup>	1520 ft.	2 5/8
130	5/8	1580	1 7/8
165	1/4	1650	2 5/8
230	1/8	1710	2 5/8
320	5/8	1775	2 7/8
350	7/8	1835	3
380	7/8	1905	2 3/4
410	7/8	1968	3
440	1	2032	3
470	1 1/8	2095	3
570	1 1/8	2212	3 1/2
600	1 1/8	2245	3 1/2
660	1 7/8	2300	3
690	1 5/8	2570	4
720	2	2630	4 1/8
780	1 7/8	2690	4 1/4
810	1 7/8	2794	5
900	1 1/4	2845	5 1/8
980	1 3/4	2882	5 1/2
1050	2 1/8	2940	5
1120	2	3003	5
1370	2 1/8	3065	5



SUMMARY OF DEVIATION SURVEYS

<u>Depth</u>	<u>Degrees Off</u>	<u>Depth</u>	<u>Degrees Off</u>
3125 ft.	5 1/4 °	4455	8
3174	5 1/2	4570	8
3220	5 1/4	4690	8
3285	5 1/4	4761	8 1/2
3345	5	4850	8 1/2
3440	6	4975	9
3500	6 1/2	5072	9
3565	7	5385	9 1/4
3591	7	5735	9 1/2
3630	7	6076	10
3660	7	6782	10
3725	6 1/2	7328	11 1/2
3763	6 3/4	7468	12
3815	7	7804	12
3845	7 1/4		
3875	7 3/4		
3915	7 3/4		
3970	7 1/2		
4035	7 1/4		
4130	8		
4190	7 1/2		
4293	7		
4375	8		

## DAILY MUD RECORD

10.

Date	Depth	Weight	Viscosity	Water Loss	Filter Cake	Ph.	Remarks and Additives
		#/ Gal.	Seconds	15 min. C.C.	32nds		
1969		Mud Additives and Properties are every 24 hours 8:00 a.m. to 8:00 a.m.					
Feb. 7	111		37				1500# gel, 50# caustic
Feb. 8	539	8.9	35				3500# gel, 150# caustic.
Feb. 9	547	8.9	35				700# gel
Feb. 10	685	9.0	52				2300# gel, 100# caustic
Feb. 11	900	8.9	40				Nil
Feb. 12	900						run casing
Feb. 13	900						W. O. C.
Feb. 14	900						drilling out
Feb. 15	1719	8.8	33			11.0	100# soda ash, 200# XC polymer, 25# caustic, 10# Dowicide 'B'.
Feb. 16	2189	8.9	33			11.0	10# Dowicide 'B', 30# chromic chloride.
Feb. 17	2358	8.9	32			10.5	25# CaCl <sub>2</sub> , 10# Dowicide 'B', 50# XC polymer, 15# chromic chloride.
Feb. 18	2418	8.9	32			10.5	25# CaCl <sub>2</sub> , 10# Dowicide 'B', 15# chromic chloride, 50# XC polymer.
Feb. 19	2648	8.9	34	24.0	2	10.5	100# XC polymer, 25# CaCl <sub>2</sub> , 30# chromic chloride, 50# caustic, 10# Dowicide 'B'.
Feb. 20	2819	9.0	34	22.0	2	11.0	50# XC polymer, 100# caustic, 80# CaCl <sub>2</sub> , 75# chromic chloride, 10# Dowicide 'B'.
Feb. 21	2950	9.0	32	25.0	2	10.0	Nil
Feb. 22	3023	9.0	34	22.4	2	10.0	50# XC polymer, 50# caustic, 15# chromic chloride, 25# CaCl <sub>2</sub> , 20# Dowicide 'B'
Feb. 23	3155	9.0	34	25.0	2	10.5	50# caustic soda
Feb. 24	3278	9.0	33	22.4	2	10.5	100# XC polymer, 100# caustic, 30# chromic chloride, 25# CaCl <sub>2</sub> , 20# Dowicide 'B'.
Feb. 26	3529	9.1	33	23.4	2	10.0	100# XC polymer, 100# caustic, 30# chromic chloride, 75# CaCl <sub>2</sub> , 20# Dowicide 'B'.
Feb. 26	3648	9.0	34	21.0	2	11.0	100# XC polymer, 200# caustic, 30# chromic chloride

## DAILY MUD RECORD

Date	Depth	Weight	Viscosity	Water Loss	Filter Cake	Ph.	Remarks and Additives
		#/ Gal.	Seconds	15 min. C.C.	32nds		
1969 Feb. 27	3732	9.0	37	22.2	2	11.0	200# XC polymer, 50# CaCl <sub>2</sub> , 100# caustic, 10# chromic chloride
Feb. 28	3887	9.0	37	14.4	2	10.5	100# XC polymer, 1200# gel, 180# CaCl <sub>2</sub> , 50# caustic, 10# chromic chloride
Mar. 1	4096	9.1	37	12.6	2	9.5	200# XC polymer, 80# CaCl <sub>2</sub> , 30# Dovicide 'B'.
Mar. 2	4293	9.1	35	14.4	2	8.0	100# XC polymer, 80# CaCl <sub>2</sub> , 100# caustic, 20# chromic chloride, 10# Dovicide 'B'
Mar. 3	4481	9.1	35	13.8	2	10.5	50# caustic, 10# chromic chloride, 20# Dovicide 'B'.
Mar. 4	4726	9.1	34	14.4	2	10.0	100# XC polymer, 50# caustic, 80# CaCl <sub>2</sub> , 20# chromic chloride, 20# Dovicide 'B'.
Mar. 5	4849	9.1	36	12.0	2	10.0	100# XC polymer, 200# gel, 50# caustic.
Mar. 6	5031	9.1	35	11.2	2	9.0	100# XC polymer, 50# caustic, 10# chromic chloride, 30# Dovicide 'B'
Mar. 7	5224	9.1	36	11.8	2	9.5	100# XC polymer, 200# gel, 100# caustic, 10# chromic chloride, 20# Dovicide 'B'
Mar. 8	5398	9.1	36	11.4	2	9.0	100# XC polymer, 10# chromic chloride, 20# Dovicide 'B'
Mar. 9	5615	9.0	36	11.2	2	10.0	100# XC polymer, 200# gel, 100# caustic, 10# chromic chloride, 20# Dovicide 'B'.
Mar. 10	5854	9.1	36	10.4	2	9.5	300# XC polymer, 50# caustic, 10# chromic chloride, 10# Dovicide 'B'
Mar. 11	6076	9.0	36	9.8	2	10.0	100# XC polymer, 100# caustic, 20# chromic chloride, 20# Dovicide 'B'.
Mar. 12	6102	8.6	38			10.0	50# caustic
Mar. 13	6224	9.1	36	10.5	2	10.0	100# XC polymer, 75# caustic, 200# gel.
Mar. 14	6452	9.0	34	10.2	2	10.5	100# XC polymer, 800# gel, 100# caustic 10# Dovicide 'B', 10# chromic chloride.
Mar. 15	6685	9.1	36	9.6	2	10.0	100# XC polymer, 600# gel, 50# caustic.
Mar. 16	6828	8.9	38	9.8	2	10.0	200# XC polymer, 600# gel, 50# caustic, 30# chromic chloride.
Mar. 17	7042	9.1	37	10.4	2	9.5	300# gel, 150# caustic, 10# Dovicide 'B', 10# chromic chloride.



## DAILY MUD RECORD

Date	Depth	Weight	Viscosity	Water Loss	Filter Cake	Ph.	Remarks and Additives
		#/ Gal.	Seconds	15 min. C.C.	32nds		
1969							
Mar. 18	7244	9.1	38	10.6	2	10.0	100# XC polymer, 1000# gel, 100# caustic, 20# chromic chloride.
Mar. 19	7375	9.1	38	11.8	2	9.5	600# gel, 100# caustic, 20# chromic chloride, 50# Dowicide 'B'
Mar. 20	7485	9.2	38	11.8	2	10.0	50# Caustic
Mar. 21	7672	9.2	38	13.0	2	9.5	100# XC polymer, 400# gel, 50# caustic, 20# Dowicide 'B'
Mar. 22	7804	9.2	36	12.8	2	9.5	800# gel, 50# caustic, 20# chromic chloride, 20# Dowicide 'B'
Mar. 23	7804	9.2	41	12.6	2		200# XC polymer, 3800# gel, 50# caustic.
Mar. 24	7804	9.2	50	8.6	2	10.5	550# XC polymer, 100# caustic, 50# Dowicide 'B', 50# chromic chloride.
Mar. 25	7804	9.2	60	8.4	2	10.5	500# XC polymer.

Note: Above properties and additives compiled from  
 'McDermott' Daily Drilling Reports.

# BIT RECORD

McDermott General Crude Northup Taylor Lake YT K-15

Well 65° 54' 19" N. Lat. 133° 03' 00" W. Long.

Drilling Contractor S & T Drilling (Western) Co. Ltd.

RIG No. 1E

Date Drilling Started Feb 5, 1969

Date Completed March 22, 1969

Bit No.	Size	Make	Type	Depth Out	Feet	Hours	Accum. Hours	Conditions			No. DC.	Wt. 1000#	RPM	Pump Pres.
								T	B	G				
1A	12½	Reed	YTA	111	111	9½	9½	3	2	1	2		100	100
Reamer	17½	Smith	Reamer	111	111	5	14½	Good			2		100	100
2A	12½	HW	OSC3A	477	366	15	29½	3	2	1	12	10	100	150
3A	8 3/4	HW	OSC1G	539	62	3 3/4	33 1/4	Khocked off				all cones		
4A	12½	HW	OSC3A	547	8	1½	34½	Million iron						
5A	12½	Smith	DTF	739	192	11 3/4	46½	4	2	1	12	20	100	
6A	8 3/4	HW	X1G	763	24	4½	50 3/4	Mill on iron						
7A	8 3/4	HW	X1G	900	137	7½	58	2	2	1	12	10	90	650
Reamer	12½	Smith	Reamer	900	161	7 3/4	65 3/4	Good			12	15	90	650
1RR	8 3/4	HW	X1G	980	80	1 3/4	67½	3	2	1	12	20	90	1000
2	8 3/4	HW	X1G	1906	926	21½	88 3/4	2	1	1	12	10-20	90	1500
3	8 3/4	HW	XV	2263	357	14	102 3/4	7	2	1	12	10-25	80	1400
4	8 3/4	Smith	SS5	2418	155	15 3/4	118½	1	1	1	16	25	46	
5	8 3/4	HW	X7	2794	376	28 3/4	147½	6	2	1	24	15-30	50	1100
6	8 3/4	HW	XV	2882	88	14½	161 3/4	7	2	1	24	10-15	60	1200
7	8 3/4	Smith	SS5	3003	121	14½	176½	1	1	1	24	10-15	60	
7RR	8 3/4	Smith	SS5	3140	145	20½	196½	2	1	1	24	10-15	50	1200
8	8 3/4	HW	XV	3174	25	5 3/4	202½	4	1	1	24	15-20	60	1250
9	8 3/4	HW	X55R	3591	417	47	249½	1	1	2	24	15-30	50	1250
10	8 3/4	HW	X7	3716	125	14½	263½	2	1	1	24	10-12	50-70	1350
11	8 3/4	HW	XV	3725	9	2½	265 3/4	4	1	1	24	10-20	70	1350
12 RR4	8 3/4	Smith	SS5	3915	190	27 3/4	293½	2	3	1	24	15-30	70	1250
13	8 3/4	Sec	DMJ	4293	378	32 3/4	326½	4	6	1	24	30	50	1250
14	8 3/4	Sec	DMJ	4481	188	21½	347½	7	5	1	24	25	50	1250
15	8 3/4	Sec	S88	4761	280	23½	371	8	4	1	24	40	44	1400
16	8 3/4	Smith	SS5	5228	467	60	431	2	2	1	24	35	40	1300
17	8 3/4	Sec.	S88	6076	848	81 3/4	512 3/4	7	1	1	24	40	40	1250
18	8 3/4	Sec.	S88	6177	101	96½	609½	8	1	1	24	30/40	30/40	1250
19	8 3/4	HW	X55R	6782	605	63 1/4	672½	2	2	1	24	40	36/40	1350
20	8 3/4	Smith	SS5	7328	546	62½	735	2	4	1	24	40	40	1400
21	8 3/4	HW	W7	7468	140	21	756	3	3	1	24	45	55	1400
22	8 3/4	Smith	SS5	7804	336	41½	797½	8	4	0	24	45/50	40	1600

## DAILY PROGRESS REPORT

DATE	DEPTH		Footage	Hours on Bottom	BIT NOS.	REMARKS
	From	To				
<u>1969</u>						Progress made every 24 hours from 8:00 a. m. to 8:00 p. m.  Commenced moving rig from Mackenzie River landing on December 14, 1968, and built road to location 185 miles away. First arrival on location on January 9, 1968. Built airstrip, moved in equipment and commenced rigging up on January 24, 1969. Cemented cellar on February 4, 1969 with 84 sks, construction cement + 26 sks. Fondu cement + 200# CaCl <sub>2</sub> and continued rigging up.
Feb. 6	0	111	111	9 1/2	1A	Completed rigging up Spudded in at 4:00 p. m. Feb. 5, 1969 Drilled 12 1/4" hole  Survey: 1/2° @ 70 ft.  Status: Picking up reamer at 8:00 a. m.
Feb. 7	0	111	111	5	Reamer	Reamed 12 1/4" hole to 17 1/2" Ran 13 3/8", 48# Sumitomo casing as conductor pipe to 111 ft. and cemented with 100 sks. portland cement + 95 sks. gyp seal. Plug down at 11:00 p. m.  W. O. C.  Found cement at 40 ft. at 5:30 a. m. and commenced drilling out same.  Status: Drilling out cement at 8:00 a. m.
Feb. 8	111	539	428	18 3/4	2A, 3A	Drilled out cement Drilled 12 1/4" hole Hole deviation increasing - tripped to pilot hole Drilled 8 3/4" pilot hole

0-111

0-111

111-477

477-539



# DAILY PROGRESS REPORT

DATE	DEPTH		Footage	Hours on Bottom	BIT NOS.	REMARKS
	From	To				
1969 Feb. 8 (continued)						<p>Surveys: 5/8° off @ 130, 1/4° off @ 165, 1/8° off @ 230, 5/8° off @ 320, 7/8° off @ 350, 7/8° off @ 380, 7/8° off @ 410, 1 1/8° off @ 440, 1 1/8° off @ 470</p> <p>Status: Drilling pilot hole @ 8:00 a. m.</p> <p>Pipe pumping out of hole when pump kicked in after rig service; shut pump off but hook came open and swivel &amp; kelly swung out through V door breaking kelly off and pipe dropped 15 ft. to bottom. Welded straps on to kelly, put dog-collar on and hoisted pipe out of hole. Found 3 bit cones off and on bottom.</p> <p>Picked up 3 1/2" kelly, laid down 3 bent drill pipe singles and ran in with Globe basket and fished for cones - no recovery.</p> <p>Ran in with modified basket</p> <p>Status: Cleaning to bottom with basket.</p> <p>Worked and tripped out with basket - no recovery Ran in with 12 1/4" bit anc reamed pilot hole Attempted to by-pass cones with bit, drilled 539-547 - could not by-pass fish Ran in with magnet - recovered 1 cone on 1st run and recovered another cone on 2nd run. Recovered junk iron on 3rd run. Drilled 12 1/4" hole (mill on iron)</p> <p>Surveys: 1 1/8° off @ 570, 1 1/8° off @ 600, 1 7/8° off @ 660.</p> <p>Status: Drilling at 685 at 8:00 a. m.</p>
Feb. 9	539					
Feb. 10	539	685	146	6 1/2	4A, 5A	<p>477-539</p> <p>547-685</p>

## DAILY PROGRESS REPORT

DATE	DEPTH		Footage	Hours on Bottom	BIT NOS.	REMARKS
	From	To				
Feb. 11	685	855	170	9	5A, 6A, 7A	<p>Drilled 12 1/4" hole                      Drilled 8 3/4" pilot hole (mill on iron)                      Ran in w/magnet - no recovery on 1st run,                      recovered 3rd cone on 2nd run.                      Drilled 8 3/4" pilot hole</p> <p>Surveys: 1 5/8° off @ 690, 2° off @ 720,                      1 7/8° off @ 780, 1 7/8° off @ 810.</p> <p>Status: Drilling at 855 at 8:00 a. m.</p> <p>685-739                      739-765                      765-855</p>
Feb. 12	855	900	45		7A, Reamer	<p>Drilled 8 3/4" pilot hole                      Reamed pilot hole to 12 1/4"</p> <p>Surveys: 1 1/4° @ 900</p> <p>16.</p> <p>Conditioned and ran 29 jts., 904.33 ft., 9 5/8", 36#,                      J-55, 8 rd, Rge. 2, Mannesman surface casing                      with shoe set at 900' K. B. and cemented with                      270 sks. Fondu cement + 160 sks. portland cement                      with 3% CaCl<sub>2</sub>.</p> <p>Status: Cementing casing @ 8:00 a. m.</p> <p>855-900                      739-900</p>
Feb. 13	900					<p>Completed cementing casing. Obtained good cement                      returns and plug was down at 9:30 a. m. Feb. 13/69.</p> <p>W. O. C. to 9:30 p. m.                      Slacked off and cut casing off.                      Headed up.</p> <p>Status: Heading up at 8:00 a. m.</p>

## DAILY PROGRESS REPORT

DATE	DEPTH		Footage	Hours on Bottom	BIT NOS.	REMARKS
	From	To				
Feb. 14	900					Completed heading up. Pressured up blind rams to 1000# - held O. K. Drilled mouse hole. Ran in w/bit No. 1 and pressured up pipe rams and hydril each to 1000#.  Status: Preparing to drill out at 8:00 a. m.
Feb. 15	900	1719	819	14 1/2	1, 2	Drilled out plugs, cement and shoe at 9:30 a. m. Drilled 8 3/4" hole Tripped at 980 for bit No. 2, reamer and Circle "C" tool Drilled 8 3/4" hole  Surveys: 1 3/4° off @ 980, 2 1/8° off @ 1050, 2° off @ 1120, 2 1/8° off @ 1370, 2 5/8° off @ 1520, 1 7/8° off @ 1580, 2 5/8° off @ 1650, 2 5/8° off @ 1710.  Status: Drilling at 1719 at 8:00 a. m.
Feb. 16	1719	2189	470	17 3/4	2, 3	Drilled 8 3/4" hole Tripped at 1906 for bit No. 3 Drilled 8 3/4" hole  Surveys: 1775 - 2 7/8°, 1835 - 3°, 1905 - 2 3/4°, 1968 - 3°, 2032 - 3°, 2095 - 3°  Status: Drilling at 1719 at 8:00 a. m.
Feb. 17	2189	2358	169	17 1/4	3, 4	Drilled 8 3/4" hole Tripped at 2263 for bit No. 4 Drilled 8 3/4" hole  Surveys: 2212 - 3 1/2°, 2245 - 3 1/2°, 2300 - 3°  Status: Drilling at 2358 at 8:00 a. m.



## DAILY PROGRESS REPORT

DATE	DEPTH		Footage	Hours on Bottom	BIT NOS.	REMARKS
	From	To				
Feb. 18	2358	2418	60		4	Drilled 8 3/4" hole Survey: 3° off @ 2390 Measured out to test - no correction for -0.44 ft. difference. Ran D. S. T. No. 1, 2393-2418 Picked up 8 drill collars - lost chisel down hole. Status: Running in w/magnet @ 8:00 a.m.
Feb. 19	2418	2648	230	16	5	Worked magnet and recovered part of chisel on 1st run and no recovery on 2nd run. Ran in w/bit #5 & junk sub Drilled 8 3/4" hole (hold back on wt.) Surveys: 4° @ 2570, 4 1/8° @ 2630 Status: Drilling at 2648 at 8:00 a.m.
Feb. 20	2648	2819	171	17 3/4	5, 6	Drilled 8 3/4" hole (hold back on wt.) Tripped at 2794 for bit No. 6 & slipped line. Drilled 8 3/4" hole (hold back on wt.) Surveys: 4 1/4° @ 2690, 5° @ 2794, Status: Drilling at 2819 at 8:00 a.m.
Feb. 21	2819	2950	131	19	6, 7	Drilled 8 3/4" hole (hold back on wt.) Tripped at 2882 for bit No. 7 Drilled 8 3/4" hole (hold back on wt.) Surveys: 5 1/8° @ 2845, 5 1/2° @ 2882, 5° @ 2940 Status: Drilling at 2950 at 8:00 a.m.

## DAILY PROGRESS REPORT

DATE	DEPTH		Footage	Hours on Bottom	BIT NOS.	REMARKS
	From	To				
Feb. 22	2950	3023	53	5	7, 7RR	Drilled 8 3/4" hole (hold back on wt.) Ran D.S.T. No. 2, 2824-3003 Drilled 8 3/4" hole (hold back on wt.)  Survey: 5° @ 3003  Status: Drilling at 3023 at 8:00 a.m.
Feb. 23	3023	3155	132	17 3/4	7RR, 8	Drilled 8 3/4" hole (hold back on wt.) Tripped at 3149 for Bit No. 8 Drilled 8 3/4" hole (hold back on wt.)  Surveys: 5° @ 3065, 5 1/4° @ 3125  Status: Drilling at 3155 at 8:00 a.m.
Feb. 24	3155	3278	123	19 1/4	8, 9	Drilled 8 3/4" hole (hold back on wt.) Tripped at 3174 for Bit No. 9 Drilled 8 3/4" hole (hold back on wt.)  Surveys: 5 1/2° @ 3174, 5 1/4° @ 3220  Status: Drilling at 3155 at 8:00 a.m.
Feb. 25	3278	3529	251	22 1/4	9	Drilled 8 3/4" hold (hold back on wt.)  Surveys: 5 1/4° @ 3285, 5° @ 3345, 6° @ 3440, 6 1/2° @ 3500  Status: Drilling at 3278 at 8:00 a.m.
Feb. 26	3529	3648	119	16 1/2	9, 10	Drilled 8 3/4" hole (hold back on wt.) Tripped at 3591 for Bit No. 10 Drilled 8 3/4" hole (hold back on wt.)  Surveys: 7° off @ 3565, 7° off @ 3591, 7° @ 3630  Status: Drilling at 3648 at 8:00 a.m.

## DAILY PROGRESS REPORT

DATE	DEPTH		Footage	Hours on Bottom	BIT NOS.	REMARKS
	From	To				
Feb. 27	3648	3732	84	11 1/2	10, 11, 12 (RR4)	<p>Drilled 8 3/4" hole (hold back on wt.)                      Tripped at 3716 for Bit No. 11                      Drilled 8 3/4" hole - bit torquing                      Tripped at 3725 for Bit No. 12                      Drilled 8 3/4" hole (hold back on wt.)</p> <p>Surveys: 7° off @ 3660, 6 1/2° off @ 3725</p> <p>Status: Drilling at 3732 at 8:00 a.m.</p>
Feb. 28	3732	3887	115	22 1/4	12 (RR4)	<p>Drilled 8 3/4" hole (hold back on wt.)</p> <p>Surveys: 6 3/4° off @ 3763; 7° off @ 3815, 7 1/4° off @ 3845</p> <p>Status: Drilling at 3887 at 8:00 a.m.</p>
Mar. 1	3887	4096	209	18 1/2	12(RR4) 13	<p>Drilled 8 3/4" hole (hold back on wt.)                      Tripped at 3915 for Bit No. 13                      Drilled 8 3/4" hole (hold back on wt.)</p> <p>Surveys: 7 3/4° off @ 3875; 7 3/4° off @ 3915; 7 1/2° off @ 3970                      7 1/4° off @ 4035.</p> <p>Status: Drilling at 4096 at 8:00 a.m.</p>
Mar. 2	4096	4293	197	19 3/4	13,	<p>Drilled 8 3/4" hole</p> <p>Surveys: 8° off @ 4130; 7 1/2° off @ 4190; 7° off @ 4293</p> <p>Status: Tripping at 4293 for Bit No. 14 at 8:00 a.m.</p>
Mar. 3	4293	4481	188	21 1/4	14	<p>Drilled 8 3/4" hole</p> <p>Surveys: 8° off @ 4375; 8° off @ 4465.</p> <p>Status: Drilling at 4481 at 8:00 a.m.</p>



## DAILY PROGRESS REPORT

DATE	DEPTH		Footage	Hours on Bottom	BIT NOS.	REMARKS
	From	To				
Mar. 4	4481	4726	245	17 1/2	15	<p>Tripped at 4481 for bit No. 15 Picked up extra stabilizers Drilled 8 3/4" hole</p> <p>Surveys: 8° off @ 4570, 8° off @ 4690</p> <p>Status: Drilling at 4726 at 8:00 a.m.</p> <p style="text-align: right;">4481-4726</p>
Mar. 5	4726	4849	123	18 3/4	15, 16	<p>Drilled 8 3/4" hole Tripped at 4761 for bit No. 16</p> <p>Survey: 8 1/2° off @ 4761</p> <p>Status: Drilling at 4849 at 8:00 a.m.</p> <p style="text-align: right;">4726-4761</p>
Mar. 6	4849	5031	182	23	16	<p>Drilled 8 3/4" hole</p> <p>Surveys: 8 1/2° off @ 4850, 9° off @ 4975</p> <p>Status: Drilling at 5031 at 8:00 a.m.</p> <p style="text-align: right;">4761-5031</p>
Mar. 7	5031	5224	193	23 1/2	16	<p>Drilled 8 3/4" hole</p> <p>Survey: 9° off @ 5072</p> <p>Status: Drilling at 5224 at 8:00 a.m.</p> <p style="text-align: right;">5031-5224</p>
Mar. 8	5224	5398	174	16 3/4	16, 17	<p>Drilled 8 3/4" hole Tripped at 5228 for bit No. 17 Measured pipe - no correction for - 1.1 ft. dif. Drilled 8 3/4" hole</p> <p>Survey: 9 1/4° @ 5385</p> <p>Status: Working on rig electrical power system.</p> <p style="text-align: right;">5224-5228 5228-5398</p>

## DAILY PROGRESS REPORT

DATE	DEPTH		Footage	Hours on Bottom	BIT NOS.	REMARKS
	From	To				
Mar. 9	5398	5615	217	22 1/2	17	Worked on rig electrical power system. Drilled 8 3/4" hole  Status: Drilling at 5615 at 8:00 a.m.
Mar. 10	5615	5854	239	21 3/4	17	Drilled 8 3/4" hole Worked on rig electrical power system - 1 hr.  Survey: 9 1/2° @ 5735.
Mar. 11	5854	6076	222	21 3/4	17	Status: Drilling at 5854 at 8:00 a.m.  Drilled 8 3/4" hole
Mar. 12	6076	6102	26	4 1/4	18	Status: Circulating to test at 6076 at 8:00 a.m.  Ran D.S.T. No. 3, 5880 - 6076  Survey: 10° @ 6076
Mar. 13	6102	6224	122	16 3/4	18, 19	Checked drill-collars and ran in w/Bit #18 Drilled 8 3/4" hole  Status: Drilling at 6102 at 8:00 a.m.
Mar. 14	6224	6452	228	23 1/4	19	Drilled 8 3/4" hole Tripped at 6177 for Bit #19 Drilled 8 3/4" hole  Status: Drilling at 6224 at 8:00 a.m.  Drilled 8 3/4" hole  Status: Drilling at 6452 at 8:00 a.m.

## DAILY PROGRESS REPORT

DATE	DEPTH		Footage	Hours on Bottom	BIT NOS.	REMARKS
	From	To				
Mar. 15	6452	6685	233	22 3/4	19	Drilled 8 3/4" hole Status: Drilling at 6685 at 8:00 a.m.
Mar. 16	6685	6828	143	16 1/2	19, 20	Drilled 8 3/4" hole Tripped at 6782 for bit No. 20 Drilled 8 3/4" hole Survey: 10° @ 6782
Mar. 17	6828	7042	214	23 1/4	20	Status: Drilling at 6828 at 8:00 a.m. Drilled 8 3/4" hole
Mar. 18	7042	7244	202	23 1/4	20	Status: Drilling at 7042 at 8:00 a.m. Drilled 8 3/4" hole
Mar. 19	7244	7375	131	17 1/2	20, 21	Status: Drilling at 7244 at 8:00 a.m. Drilled 8 3/4" hole Tripped at 7328 for bit No. 21 Survey at 7328 - off 11 1/2° Drilled 8 3/4" hole
Mar. 20	7375	7485	110	17	21, 22	Status: Drilling at 7375 at 8:00 a.m. Drilled 8 3/4" hole Tripped at 7468 for bit No. 22 Survey at 7468 - off 12° Drilled 8 3/4" hole Status: Drilling at 7485 at 8:00 a.m.



## DAILY PROGRESS REPORT

DATE	DEPTH		Footage	Hours on Bottom	BIT NOS.	REMARKS
	From	To				
Mar. 21	7485	7672	187	23 1/4	22	Drilled 8 3/4" hole Status: Drilling at 7672 at 8:00 a. m. 7485-7672
Mar. 22	7672	7804	132	15 1/4	22	Drilled 8 3/4" hole Completed drilling at 11:45 p. m. March 22, 1969 Mixed mud & condition same - 1 hr. Tripped for bit No. 23 at 7804 Survey at 7804 - off 12° 7672-7804
Mar. 23	7804					Changed stabilizer bars and laid down Circle "C" Trip in w/bit No. 23. Reamed 5 ft. undergauge hole - 1 hr. Circulated, waiting on orders and condition mud - 4 hours. Conditioned mud and hole to log - 6 1/2 hrs. Tripped to log. Commenced logging - found hole bridged at - 1800. Ran in with bit and cleaned and conditioned hole. Status: Cleaning hole at 8:00 a. m. 24.
Mar. 24	7804					Completed conditioning hole. Resumed logging and found hole bridged again. Cleaned hole to 3000' Resumed logging and found hole bridged at 5880. Logged 5880 to surface. Status: Logging at 8:00 a. m.
Mar. 25	7804					Completed logging to surface (1st run) Cleaned hole to bottom Ran in to log - hole clean to bottom and commenced logging at 7:00 p. m. March 24. Status: Logging at 8:00 a. m.

## DAILY PROGRESS REPORT

DATE	DEPTH		Footage	Hour on Bottom	BIT NOS.	REMARKS
	From	To				
Mar. 26	7804					<p>Completed logging at 2:00 a.m. March 26.                      Ran Schlumberger Borehole Compensated Sonic Log                      w/Gamma Ray &amp; Caliper                      Interval: 901 to 7799.</p> <p>Ran Schlumberger Induction E-Log. Interval: 905-7800</p> <p>Ran Schlumberger Compensated Formation Density Log                      w/Gamma Ray                      Interval: 905-7799</p> <p>Ran Schlumberger Continuous Dipmeter Survey                      Interval: 905-7800</p> <p>Ran Velocity Survey</p> <p>Made up packer and ran D.S.T. No. 4, 7390-7804</p> <p>Status: Testing at 8:00 a.m.</p> <p>Completed D.S.T. No. 4                      Ran D.S.T. No. 5, 5640-5740</p> <p>Completed D.S.T. No. 5 and wait on orders.</p> <p>Status: Waiting on orders at 8:00 a.m.</p> <p>Waited on orders.</p> <p>Ran Abandonment Plug No. 1 7800-7300,                      cemented with 250 sks, Type 'A' cement.                      Plug down at 6:25 p.m. March 27.</p> <p>Ran Plug No. 2, 5050-4950, cemented with                      50 sks, Type 'A' cement.                      Plug down at 8:10 p.m. March 27.</p> <p>W. O. C. and laid down collars and pipe.</p>
Mar. 27	7804					
Mar. 28	7804					

## DAILY PROGRESS REPORT

DATE	DEPTH		Footage	Hours on Bottom	BIT NOS.	REMARKS
	From	To				
Mar. 28 (continued)						<p>Ran Plug No. 3, 2550-2450, cemented with 100 sks. Type 'A' cement + 2% CaCl<sub>2</sub> Plug down at 6:29 a.m. March 28.</p> <p>Status: W. O. C. at 8:00 a.m.</p> <p>W. O. C. and laid down pipe. Felt for and found Plug No. 3, at 2460 at 2:45 p.m. March 28.</p>
Mar. 29						<p>Ran Plug No. 4, 1000-800, cemented with 100 sks. Type 'A' cement + 4% CaCl<sub>2</sub>. Plug down at 3:35 p.m. March 28.</p> <p>W. O. C. and laid down pipe Felt for and found Plug No. 4 Laid down pipe and cut off casing 3' below ground level. Put in 10 sks. cement and welded plate on top.</p> <p>Released Rig at 2:00 a.m. March 29, 1969.</p>



SUMMARY OF ABANDONMENT PLUGS

- Plug No. 1                      7800-7300, cemented with 250 sks Type 'A' cement.  
  
Plug down at 6:25 p.m. March 27, 1969.  
No feel for plug.
- Plug No. 2                      5050-4950, cemented with 50 sks. Type 'A' cement.  
  
Plug down at 8:10 p.m. March 27, 1969.  
Felt for and found Plug #2 at 4918 after 8 hrs.
- Plug No. 3                      2550-2450, cemented with 100 sks. Type 'A' cement + 2% CaCl<sub>2</sub>.  
  
Plug down at 6:29 p.m. March 28, 1969.  
Felt for and found Plug #3 at 2460 at 2:45 p.m. March 28.
- Plug No. 4                      1000 - 800, cemented with 100 sks. Type 'A' cement + 4% CaCl<sub>2</sub>.  
  
Plug down at 3:35 p.m. March 28, 1969.  
Felt for and found Plug #4 at 819 after 8 hours.  
  
Cut casing off 3 ft. below ground level and put in 10 sks. cement. Welded plate on top

- cementing by Halliburton.

STRATIGRAPHY

McD GCO Northup Taylor Lake Y. T. K-15 was located on a structural anticline mapped to be some 14 miles long and 3.5 miles wide. A general section of sediments found in the Central MacKenzie River Region was encountered and the well was bottomed in the Ordovician at a total depth of 7804 feet.

Permafrost was found to extend to approximately 85 feet and base of glacial drift was encountered at 110 feet. The succeeding 1960 feet are a black fissile micromicaceous shale with thin streaks of siltstone and traces of ironstone or ferruginous claystone. These are underlain by 1385 feet of interbedded sandstones and shale, the topmost 130 feet of which are a highly glauconitic sandy shale. The remaining shales are brown-black, fissile to compact and with traces of finely disseminated carbonized plant remains. The sandstones are brown and dark brown, fine to coarse grained quartz, shaly, siliceous and also with scattered carbonized plant remains. Porosity development is minor and mediocre and is water-bearing. No visible oil-staining was noted.

The sediments penetrated to this depth at 3455 ft. are in all probability of Cretaceous and/or Mississippian age and further breakdown or positive assignment as to age is dependent on micropaleontological studies.

The sand and shale sequence continues on further, i. e. from 3455 ft. to 4312 ft. but this section is considered to be Upper Devonian Imperial Fm. The shale is black, fissile and micromicaceous and

locally slightly bituminous. The sands are very fine grained, tight, shaly and considerably more silicified. Underlying the Imperial is the Canol Fm. consisting of 140 ft. of black bituminous fissile and platy shale typical of this formation.

To this depth at 4452 feet the sediments are all clastics and the base is a marked unconformity truncating the Middle Devonian. The underlying sediments commencing with the Hume Limestone at the top and to the final total depth in the Ordovician are all primarily carbonates. The Hume in this well is 548 ft. thick and consists of brown and dark brown earthy to microcrystalline limestone grading to argillaceous limestone with subordinate greenish-grey shale at the base of section. The limestone is in part bioclastic and is highly fractured and veined with quartz and calcite. Spectrographic analysis and formation density log interpretation also show prominent amounts of barite (up to 30%) to be present in the upper 100 ft. No effective porosity was noted in this section.

The underlying Bear Rock is 1550 ft. thick and is a section of buff to brown-black limestones and dolomites which are lithographic to fine crystalline calcilutites and local calcarenites (bioclastic?). They are dense, tight and with much coarse crystalline calcite veining and fracture and breccia infilling. Porosity development is rare and is restricted to minor streaks in a medium crystalline skeletal-textured limestone. There is no staining in this section either and the formation produced salt water on test.



The top of the Silurian-Ordovician is at 6550 and of the 1354 feet penetrated the section is a light-grey to brown-grey micro-crystalline dense tight limestone and dark brown fine crystalline dolomite. Crystal structure is generally more uniform and somewhat slightly coarser than the overlying Bear Rock. Coarse white calcite is common to abundant in this formation and porosity which occurs at 7390 is very poorly developed. It too is indicated to be water bearing.

Of the section of sediments penetrated in this well porosity development is sparse and poorly developed in all potential horizons. No oil staining was noted and although the waters recovered on tests were all gas-cut no free hydrocarbons were produced.

## McDERMOTT GCO NORTHUP TAYLOR LAKE, Y. T. K-15

65° 54' 19" N. Lat. 133° 03' 00" W. Long.

SAMPLE DESCRIPTIONS

10-40	Intermixed	conglomeratic sandstone, chert and quartz pebbles, indurated limonitic quartz sandstone, grey, dark grey and green shale.
40-60	Sand (50%)	quartz, clear to yellow-stained, fine to very coarse, angular to well rounded, loose.
	Shale (50%)	dark grey, crumbly, much ironstone.
60-70	Sample Missing	
70-80	Sandstone and Shale -	as above.
80-110	Shale	dark brownish grey, soft, crumbly.
110-130	Conglomerate	sandstone pebbles and cert and quartz pebbles, loose.
	Shale	dark grey, firm.
130-180	Shale -	black, micromicaceous, firm, compact, in part fissile to platy.
		<u>BASE OF DRIFT - † 110 (112 Log)</u>
180-360	Shale	as above, somewhat more fissile, rare aragonite prisms
360-390	Shale	black as above and brown-grey indurated compact shale.
390-550	Shale	black, micromicaceous, fissile to flaky, trace pyrites
550-610	Shale	black, as above, rare streak indurated ferruginous shale.
610-660	Shale	black, as above, few thin streaks (laminae) very fine shaly siltstone.
660-770	Shale	black, fissile, micromicaceous, rare thin silty streaks.

770- 890	Shale	as above, silty content somewhat more common.
890- 900	Sample Missing	
<u>CASING SHOE AT 901</u>		
900- 970	Shale	black, micromicaceous, firm, in part fissile, minor thin laminae and streaks grey, speckled siltstone and sandstone
970- 980	Shale	as above and minor dull brownish grey indurated (ferruginous) shale.
980-1000	Shale	black, micromicaceous, compact to fissile, few thin streaks siltstone and very fine grained sandstone.
1000-1030	Shale	black, micromicaceous, fissile, rare minute carbonized plant remains.
1030-1060	Shale	as above, rare micro-pyrites.
1060-1080	Shale	as above, trace or few thin streaks very fine grained speckled sandstone.
1080-1160	Shale	black, fissile, faintly micromicaceous.
1160-1210	Shale	black, somewhat more fissile than above.
1210-1220	Shale	as above, minor pyrites
1220-1260	Shale	black as above, minor ironstone, trace pyrites.
1260-1290	Shale	black, fissile, faintly micromicaceous, trace ironstone
1290-1310	Shale	as above, light brown ironstone more common, trace pyrites.
1310-1330	Shale	as above, 30% ironstone, pyrites common, trace calcite-filled fractures in ironstone
1330-1340	Shale (80%) Ironstone (20%)	as above as above
1340-1370	Shale	black, fissile, faintly micromicaceous, minor pyrites.



1370-1380	Shale	as above, few thin shell (?) fragments.
1380-1390	Shale	as above, minor pyrites, minor ironstone.
1390-1440	Shale	as above, pyrites.
1440-1480	Shale	black, faintly micromicaceous, fissile.
1480-1500	Shale	as above, trace pyrites.
1500-1540	Shale	as above, pyrites more common.
1540-1600	Shale	black, as above, trace pyrites.
1600-1620	Shale	black, as above, and 20% light brown ironstone.
1620-1680	Shale	black, faintly micromicaceous, fissile, in part slightly brownish-tinged, rare pyrites.
1680-1710	Shale	as above, minor dark brown indurated ironstone (5%).
1710-1740	Shale	as above, 5-10% ironstone, minor pyrites, trace poorly preserved fossil fragments.
1740-1750	Shale	black, as above, trace pyrites.
1750-1760	Shale	as above, rare brown grey microcrystalline limestone.
1760-1820	Shale	black, micromicaceous, fissile to platy, trace pyrites.
1820-1830	Shale	black as above, minor dark brown ironstone, trace pyrites.
1830-1850	Shale	as above, with dark brown to light brown ironstone.
1850-1870	Shale	black, faintly micromicaceous, fissile, trace pyrites, rare pyritized fish-bone (?) fragments.
1870-1890	Shale	as above, minor ironstone, trace pyrites.

1890-1960	Shale	black, faintly micromicaceous, fissile to platy, trace pyrites, minor scattered ironstone with calcite-filled fractures, rare fine anhydrite (?) -filled fractures in shale.
1960-2050	Shale	black, fissile, trace pyrites, trace ironstone.
2050-2070	Shale	black as above, minor scattered nodular glauconite.
2070-2090	Shale	black, moderately fissile to blocky, faintly micromicaceous.
2090-2110	Shale	brown-black to black, highly glauconitic, and sandy with medium to coarse quartz grains, minor coarse grained shaly glauconitic sandstone, minor pyrites.
2110-2120	Shale	black, micromicaceous, fissile, minor glauconitic slightly sandy shale.
2120-2150	Shale	black, micromicaceous, in part slightly sandy, trace glauconite.
2150-2190	Shale	black, micromicaceous, fissile, locally sandy, trace pyrites.
2190-2200	Shale	black, slightly brownish-tinged, micromicaceous, compact, sandy
2200-2220	Sandstone	dark brown, quartz, very fine grained, shaly, tight, rare glauconite, in part a micromicaceous sandy shale.
2220-2230	Sandstone (50%)	as above.
	Sandstone (50%)	quartz, light tan, medium to coarse, indurated, tight, moderately sorted, rare glauconite flecks.
2230-2240	Sandstone	light brown to brown, quartz, fine grained with admixture of medium and coarse grained, sub-angular to rounded, shaly, indurated, glauconitic, tight.
2240-2250	Sandstone	light brown, quartz, very fine grained, indurated, slightly shaly, tight, rare fine glauconitic flecks.

2250-2260	Sandstone	as above, shaly to very shaly, in part a sandy shale.
2260-2270	Sandstone	light brown, quartz, fine grained, indurated, tight, hard, pyritic, in part shaly.
2270-2300	Shale	black, fissile to compact, in part sandy, minor pyrites.
2300-2310	Shale (50%) Sandstone (50%)	as above, in part brown-black quartz, brown to dark brown, fine-grained, indurated, silicified, tight, variably pyritic, in part moderately shaly.
2310-2320	Sandstone	brown to dark brown, quartz, fine-grained, sub-angular, infilled with clay, scattered thin disseminated carbonized plant remains, minor pyrites, tight.
2320-2330	Sandstone	as above, in part medium to coarse grained and somewhat more indurated.
2330-2340	Sandstone (60%) Shale (40%)	brown, quartz, fine to medium-grained, moderately sorted, minor coarse-grain admixture, indurated, siliceous, locally infilled with clay and shale, tight. brown-black, compact to fissile, slightly bituminous.
2340-2360	Shale	brown-black, in part slightly bituminous, disseminated carbonized plant remains common.
2360-2370	Sandstone	grey-brown to brown, quartz, very fine to fine-grained, indurated to clayey as above, tight, interbedded with minor brown-black shale.
2370-2380	Sandstone	as above, fine grained, more shaly than above, minor pyrites.
2380-2390	Shale (40%) Sandstone (60%)	brown-black, fissile. as above.
2390-2410	Sandstone	brown, quartz, moderately well sorted, medium-grained, sub-angular, moderately siliceous, minor clay infilling, porous (est. 10-15%), no visible oil staining.



2410-2420	Sandstone	brown, quartz, fine grained, sub-angular, in part indurated and siliceous, in part shaly, tight, minor shale laminae
	Shale (20%)	brown-black, sandy, firm, compact.
2420-2440	Shale	brown-black, firm, compact, sandy, micromicaceous, scattered finely disseminated carbonized plant remains.
2440-2460	Shale (90%)	as above
	Sandstone (10%)	grey-brown, quartz, fine grained, indurated, silicified, tight, interbedded with shale.
2460-2490	Shale	dark brown-black, sandy and with carbonized plant remains as above.
2490-2500	Shale	dark brown-black, sandy and black, non-sandy compact to fissile shale.
2500-2510	Shale	black as above, and 20% sandy shale with minor fine grained sandstone as above.
2510-2540	Shale	black, fissile, in part faintly micromicaceous.
2540-2550	Shale	as above 20%, and 80% brown-black sandy shale with minor fine grained indurated sandstone.
2550-2560	Shale	brown-black, sandy, compact, micromicaceous.
2560-2580	Shale	as immediately above with trace sandstone, minor black fissile shale.
2580-2610	Shale	black, fissile, micromicaceous, minor dark-brown-black slightly sandy shale.
2610-2620	Shale (80%)	black, fissile,
	Sandstone (20%)	dark brown, quartz, indurated, siliceous, fine-grained.
2620-2670	Shale	black, fissile, faintly micromicaceous
2670-2690	Shale	black as above, trace ironstone, minor brown quartz fine-grained siliceous sandstone.
2690-2780	Shale	black, fissile, faintly micromicaceous
2780-2790	Shale	black as above, in part slightly brownish-tinged, in part silty to sandy, minor (5%) dark brown ironstone, trace tight sandstone

2790-2800	Sandstone (10%) Shale (60%)	dark brown, quartz, fine to medium grained, indurated, silicified to shaly, tight, trace white kaolinite. black, fissile, as above.
2800-2810	Sandstone	brown, quartz, fine grained with subordinate admixture of medium and coarse grains, shalier than above, in part indurated and silicified, minor kaolinitic inclusions, trace carbonaceous lamirae, and inclusions, tight; minor black shale (laminae ? thin beds?)
2810-2820	Sandstone	as above, fine grained only, carbonaceous inclusions more common, black shale more common.
2820-2830	Shale	black, fissile.
2830-2840	Sandstone	brown, quartz, fine grained with subordinate medium and coarse grain admixture, indurated, silicified, and infilled with brown clayey shale, trace porosity, scattered kaolinite, shale as above.
2840-2870	Sandstone	as above, slight increase in porosity (2-3%), minor tight sandstone in ironstone matrix, minor black shale (thin interbeds).
2870-2890	Sandstone	as above, cleaner and somewhat more porous, estimated at 10%-15%.
2890-2910	Sandstone	brown, quartz, poorly sorted fine to coarse grained, silicified and shaly in brown clay matrix, tight, minor carbonized plant laminae, minor kaolinite.
2910-2920	Shale	brown-black to black, fissile to compact and 30% sandstone as above.
2920-2930	Sandstone	brown, quartz, fine grained with minor medium and coarse grain admixture, indurated, silicified, shaly as above, rare carbonized disseminations, tight.
2930-2950	Sandstone	as above, slightly porous.
2950-2970	Sandstone	as above, porosity estimated 2-5%, minor black shale laminae, minor ironstone, minor kaolinite.

2970-2980	Sandstone	brown to grey-brown, quartz, fine-grained, shaly, kaolinitic, tight, minor carbonized disseminations, black shale laminae and thin beds common,
2980-2990	Sandstone	brown, quartz, fine to medium grained, sub-angular, well sorted, moderately clean, slightly siliceous, good porosity (est. 15%) no visible oil-staining, no fluorescence.
2990-3000	Sandstone	as above, porous, somewhat coarser grained.
3000-3010	Shale	black, fissile, trace hard ferruginous shale.
3010-3020	Shale	black as above, minor dark brown silty to sandy shale, minor silicified tight very fine grained sandstone, trace pyrites.
3020-3050	Shale Sandstone (30%)	black, fissile as above grey-brown, quartz, fine grained, highly silicified, in part shaly, tight, carbonaceous disseminations common. Sandstone increasing to 50%.
3050-3060	Shale	black, fissile to compact, micromicaceous, and brown-black sandy shale, minor tight brown quartz sandstone, scattered carbonized disseminations.
3060-3130	Shale	black, compact to fissile, in part silty to sandy, micromicaceous, minor brown fine grained silicified tight quartz sandstone, trace pyrites, scattered carbonized disseminations.
3130-3140	Shale (60%) Sandstone (40%)	black as above dark brown, quartz, fine to medium grained, silicified, shaly, tight.
3140-3180	Shale (60%) Sandstone (40%)	black as above. as above, fine to very fine grained, more shaly than above, laminated and interbedded with shale as above.
3180-3190	Shale	black, fissile to compact, in part brown-black and sandy, minor (10%) sandstone as above.
3190-3220	Sandstone	grey-brown, quartz, fine grained with minor coarse grains, silicified, indurated, shaly, light grey kaolinitic inclusions common, tight, minor black shale laminae.



3220-3230	Interbedded	sandstone 70% as above and 30% black fissile shale with carbonized laminae
3230-3260	Shale	black, compact to fissile in part brown-black and sandy, minor sandstone as above, minor carbonaceous laminae
3260-3270	Sandstone	brown, quartz and minor chert, fine to medium grained, indurated, silicified, kaolinitic inclusions common, shaly, tight.
3270-3280	Shale	brown-black, sandy to black fissile with minor (10%) sandstone as above, scattered pyrites and carbonaceous laminae.
3280-3330	Shale	black, compact to fissile, micromicaceous, random thin streaks siltstone or very fine grained sandstone, trace pyrites, slightly bituminous.
3330-3350	Shale	as above, subordinate amounts sandy shale.
3350-3380	Shale	black, fissile, micromicaceous as above, slightly bituminous.
3380-3400	Shale (70%) Sandstone (30%)	as above. dark brown, quartz, fine to medium grained, shaly, siliceous, tight.
3400-3410	Sandstone	brown, quartz, fine to medium grained, highly silicified, indurated, hard, sharp, tight.
3410-3430	Shale	black, fissile to compact, micromicaceous, slight brown streak, trace pyrites.
<u>UPPER DEVONIAN - Imperial Fm. - 3455</u> <u>E-Log</u>		
3430-3460	Shale	black as above, and 20% hard sharp sandstone as above.
3460-3490	Shale	black, fissile to micromicaceous, slight brown streak.
3490-3500	Shale	as above, 10% sharp, tight, hard sandstone as above.
3500-3590	Shale	black, fissile, in part platy, slightly bituminous (brown streak), trace pyrites, faintly micromicaceous
3590-3620	Shale	black as above, brown streak diminishing to non-bituminous.

3620-3700	Shale	black, fissile to platy, micromicaceous, trace pyrites.
3700-3730	Sandstone	dark brown, quartz, very fine grained, shaly, siliceous, pyritic, secondary quartz crystals common, (vein-infilling), minor white anhydrite (vein-infilling? thin laminae?) tight.
3730-3750	Sandstone	dark brown, quartz, very fine grained, highly silicified, hard, tight, shaly, sharp, minor thin quartz crystallized veins, scattered dolomitized fossil? fragments.
3750-3810	Shale	black, fissile to platy, micromicaceous, trace pyrites.
3810-3860	Shale	black, as above, very slight brown streak, minor brown-black ironstone, minor light grey to tan dolomite as above (fossil fragments?) scattered clear secondary quartz crystals.
3860-3900	Shale	black, compact to moderately fissile, somewhat more firm than above sub-bituminous (slight brown streak), minor silicified silty shale, minor pyrites.
3900-3910	Shale	very dark grey to black, fissile, micromicaceous, non-bituminous, minor silicified silty shale, minor siltstone.
3910-3960	Shale	dark grey to black, fissile, micromicaceous, sparse medium to coarse crystalline dolomite (fossil fragments? concretions?) scattered pyrites.
3960-4030	Shale	dark grey to black, fissile, micromicaceous, thin streaks indurated shaly micaceous siltstone.
4030-4060	Shale	dark grey to black, micromicaceous, and dark brown siltstone as above becoming more common.
4060-4080	Shale	as above, and siltstone, as above, scattered coarse crystalline dolomite (concretions?) and trace clear coarse secondary quartz crystals.

4080-4090	Shale	as above, grey to dark grey to black, siltstone common, trace buff grey mudstone.
4090-4110	Shale (40%) Sandstone (60%)	dark grey, micromicaceous, fissile. dark brown, brown grey to grey, very fine grained to silty, shaly, tight, in part micaceous, thin shale laminations, trace pyrites.
4110-4180	Shale (70%)	interbedded with Sandstone and Siltstone (30%) as above.
4180-4210	Shale	black, fissile to platy, faintly micromicaceous, minor (5-10%) grey shaly siltstone.
4210-4230	Shale	black, fissile to platy, slightly micromicaceous, slightly bituminous (slight brownish streak), sparse thin dolomite-healed fractures, trace pyrites.
4230-4240	Shale (70%) Sandstone (30%)	as above. brownish grey, speckled, very fine grained to silty, shaly, tight, pyritic, in part micromicaceous.
4240-4250	Shale	black, fissile, prominent white coarse to fine crystalline dolomite - fracture infilling and/or fossil? fragments, minor pyrites, minor (5%) thin streaks shaly siltstone.
4250-4280	Shale (50%) Sandstone (50%)	black - as above. dark brown-grey, very fine grained to silty quartz, shaly, tight, slightly, dolomitic, in part pyritic, trace coarse white dolomite as above.
4280-4300	Shale	black, firm to fissile, slightly bituminous, faintly micromicaceous, sandstone as above (20%), minor pyrites, few scattered silicified concretions.
4300-4310	Dolomite (50%) Shale (50%)	very dark brown, microcrystalline, shaly, tight, hard, white dolomite healed scattered thin fractures. black, as above, minor pyrites.
4310-4350	Shale	black, firm, fissile to platy, micromicaceous, sub-bituminous (brown streak), minor pyrites, sparse thin calcite-healed fractures, rare black chert concretions.



CANOL SHALE 4310 (4312 E-Log)

4350-4360	Shale	as immediately above and (20%) brown black highly argillaceous microcrystalline dolomite.
4360-4370	Shale	black, micromicaceous, bituminous, as above, minor silicified shale, minor pyrites.
4370-4380	Shale	black, bituminous as above, in part dolomitic, sparse thin calcite-healed fractures.
4380-4440	Shale	black, bituminous as above, minor white calcite filled fractures, minor pyrites, rare chert concretions.
4440-4450	Shale	as above, abundant coarse white secondary calcite, minor brown argillaceous, microcrystalline, fractured and calcite-filled limestone.

HUME LIMESTONE 4451 (4452 E-Log)

4450-4480	Limestone	buff chalky-textured to earthy and grey brown to dark brown, microcrystalline to medium crystalline, limestone, white secondary calcite (and barite?) infilling abundant fractures, tight, no visible porosity or staining, minor dark brown medium to coarse crystalline dolomite, sparse orange-red sphalerite crystals.
4480-4490	Limestone	dark brown, microcrystalline, dense, tight, minor white coarse crystalline barite infilling fractures, subordinate (30%) buff chalky to earthy limestone.
4490-4500	Dolomite	very dark brown, microcrystalline, dense, tight, abundant (30%) coarse white (barite) and clear quartz crystals infilling fractures.
4500-4510	Limestone	buff chalky and earthy to brown and grey brown microcrystalline, tight, abundant coarse white barite, quartz and calcite crystals.

CANOL SHALE 4310 (4312 E-Log)

4350-4360	Shale	as immediately above and (20%) brown black highly argillaceous microcrystalline dolomite.
4360-4370	Shale	black, micromicaceous, bituminous, as above, minor silicified shale, minor pyrites.
4370-4380	Shale	black, bituminous as above, in part dolomitic, sparse thin calcite-healed fractures.
4380-4440	Shale	black, bituminous as above, minor white calcite filled fractures, minor pyrites, rare chert concretions.
4440-4450	Shale	as above, abundant coarse white secondary calcite, minor brown argillaceous, microcrystalline, fractured and calcite-filled limestone.

HUME LIMESTONE 4451 (4452 E-Log)

4450-4480	Limestone	buff chalky-textured to earthy and grey brown to dark brown, microcrystalline to medium crystalline, limestone, white secondary calcite (and barite?) infilling abundant fractures, tight, no visible porosity or staining, minor dark brown medium to coarse crystalline dolomite, sparse orange-red sphalerite crystals.
4480-4490	Limestone	dark brown, microcrystalline, dense, tight, minor white coarse crystalline barite infilling fractures, subordinate (30%) buff chalky to earthy limestone.
4490-4500	Dolomite	very dark brown, microcrystalline, dense, tight, abundant (30%) coarse white (barite) and clear quartz crystals infilling fractures.
4500-4510	Limestone	buff chalky and earthy to brown and grey brown microcrystalline, tight, abundant coarse white barite, quartz and calcite crystals.

4510-4530	Limestone	as above, earthy to cryptocrystalline, moderate amounts white barite and quartz crystals.
4530-4550	Dolomite	very dark brown, microcrystalline, in part medium crystalline, tight, abundant white barite, quartz and calcite as above, minor brown microcrystalline limestone (20%).
4550-4560	Calcite (60%) Limestone (40%)	white, coarse crystalline, medium grey brown, lithographic, dense, tight.
4560-4580	Limestone (80%) Calcite (20%)	lithographic as above, in part light brown earthy to chalky white, coarse crystalline, trace sphalerite crystals.
4580-4590	Limestone	brown sub-lithographic to microcrystalline, in part buff to light brown, earthy to chalky with erratic bituminous shale laminae and inclusions, minor (10%) coarse white calcite.
4590-4620	Limestone	brown to dark grey brown sub-lithographic, dense, in part buff and earthy, calcite crystals (5-10%).
4620-4630	Limestone	light brown chalky to earthy textured to brown and dark brown cryptocrystalline, dense, tight, minor erratic bituminous inclusions, coarse secondary calcite sparse.
4630-4720	Limestone	dark brown to dark grey brown, sub-lithographic to microcrystalline, dense, tight, subordinate (30-40%), buff to light brown earthy limestone, sparse bituminous shale laminae and inclusions, minor sparry calcite crystals, rare Ostracods and fossil fragments.
4720-4740	Limestone	as above, sparsely bioclastic, and buff-grey lithographic calcilutite.
4740-4750	Limestone	dark brown, microcrystalline, buff-grey earthy limestone, sparse Ostracods, minor bituminous shale laminae, and minor sparry calcite.



4750-4780	Limestone	dark brown, microcrystalline, grey-brown lithographic and light brown earthy limestone, locally bioclastic, minor bituminous shale inclusions, minor coarse white calcite crystals.
4780-4800	Limestone	light grey to brown-grey lithographic calcilutite, minor (20%) dark brown cryptocrystalline limestone, sparse bituminous inclusions, dense, tight
4800-4820	Limestone	brown to dark brown, micritic to microcrystalline, in part finely bioclastic, scattered small Ostracods, minor bituminous inclusions, dense, tight.
4820-4830	Limestone	as above, trace Coral fragments, minor light grey microcrystalline slightly argillaceous limestone.
4830-4840	Limestone	light grey and light brown grey, fine calcarenite, in part microcrystalline, fine bioclastic debris, dense, tight, and brown bioclastic limestone as above with bituminous inclusions and minor Ostracods.
<u>HUME SHALE - 4840 (4800 E-Log)</u>		
4840-4850	Limestone	as above, minor sparry calcite, slightly argillaceous.
4850-4860	Limestone	light grey to grey, calcilutite, argillaceous, dense, tight, minor light buff grey bioclastic micrite, Crinoid(?) fragments, rare Ostracods.
4860-4870	Limestone	grey to dark grey calcilutite, argillaceous, dense, in part a fine calcarenite, subordinate amounts (40%) light buff bioclastic limestone - recrystallized organic fragments in micro sparry calcite matrix.
4870-4880	Limestone	brown to dark brown, microclastic to microcrystalline, sparse sparry calcite, sparse bituminous shale laminae and inclusions, dense, tight.

4880-4900	Limestone	as above, predominantly light brown microclastic.
4900-4910	Limestone	brownish grey and dark-grey calcilutite, argillaceous to highly argillaceous, locally with fine to medium bioclastic debris, dense, tight, subordinate (30%) light brown microclastic limestone as above.
4910-4930	Limestone	grey-brown to brown-grey, calcilutite as above, argillaceous, in part sub-lithographic, dense, tight, locally with bioclastic debris (shell fragments, Crinoid fragments), subordinate brown microclastic limestone.
4930-4940	Limestone	grey-brown, calcilutite, in part microcrystalline, in part calcarenitic with fine bioclastic debris, minor bituminous shale inclusions and laminae.
4940-4950	Limestone	light brown fine calcarenite and dark grey argillaceous calcilutite with sparse bioclastic debris, dense, tight.
4950-4960	Limestone	as above, argillaceous limestone more common, in part a limy to dolomitic shale.
4960-4980	Shale	grey, slightly brownish to greenish, firm, compact, limy to dolomitic.
4980-5000	Shale	as above, minor bioclastic limestone with fine to medium fossil debris, minor microcrystalline limestone, minor pyrites.
5000-5010	Limestone	grey and brown grey, calcilutite, argillaceous, in part sub-lithographic to microcrystalline, minor fine bioclastic debris as above.
<u>BEAR ROCK - 5101 (5000 E-log)</u>		
5010-5020	Limestone	dark brown to very dark brown, sub-lithographic to microcrystalline, dense, tight, bituminous type laminae and inclusions, sparse small Ostracods.

5020-5030	Limestone	as above, in part finely calcarenitic (bioclastic?), in part earthy-textured and with sparry to microsparry calcite specks and inclusions, dense, tight.
5030-5070	Limestone	very dark brown, sub-lithographic to microcrystalline calcilutite, slightly bituminous, subordinate amounts earthy-textured micrite, minor fine to very fine calcarenite (organic?), trace sparry calcite veins, bituminous-type laminae and inclusions common, dense, tight.
5070-5080	Limestone	as above, minor (2-5%) floating, well developed needle-like very fine brown quartz crystals, dense, tight.
5080-5110	Limestone	dark brown sub-lithographic as above, very fine brown quartz crystals as above more common and locally abundant, coarse white sparry calcite (20%) black bituminous-type laminae and inclusions common, dense, tight.
5110-5120	Limestone	brown to dark brown as above, abundant quartz crystals as above, abundant sparry calcite, minor grey to brown microsucose dolomite, dense, tight.
5120-5130	Limestone	dark brown to brown to grey sub-lithographic and brown grey earthy limestone, moderate amounts quartz crystals as above, minor sparry calcite, dense, tight.
5130-5140	Calcite (40%) Limestone (60%)	white, sparry, coarse dark brown to brown as above and with abundant brown quartz crystals as above.
5140-5150	Limestone	as above, grey-brown earthy limestone common, minor (10%) sparry calcite.
5150-5210	Limestone	dark brown to very dark brown, locally grey-brown calcilutite, sub-lithographic to microcrystalline, dense, tight, minor sparry calcite, minor black bituminous-like inclusions and laminae, trace reddish-brown microcrystalline dolomite.



5210-5230	Limestone	brown to dark brown lithographic calcilutite, in part very dark brown to black microcrystalline limestone, prominent brown-grey and grey earthy limestone, minor sparry calcite, trace calcarenite, dense, tight, scattered black shale (?) inclusions.
5230-5240	Limestone	as above, sparry calcite common.
5240-5250	Dolomite	brown to very dark brown, microcrystalline, slightly limy, minor thin calcite-filled veins, tight, subordinate limestone as above.
5250-5270	Limestone	dark brown to black, calcilutite, in part microcrystalline, tight, sparry calcite common, scattered black carbon-like inclusions and residue, minor very fine brown quartz crystals, locally fragmental in texture (organic?).
5270-5290	Limestone	as above, trace brown pelletal limestone.
5290-5300	Limestone (50%) Dolomite (50%)	as above buff anhedral and dark brown sub-euhedral, very fine crystalline, tight, minor thin calcite-filled veins.
5300-5310	Dolomite	as above.
5310-5320	Dolomite (60%) Limestone (40%)	as above. brown-grey to dark brown, microcrystalline, calcilutite, in part earthy-textured, white calcite common.
5320-5330	Limestone (60%) Calcite (40%)	brown, brown-grey and dark-brown as above. white, coarse,
5330-5340	Calcite (30%) Limestone (30%) Dolomite (40%)	as above. as above. brown to dark brown, microcrystalline to very fine crystalline, locally micro-sucrose, tight.
5340-5350	Dolomite (50%) Limestone (50%)	as above, in part slightly limy. brown-grey to brown-black, calcilutite, dense, tight, yellowish-brown lithographic limestone mottled with black carbon-type residue, and coarse white calcite.

5350-5370	Limestone	brown to brown-black, calcilutite, in part microcrystalline, thin calcite veining and coarse white calcite common, tight, black carbon-type residue common.
5370-5380	Limestone Dolomite (30%)	brown lithographic mottled, to dark brown cryptocrystalline, calcilutite, dense, tight, calcite veining as above. yellowish-brown to brown, microcrystalline to dark brown cryptocrystalline
5380-5390	Dolomite	brown to brown-black, microcrystalline and with scattered golden yellow to orange fine sphalerite crystals, in part brecciated and infilled with coarse white dolomite and/or clear quartz crystals, minor dark brown microcrystalline limestone, minor scattered black shale inclusions.
5390-5400	Limestone	brown to brown-black cryptocrystalline, calcilutite, prominent coarse white calcite, minor black shale laminae and inclusions.
5400-5460	Limestone	yellow-brown to dark brown, lithographic, calcilutite, in part mottled and with scattered black shale disseminations and laminae, dense, tight, minor very dark brown cryptocrystalline limestone.
5460-5470	Limestone (90%) Dolomite (10%)	as above yellow-brown, microcrystalline, micro-sucrose, sparse thin calcite veining, minor coarse white sparry calcite.
5470-5500	Limestone (80%) Dolomite (20%)	as above, black shale laminae more common, abundant white calcite yellow-brown, as above.
5500-5530	Limestone	yellow-brown to brown, lithographic calcilutite, in part mottled dark grey, dense, tight, white calcite abundant, minor black shale inclusions, trace pyrites.
5530-5570	Limestone	brown, lithographic calcilutite, dense, tight, minor (5%) dark brown tight microcrystalline dolomite, minor (5-10%) coarse white sparry calcite, trace dark brown bituminous-type laminae and inclusions.

5570-5600	Limestone	brown, lithographic as above, calcite (5-10%) as above, rare greenish-tinged dolomitic shale.
5600-5620	Limestone	brown, to dark brown, lithographic as above, minor (5%) dark brown microcrystalline dolomite and limy dolomite.
5620-5650	Limestone (70%) Dolomite (15%) Shale (5%) Limestone (10%)	brown lithographic to dark brown microcrystalline, white coarse calcite dark brown, very fine crystalline, in part limy. grey-green, waxy. green-grey, dense, argillaceous, pyritic.
5650-5690	Limestone	brown, lithographic as above, stylolites common, white calcite common, minor dark brown microcrystalline limestone, minor grey-green argillaceous limestone, minor green shale, scattered black bitumin-type inclusions, dense, tight with possible trace porosity in calcite.
5690-5700	Limestone	cream to grey-buff, sub-lithographic calcilutite, dense, white coarse calcite common, dense, tight, rare trace pyrobitumen, minor grey-brown very fine crystalline limestone, minor (1-2%) siltstone in a limestone matrix, in part a silty limestone.
5700-5710	Limestone	as above, trace green shale, black carbon-type residue and inclusions common.
5710-5720	Limestone	as above, calcite abundant (40%), minor silty to sandy limestone as above, rare brown-grey limestone exhibiting skeletal-type porosity - no staining.
5720-5740	Limestone	as above, with calcite and sandy limestone as above; trace pyrobitumen and black carbon-type residue minor (2-5%) greenish-grey argillaceous silty limestone, minor grey, very fine crystalline limy dolomite, tight.



5740-5750	Limestone (30%)	light grey, microcrystalline to very fine crystalline, sub-euhedral, in part slightly dolomitic, minor scattered black carbon-type disseminations, dense, tight.
	Calcite (70%)	white, coarse.
5750-5770	Limestone	grey buff, fine crystalline, sub-euhedral, slightly dolomitic, black disseminations as above, tight, calcite as above (40%).
5770-5800	Limestone	as above, buff in part lithographic to microcrystalline, tight, calcite as above 20%.
5800-5820	Limestone	buff and grey-buff sub-lithographic to microcrystalline, calcilutite, dense, tight, in part fine crystalline as above, minor coarse white calcite.
5820-5830	Limestone	buff to grey-brown, microcrystalline to very fine crystalline, in part and cryptocrystalline calcilutite, minor coarse white calcite, dense, tight.
5830-5850	Limestone	buff to medium grey brown cryptocrystalline to microcrystalline, in part a grey calcilutite, minor fine crystalline sub-euhedral limestone, coarse white calcite (20%), dense, tight.
5860-5890	Limestone	buff and grey-buff and grey, calcilutite, dense, tight, in part microcrystalline, calcite common (20%), minor scattered black carbon-type residue or disseminations, minor (5%) buff euhedral fine crystalline dolomite.
5890-5900	Limestone (60%) Limestone (40%)	as above. grey-brown, fine to medium crystalline, sub-euhedral, slightly dolomitic, trace skeletal texture with rare porosity otherwise tight.
5900-5920	Limestone	brown to brown-grey fine to medium crystalline, euhedral, slightly more dolomitic, in part skeletal with minor scattered good intercrystalline and skeletal porosity, no staining, no fluorescence, slight kaolinitic matrix, trace secondary quartz crystals. Porosity estimated @ 1%.

5920-5960	Dolomitic Limestone	as above, in part coarse crystalline and in part a dolomite, porosity as above, rare.
5960-5980	Dolomitic Limestone	as above, no apparent porosity, minor scattered 'floating' well-developed fine hexagonal brown secondary quartz crystals.
5980-6000	Limestone	very light grey, calcilutite, dense, tight, dolomitic limestone as above and white calcite.
6000-6030	Limestone	very light grey calcilutite, dense chalky-textured
6030-6070	Dolomite	brown-grey to dark brown-grey, very fine crystalline, anhedral, tight, in part limy.
6070-6090	Dolomite	brown-grey, very fine crystalline, anhedral, minor thin calcite inclusions - veining? organic? dense, tight, in part limy.
6090-6100	Dolomite	as above, minor grey and brown-grey microcrystalline limestone, calcite as above.
6100-6110	Limestone	grey and brown-grey, very fine crystalline, tight, minor fine calcite inclusions, minor (10%) dolomite as above.
6110-6130	Dolomite (50%)	brown-grey to dark brown-grey, very fine to fine crystalline, anhedral, tight.
	Limestone (45%)	grey to brown-grey, microcrystalline to fine crystalline, tight, minor thin calcite veining? organic texture?
	Chert (5%)	grey-brown to dark brown massive.
6130-6170	Dolomite and Limestone	as above and 30% chert as above with trace quartz.
6170-6190	Limestone	cream, dense, calcilutite, chalky textured, minor black carbon-type disseminations; brown to brown-grey calcarenite in microsparry matrix to fine crystalline

6170-6190 (continued)	Limestone	limestone, minor grey-brown to light brown massive chert, minor coarse white calcite.
6190-6200	Limestone	as above, in part bioclastic?
6200-6210	Limestone	cream to buff to light grey, microcrystalline to microsparry, faint mottling (organic?) and brown to brown-grey, very fine to medium crystalline, in part organic (?) limestone, scattered black carbon-type disseminations and inclusions, coarse white calcite common and minor (5%) mottled to speckled brown-grey to dark brown ordinary chert.
6210-6240	Limestone	as above, calcite abundant (20-40%), chert as above common (10-20%) in part a light grey and smoky quartz.
6240-6260	Calcite (40%) Limestone (50%)  Chert (10%)	white, coarse crystalline brown-grey, microcrystalline to medium crystalline, fragmental (bioclastic), tight. as above.
6260-6320	Calcite (80%)  Limestone (20%)	white, coarse to very coarse crystalline brown and brown-grey, fine crystalline, in part mottled - organic?, tight, minor chert.
6320-6330	Calcite (70%) Limestone (20%) Dolomite (10%)	as above. as above. brown and grey-brown, very fine to fine crystalline, sub-euhedral, tight, minor chert.
6330-6350	Calcite (50-30%) Dolomite (50-70%)	as above. brown and grey-brown, fine to medium crystalline, anhedral to sub-euhedral, in part bioclastic (?) textured, tight.
6350-6370	Dolomite	as above, faint mottling and with local clasts (organic). Calcite as above 10%.
6370-6380	Dolomite (70%)  Calcite (30%)	as above, minor brown fine crystalline and bioclastic limestone as above.



6380-6440	Calcite (80%) Dolomite (20%)	white, as above. brown as above, bioclastic, in part limy.
6440-6460	Calcite (80%) Limestone (20%)	white, as above. grey, brown and dark brown- grey, dense, calcilutite in part, bioclastic as above, in part calcite-veined, locally micritic, minor black carbon- type inclusions, tight.
6460-6510	Calcite (80%) Limestone (20%)	white, coarse as above. brown to dark grey-brown, calcilutite, dense tight, light brown calcite-veined micrite, scattered black carbon-type inclusions, minor (2%) grey, slightly argillaceous, crypto- crystalline dolomite.
6510-6530	Calcite (80%) Limestone (20%)	as above. as above, fragmental, brecciated and mottled, carbon-type in- clusions and disseminations more common, trace dark brown chert and minor ordinary massive quartz.
6530-6560	Calcite (80%) Limestone (20%)	as above as above, trace greenish-grey micropyrritic dolomitic shale.
6560-6610	Calcite (80%) Limestone (20%)	as above. grey-buff dense micropyrritic calcilutite, dolomitic, slightly silicified and green-grey to waxy green micropyrritic, slightly silicified limy shale (5%).
6610-6650	Calcite (90%) Limestone (10%)	as above grey-buff to buff-grey, crypto- crystalline calcilutite, dense, in part greenish-grey slightly silicified and argillaceous
<u>TOP OF SILURIAN-ORDOVICIAN - 6530 (6550 Log)</u>		
6650-6670	Calcite (80%) Limestone (20%)	white, as above. buff-grey calcilutite to brown microcrystalline, in part buff microsparry and with thin calcite veining, dense, tight.

6670-6680	Calcite (70%) Limestone (30%)	as above buff microsparry and minor buff-grey calcilutite and brown microcrystalline lime- stone, dense, tight, trace black laminae - stylolites?
6680-6730	Limestone (70%)  Calcite (30%)	light buff to buff-grey, dense, cryptocrystalline calcilutite, locally microcrystalline, tight, minor thin calcite veins, in part dolomitic minor stylolites. white as above.
6730-6740	Limestone (50%) Dolomite (30%)  Calcite (20%)	as above, grey-buff to grey-brown, micro- crystalline, anhedral, tight. white as above.'
6740-6770	Dolomite	light buff-grey to grey-brown, cryptocrystalline, dense, tight, minor thin calcite veins and inclusions, rare thin black shale laminae (stylolites?)
6770-6780	Dolomite	as above, poor sample after trip.
6780-6790	Dolomite	as above, becoming limy.
6790-6810	Limestone	light brown-grey to dark brown cryptocrystalline calcilutite, in part dolomitic, dense, tight, thin calcite veining and inclusions, scattered carbon-like laminae and inclusions, trace coarse calcarenite - bioclastic?
6810-6820	Limestone	dark brown-grey, cryptocrystalline calcilutite, dense, tight, in part dolomitic, thin calcite veining as above, minor black shale laminae.
6820-6840	Limestone	as above, in part micritic and with more calcite filled fracturing and brecciation.

6840-6920	Limestone	light grey to buff-grey to brown grey cryptocrystalline calcilutite, in part micritic, in part fragmental, scattered black shale laminae and inclusions, abundant chalky limestone and coarse crystalline white calcite, dense, tight, in part dolomitic, minor (2-3%) light grey microcrystalline dolomite.
6920-6950	Dolomite (40%)	light grey and dark brown cryptocrystalline to microcrystalline tight, limy.
	Limestone (60%)	chalky to coarse crystalline, white, minor black disseminations, light grey cryptocrystalline calcilutite.
6950-6980	Limestone	light grey, cryptocrystalline calcilutite, in part slightly dolomitic, dense, tight, subordinate amounts white chalky limestone and coarse crystalline calcite, trace brown very fine crystalline dolomite.
6980-7020	Limestone (70%)	as above, dolomitic.
	Dolomite (30%)	buff to brown-grey, microcrystalline to very fine crystalline.
7020-7050	Limestone	light grey, cryptocrystalline calcilutite, in part microcrystalline, dense, tight, subordinate amounts cream microclastic limestone, coarse crystalline calcite becoming abundant.
7050-7060	Limestone	white, chalky to coarse crystalline, dense, minor (20%) light grey limestone as above.
7060-7100	Limestone (70%)	white chalky to coarse crystalline as above.
	Limestone (30%)	light brown grey, very fine crystalline to cryptocrystalline, sparse thin calcite-veining, tight.



7100-7120	Limestone	light grey, cryptocrystalline to microcrystalline calcilutite, in part (5%) medium crystalline with well developed euhedral crystals, some calcite inclusions and veining, dense, tight, slightly dolomitic.
7120-7160	Limestone	light grey, cryptocrystalline calcilutite, dolomitic, dense, tight, minor calcite inclusions, minor microcrystalline dolomite.
7160-7170	Limestone	light grey to grey, slightly brownish, cryptocrystalline calcilutite, dense, tight dolomitic, in part microcrystalline, minor (5-8%) dolomite, minor calcite as above.
7170-7220	Dolomite (50%) Limestone (50%)	light brownish-grey, microcrystalline, in part fine crystalline, limy, dense, tight. light grey to brownish-grey cryptocrystalline to microcrystalline, dolomitic, tight, minor calcite.
7220-7230	Dolomite	light grey, slightly brownish, fine crystalline, anhedral, limy, in part and dolomitic limestone, tight, minor coarse calcite.
7230-7250	Dolomite	as above, minor (20%) grey to dark grey microcrystalline dolomite, dense, tight, <u>argillaceous</u> , trace pyrites, coarse calcite more common.
7250-7270	Limestone	brownish-grey, microcrystalline, dolomitic, in part a dolomite, tight.
7270-7290	Limestone	light grey, slightly brownish microcrystalline, dolomitic, in part a dolomite, in part cryptocrystalline, dense, tight.
7290-7320	Dolomite	light brownish grey, microcrystalline tight, limy, in part a dolomitic limestone, minor coarse calcite, few scattered black thin laminae (stylolites)

7320-7340	Dolomite	as above, brown, coarse white calcite common, trace pyrites, trace brown-grey waxy shale inclusions.
7340-7360	Limestone	grey, slightly brownish, cryptocrystalline calcilutite, in part microcrystalline, dolomitic, tight, minor calcite, rare dark grey shale inclusions, trace pyrites.
7360-7370	Limestone	grey, slightly greenish, cryptocrystalline calcilutite, dolomitic, slightly argillaceous, dense, tight, rare <u>green grey shale</u> inclusions, trace pyrites, coarse calcite as above.
7370-7400	Limestone	light grey, slightly greenish to brownish, argillaceous calcilutite as above to microcrystalline, in part fragmental with abundant coarse white calcite, trace pyrites and shale laminae.
7400-7410	Limestone	as above, minor (5%) medium crystalline sub-euhedral limestone.
7410-7430	Limestone	light brownish grey as above and greenish-grey in part dolomitic cryptocrystalline calcilutite, dense, argillaceous, tight, trace pyrites, coarse calcite common, trace dark <u>green-grey shale</u> partings.
7430-7440	Limestone	light brownish-grey, calcilutite, in part micritic textured, dense, tight, minor calcite, trace pyrites, trace dark greenish-grey shale as above.
7440-7460	Limestone	grey and greenish-grey in part brownish-tinged, cryptocrystalline calcilutite, argillaceous, dense, tight, minor calcite, trace pyrites, trace dark greenish-grey shale as above.
7460-7480	Limestone	grey and brownish-grey, cryptocrystalline, dolomitic, slightly argillaceous, in part grey-brown and microcrystalline, dense, tight, minor calcite veining and fracture infilling.

7480-7490	Limestone	as above, minor very dark brown fine microcrystalline dolomitic limestone with thin calcite healed fractures.
7490-7500	Limestone (60%) Limestone (40%)	brownish-grey as above, in part grey and slightly argillaceous grey to light grey, fine to medium crystalline, sub-euhedral in part argillaceous, minor calcite as above.
7500-7520	Limestone	brownish-grey, microcrystalline, dense, tight, in part dolomitic, trace pyrites.
7520-7540	Dolomite	brownish-grey, slightly darker than above, cryptocrystalline, limy, dense, tight, sparse, in part grey and slightly argillaceous, sparse calcite inclusions and thin fractures, rare pyrites.
7540-7550	Limestone	light brownish-grey, microcrystalline, in part dolomitic, minor coarse calcite inclusions, minor (20%) dolomite as above.
7550-7560	Dolomite	brown-grey, cryptocrystalline, dense, tight, limy, in part a limestone, minor coarse calcite inclusions.
7560-7570	Limestone	light grey to grey-brown, microcrystalline, minor buff micritic limestone, abundant (10%) coarse white calcite - fracture infilling and brecciation, trace pyrites, tight.
7570-7580	Limestone	light grey-brown, microcrystalline, dolomitic, in part a dolomite, minor calcite as above.
7580-7600	Dolomite	grey-brown to brown, microcrystalline, dense, tight, minor thin calcite veins, minor coarse white calcite.
7600-7610	Limestone	brown, microcrystalline, in part dolomitic, minor dark brown bituminous shale laminae and inclusions dense, tight.



7610-7620	Dolomite	dark brown, very fine crystalline, anhedral, bituminous shale inclusions and disseminations common, dense, tight, sparse thin calcite veins and inclusions, minor (5-10%) brown and dark brown dense in part argillaceous and silty limestone.
7620-7640	Dolomite	grey-brown to brown, very fine crystalline anhedral, in part limy, slightly argillaceous with light buff argillaceous material; and dark brown bituminous limestone as above, minor white coarse calcite inclusions, dense, tight
7640-7670	Dolomite	dark brown, microcrystalline to very fine crystalline, anhedral, variably bituminous as above, and with scattered bituminous shale laminae, sparse thin calcite veins and coarse calcite inclusions, dense, tight.
7670-7680	Dolomite	as above, and medium brown microcrystalline dolomite.
7680-7690	Dolomite	dark brown to very dark brown very fine crystalline, anhedral, tight, calcite veins and inclusions as above.
7690-7700	Dolomite	dark brown as above, and light brown to buff, very fine crystalline, in part euhedral, tight, slightly argillaceous dolomite
	Chert (5%)	very dark brown to brown-black, smooth-textured, massive.
7700-7710	Dolomite	dark brown, very fine crystalline, slightly bituminous, tight, sparse calcite inclusions.
7710-7720	Dolomite	as above, light brown.
7720-7750	Dolomite	dark brown, varying from light brown to very dark brown, very fine to fine crystalline, anhedral, slightly bituminous and with scattered black bituminous shale laminae and inclusions, thin calcite veins and minor coarse white calcite inclusions, dense, tight.

7610-7620	Dolomite	dark brown, very fine crystalline, anhedral, bituminous shale inclusions and disseminations common, dense, tight, sparse thin calcite veins and inclusions, minor (5-10%) brown and dark brown dense in part argillaceous and silty limestone.
7620-7640	Dolomite	grey-brown to brown, very fine crystalline anhedral, in part limy, slightly argillaceous with light buff argillaceous material; and dark brown bituminous limestone as above, minor white coarse calcite inclusions, dense, tight
7640-7670	Dolomite	dark brown, microcrystalline to very fine crystalline, anhedral, variably bituminous as above, and with scattered bituminous shale laminae, sparse thin calcite veins and coarse calcite inclusions, dense, tight.
7670-7680	Dolomite	as above, and medium brown microcrystalline dolomite.
7680-7690	Dolomite	dark brown to very dark brown very fine crystalline, anhedral, tight, calcite veins and inclusions as above.
7690-7700	Dolomite	dark brown as above, and light brown to buff, very fine crystalline, in part euhedral, tight, slightly argillaceous dolomite
	Chert (5%)	very dark brown to brown-black, smooth-textured, massive.
7700-7710	Dolomite	dark brown, very fine crystalline, slightly bituminous, tight, sparse calcite inclusions.
7710-7720	Dolomite	as above, light brown.
7720-7750	Dolomite	dark brown, varying from light brown to very dark brown, very fine to fine crystalline, anhedral, slightly bituminous and with scattered black bituminous shale laminae and inclusions, thin calcite veins and minor coarse white calcite inclusions, dense, tight.

60.

7750-7770	Dolomite	light grey-brown, very fine crystalline, anhedral, dense, tight.
7770-7790	Dolomite	very dark brown, fine crystalline, minor bituminous laminae, minor calcite veins, tight.
7790-7800	Dolomite	dark brown fine crystalline as above to brown and light brown-grey microcrystalline, dense, tight, part slightly argillaceous, minor calcite as above.

TOTAL DEPTH 7804 Driller

TOTAL DEPTH 7801 Log



# CHEMICAL & GEOLOGICAL LABORATORIES LTD.

## WATER ANALYSIS

Lab No. E69-9242

Received: Feb. 26, 1969 Reported: March 5, 1969 Well: Location: McDermott General Crude Northrup Taylor Lake YT K-15  
 Operator: J. RAY McDERMOTT & CO. INC. Field or Area: 65° 54' 19" N. Lat. 133° 03' 00" W. Long.

Elev.: K.B. Grd. Zone/Formation: Sample Interval: 2393' - 2418'

Method of Production: D.S.T. #1 Grd. Sampled from: 40' Sampled by: Glen Knapp Date: Feb. 17, 1969

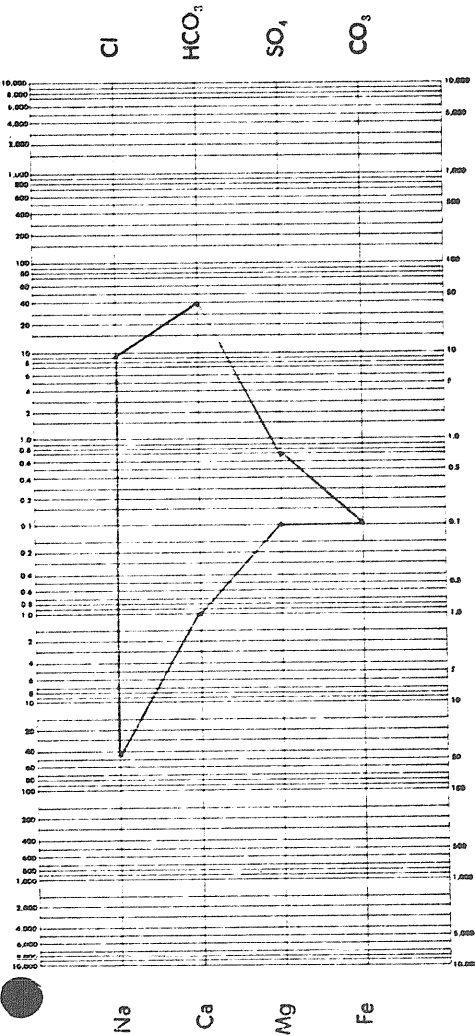
OTHER PERTINENT DATA Recovered: 500'

(Signed)

Mg./L	Na	K	Ca	Mg	SO <sub>4</sub>	Cl	CO <sub>2</sub>	HCO <sub>3</sub>
1061			20	1	33	319		2290
46.17			1.00	0.08	0.69	9.00		37.56
48.86			1.06	0.08	0.73	9.52		39.75

Total Solids Mg/L: By Evaporation 2840 Fe Present Specific Gravity .004 @60°F Observed pH 8.2 @ 74 °F  
 Calculated 3724 After Ignition 1768 H<sub>2</sub>S Nil Refractive Index 1.3338 @25°C Resistivity 2.97 ohm meters @ 68 °F

Pattern Unit Meq./L



Remarks and Conclusions Analysis determined on colourless water filtered from slightly muddy water.

E69-9248-1  
BENZENE CONTENT: 0.03 p.p.m.

Sample was received in a metal container without a foil insert in the screw cap. Container was full, water was clear, and appeared to be a good sample.

**CHEMICAL & GEOLOGICAL LABORATORIES LTD.**

**WATER ANALYSIS**

Lab No. E69-9249-1

Received: Feb. 26, 1969 Reported: March 5, 1969 Well: Location: McDermott General Crude Northup Taylor Lake YT K-15  
 Operator: J. RAY McDERMOTT & CO. INC. Field or Area: 65° 54' 19" N. Lat. 133° 03' 00" W. Long.  
 Elev.: K.B. Grd. Zone/Formation: Sampled from: 643' above tool Sampled by: Glen Knapp Date: Feb. 21, 1969  
 Method of Production: D.S.T. #2 Sample Interval:

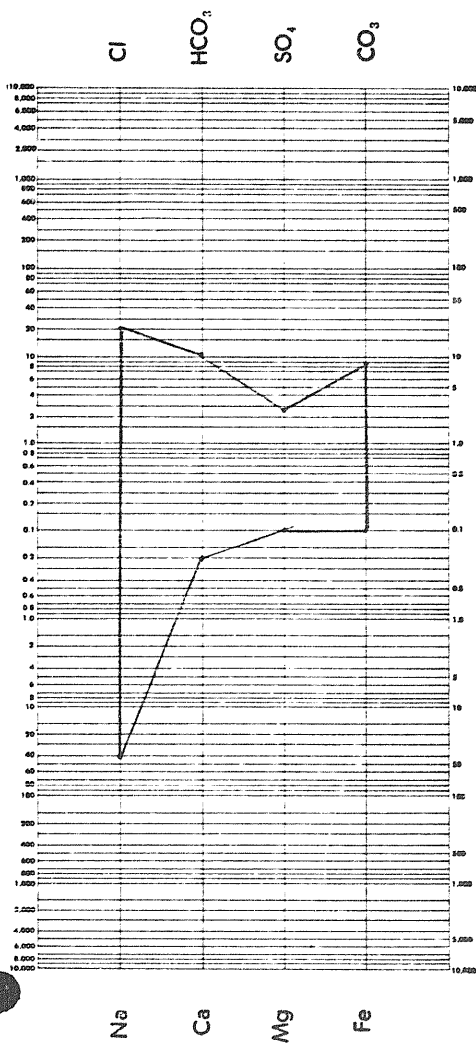
**OTHER PERTINENT DATA**

(Signed)

Mg./L	Na	K	Ca	Mg	SO <sub>4</sub>	Cl	CO <sub>2</sub>	HCO <sub>3</sub>
985			4	1	127	738		680
Meq./L	42.84		0.20	0.08	2.64	20.81	8.52	11.15
Meq. %	49.67		0.23	0.09	3.06	24.13	9.88	12.93

Total Solids Mg/L: By Evaporation 2924 Fe Trace Specific Gravity 1.003 @60°F Observed pH 9.4 @ 74 °F  
 Calculated 2791 After Ignition 2232 H<sub>2</sub>S Nil Refractive Index 1.3337 @25°C Resistivity 2.86 ohm meters @ 68 °F

Pattern Unit Meq./L



Remarks and Conclusions Analysis determined on colourless water filtered from muddy water.

E69-9249-1:

**BENZENE CONTENT:** No trace of benzene indicated.

Sample was received in a metal container without a foil insert in the screw cap. Container was full, water was very muddy, and had to be filter pressed prior to analysis.

# CHEMICAL & GEOLOGICAL LABORATORIES LTD.

## WATER ANALYSIS

Lab No. E69-9682

Received: Mar. 27, 1969 Reported: April 1, 1969 Well: Location: McDermott General Crude Northrup Taylor Lake YT K-15  
 Operator: J. RAY MCDERMOTT & CO. INC. Field or Area: 65° 54' 19" N. Lat. 133° 03' 00" W. Long.

Elev.: K.B. Grd. Zone/Formation:

Sample Interval:

Method of Production: D.S.T. #3

Sampled from: 620' Above Tool

Sampled by:

Date: Mar. 11, 1969

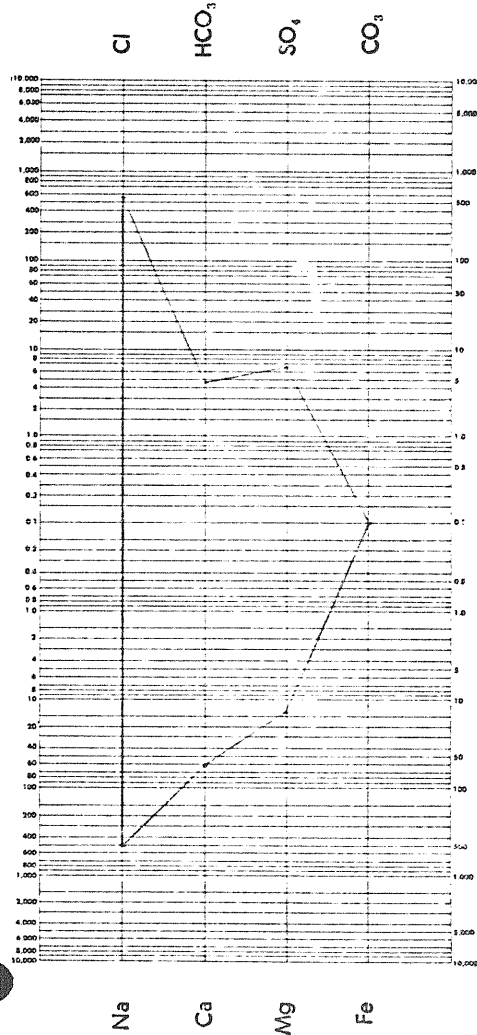
### OTHER PERTINENT DATA

(Signed)

	Na	K	Ca	Mg	SO <sub>4</sub>	Cl	CO <sub>3</sub>	HCO <sub>3</sub>
Mg./L	11652		1233	180	314	20250		290
Meq./L	506.01		61.53	14.80	6.53	571.05		4.76
Meq. %	43.45		5.28	1.27	0.56	49.03		0.41

Total Solids Mg/L: By Evaporation 34,260 Fe Present Specific Gravity 1.3392 @60°F Observed pH 6.5 @ 74 °F  
 Calculated 33,899 After Ignition 31,580 H<sub>2</sub>S Nil Refractive Index 1.025 @25°C Resistivity 0.236ohm meters @ 68 °F

Pattern Unit Meq./L



Remarks and Conclusions

The water contained a thin layer of sediment.  
BENZENE CONTENT: No trace of benzene indicated.  
 Sample was received in a 1 quart metal container with a foil insert in the screw cap. Container was full, water was clear, and appeared to be a good sample.





**CORE LABORATORIES - CANADA LTD.**  
 PETROLEUM RESERVOIR ENGINEERING  
 WATER ANALYSIS



File CRH-2-4575  
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Company J. Ray McDermott, Canada Ltd.  
 Well MCD. GCO Northup Taylor Lake YT K-15 K.B. \_\_\_\_\_ Grd. 1525'  
65°54'34" NL  
 Location 133°03'00" WL Field Wildcat Province Yukon Territory  
 Formation \_\_\_\_\_ Interval 7390' - 7804'  
 Sampled from DST#4 (Middle) by J. Ray McDermott, Canada Ltd.  
 Date sampled March 26/69 Date analyzed April 17/69 Analyst JC  
 Recovery \_\_\_\_\_

Mud type \_\_\_\_\_ Water cushion \_\_\_\_\_

Resistivity 0.122 Ohm-meters @ 70 °F Total Solids:  
 Calculated 58447 mg/liter  
 Specific gravity 1.0425 @ 60°F By evaporation @ 110°C \_\_\_\_\_ mg/liter  
 pH 7.1 H<sub>2</sub>S Absent By evaporation @ 180°C \_\_\_\_\_ mg/liter  
 Refractive Index 1.343 @ 70°F At ignition \_\_\_\_\_ mg/liter

**MILLIGRAMS PER LITER**

Na + K	Ca	Mg	Fe	Ba	Br	I	Cl	HCO <sub>3</sub>	SO <sub>4</sub>	CO <sub>3</sub>	OH
19788	2269	386	Pres.	Abs.			34884	405	715	Abs.	Abs.

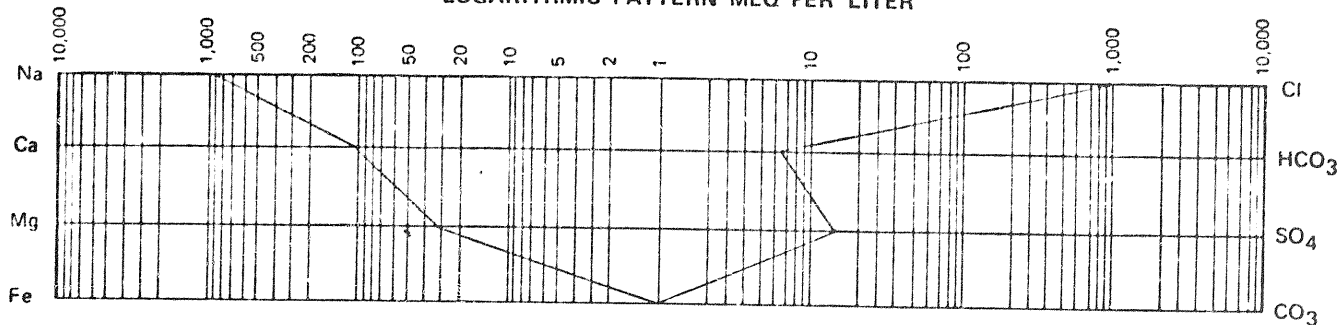
**PER CENT CALCULATED SOLIDS**

33.8	3.9	0.7					59.7	0.7	1.2		
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**MEQ PER LITER**

860.3	113.2	31.7					933.7	6.6	14.9		
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**LOGARITHMIC PATTERN MEQ PER LITER**





**CORE LABORATORIES -- CANADA LTD.**  
 PETROLEUM RESERVOIR ENGINEERING  
 WATER ANALYSIS



File CBH-2-4575

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Company J. Ray McDermott, Canada Ltd.

Well MCD. GCO Northup Taylor Lake YT K-15 K.B. \_\_\_\_\_ Grd. 1525'  
65°54'34" NL

Location 133°03'00" WL Field Wildcat Province Yukon Territory

Formation \_\_\_\_\_ Interval 5640' - 5740'

Sampled from DST#5 (Middle) by J. Ray McDermott, Canada Ltd.

Date sampled March 26/69 Date analyzed April 17/69 Analyst JC

Recovery \_\_\_\_\_

Mud type \_\_\_\_\_ Water cushion \_\_\_\_\_

Total Solids:

Resistivity 0.350 Ohm-meters @ 70 °F Calculated 19414 mg/liter

Specific gravity 1.0140 @ 60°F By evaporation @ 110°C \_\_\_\_\_ mg/liter

pH 7.8 H<sub>2</sub>S Absent By evaporation @ 180°C \_\_\_\_\_ mg/liter

Refractive Index 1.336 @ 70°F At ignition \_\_\_\_\_ mg/liter

**MILLIGRAMS PER LITER**

Na + K	Ca	Mg	Fe	Ba	Br	I	Cl	HCO <sub>3</sub>	SO <sub>4</sub>	CO <sub>3</sub>	OH
6688	568	113	Abs.	Abs.			10899	651	495	Abs.	Abs.

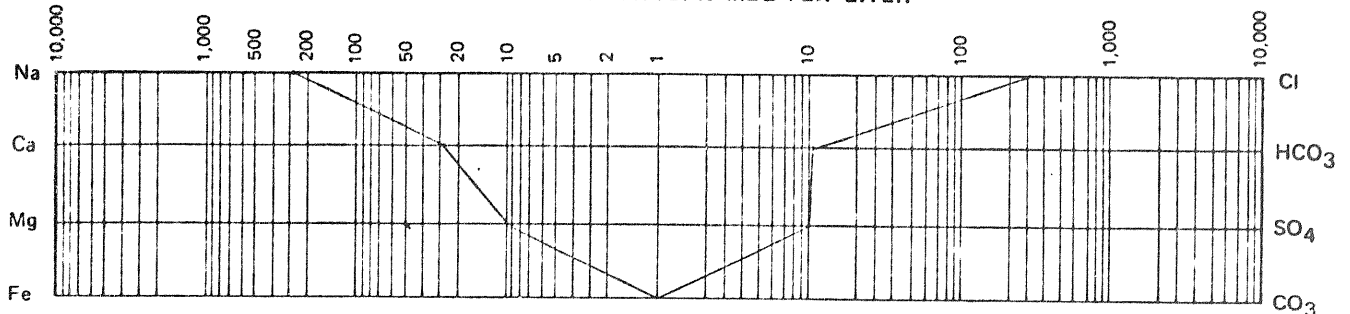
**PER CENT CALCULATED SOLIDS**

34.4	2.9	0.6					56.1	3.4	2.6		
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**MEQ PER LITER**

290.8	28.3	9.3					307.4	10.7	10.3		
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**LOGARITHMIC PATTERN MEQ PER LITER**



# DRILL STEM TEST REPORT

Well Name McD. G. C. O. Northup Taylor Lake Y. T. K-15 Test No. 1

Company J. Ray McDermott Canada Ltd. Date Test Run February 17, 1969

Testing Company Johnston Testers Ltd. Operator G. Knopp

No. & Size Packers 2 - 7 3/4" bob-tail (~~Hookwall~~) (Formation) Size Choke 1/2"

Other Equipment Safety-joint, multiple shut-in, Bowen hydraulic jars

Mud Wt. 8.9, Vis. 32, W.L. \_\_\_\_\_, pH \_\_\_\_\_

Interval Tested: From 2393 to 2418 Formation Mississippian

Full hole 8.3/4"

Casing 9.5/8" to 900'

Upper Packer set at 2386

Main Packer set at 2393

Rat hole at \_\_\_\_\_

Rat hole size \_\_\_\_\_

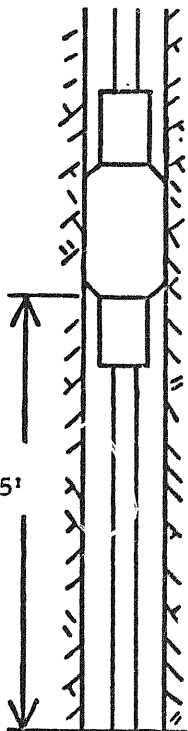
Length of tested interval \_\_\_\_\_

Casing perforations \_\_\_\_\_

\_\_\_\_\_ to \_\_\_\_\_

Bottom Packer set at \_\_\_\_\_

Total Depth 2418



Pre-flow 2 min.

Time initial shut-in started 9:12 P.M.

Time test tool opened 9:42 P.M.

Time test tool closed 10:42 P.M.

Time packer pulled loose 11:42 P.M.

Valve open 60 min. Shut in 30 min. & 60 min.

Description of blow Good air blow on pre-flow.

Weak air blow on valve open increasing to good.

Gas to surface in \_\_\_\_\_ min. at nil Mcf/day

Maximum gas flow \_\_\_\_\_ Mcf/day

Flow stabilized in \_\_\_\_\_ min. at \_\_\_\_\_ Mcf/day

Measured by: (manometer) (pres. gauge) (side static)

Gas sample saved after \_\_\_\_\_ min.

Was flare lit \_\_\_\_\_ Length of flame \_\_\_\_\_

Fluid to surface in \_\_\_\_\_ min.

Nature of fluid flow \_\_\_\_\_

Was test a misrun No

Cause of misrun \_\_\_\_\_

Temp. - 72°F

Remarks: Weak air blow when valve open, increasing to good air blow in 15 min. and remaining steady for duration of test.

### RECOVERY:

Total fluid in (size) 2 7/8" I. D. 6 1/4" O. D. drill pipe: 500 feet 4 barrels

(describe fluid) \_\_\_\_\_ Oil: \_\_\_\_\_ feet \_\_\_\_\_ barrels

muddy gassy fresh Water: 400 feet \_\_\_\_\_ barrels

watery Mud: 100 feet \_\_\_\_\_ barrels

Saved samples at \_\_\_\_\_ ft. \_\_\_\_\_ ft. 120 ft. above the test tool

### PRESSURE CHART READINGS: Field Pressures: Recorder #AK1 2264 @ 2397

Hydrostatic head: Before opened 1079 psi. After pulled 1097 psi.

Flowing pressure: Minimum Initial 71 psi. Maximum Final 236 psi.

Shut in pressure: Initial 1008 psi. Final 1008 psi.

Flow period 60 min. Shut in periods 30 + 60 Bomb capacity \_\_\_\_\_ psi.

Engineer: F. Halkow & D. Hunter

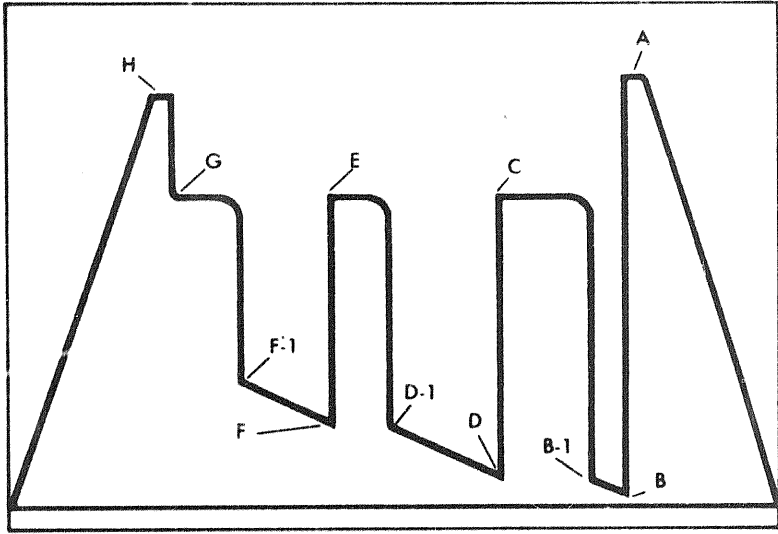








**GUIDE TO IDENTIFICATION OF DRILL STEM TEST PRESSURE CHARTS**



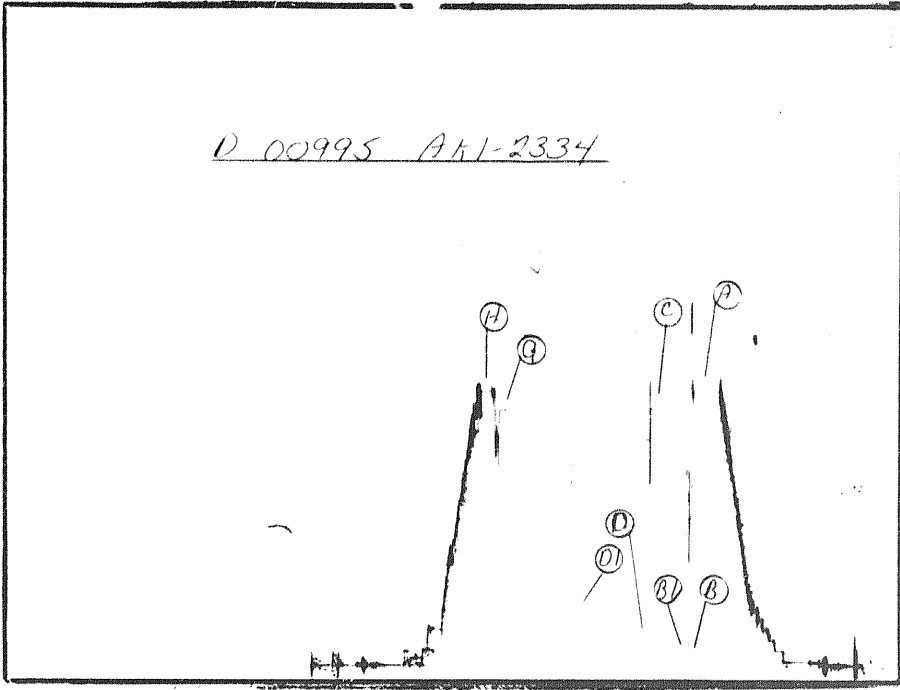
- A. Initial Hyd. Mud
- B. First Flow
- C. Initial Shut-In
- D. Second Flow
- E. Second Shut-In
- F. Third Flow
- G. Final Shut-In
- H. Final Hyd. Mud

The following points are either fluctuating pressures or points indicating other packer settings (testing different zones).

- A-1, A-2, A-3, etc. Initial Hyd. Pressures
- B, B-1, Initial Flow Pressures
- C, Initial Shut-In
- D-1, D-2, D-3, etc. Second Flow Pressures
- E, Second Shut-In
- F, F-1, F-2. Third Flow Pressures
- G, Final Shut-In
- H, Final Hyd. Pressures
- Z — Special pressure points such as pumping pressures recorded for formation breakdown.



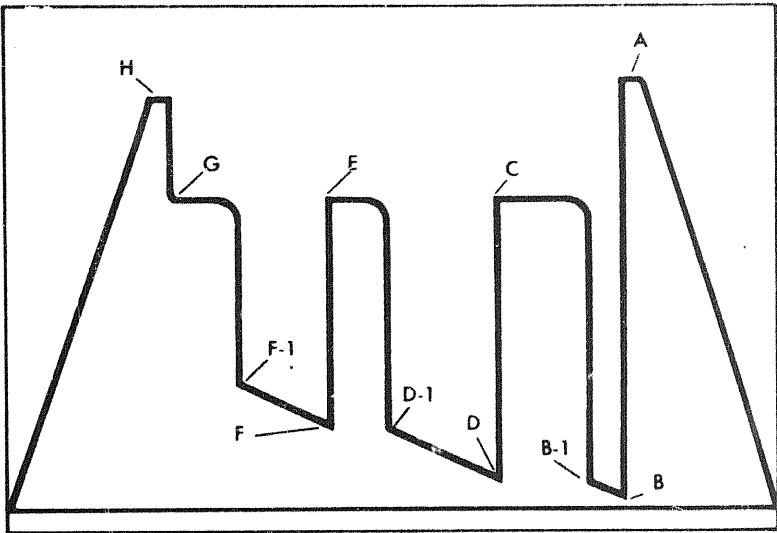
FIELD REPORT NO.	RECORDER NO.	CAPACITY	REPORTS REQUESTED
D 00995	AK1-2334	2750	10







**GUIDE TO IDENTIFICATION OF DRILL STEM TEST PRESSURE CHARTS**



- A. Initial Hyd. Mud
- B. First Flow
- C. Initial Shut-In
- D. Second Flow
- E. Second Shut-In
- F. Third Flow
- G. Final Shut-In
- H. Final Hyd. Mud

The following points are either fluctuating pressures or points indicating other packer settings (testing different zones).

- A-1, A-2, A-3, etc. Initial Hyd. Pressures
- B, B-1, Initial Flow Pressures
- C, Initial Shut-In
- D-1, D-2, D-3, etc. Second Flow Pressures
- E, Second Shut-In
- F, F-1, F-2. Third Flow Pressures
- G, Final Shut-In
- H, Final Hyd. Pressures
- Z — Special pressure points such as pumping pressures recorded for formation breakdown.

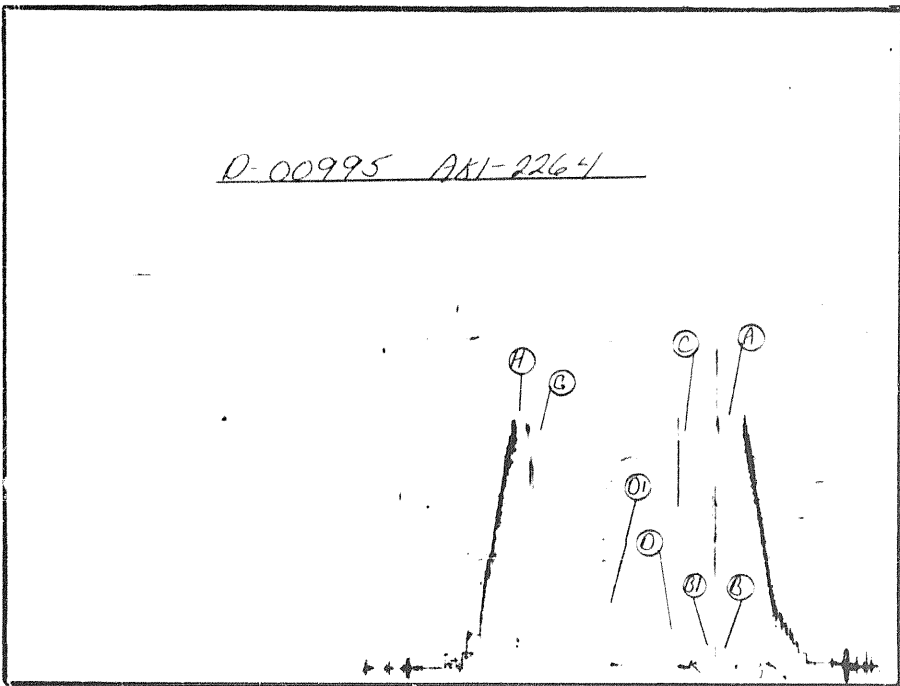


FIELD REPORT NO.  
D 00995

RECORDER NO.  
AK1-2264

CAPACITY  
3150

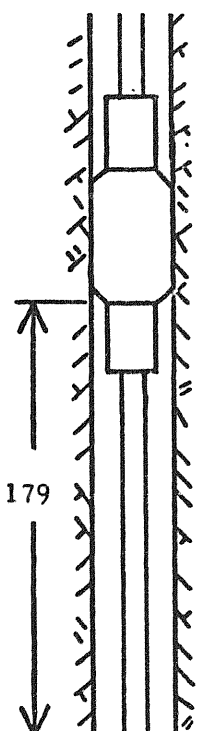
REPORTS REQUESTED  
10



# DRILL STEM TEST REPORT

Well Name McD. G. C. O. Northup Taylor Lake Y, T. K-15 Test No. 2  
 Company J. Ray McDermitt Canada Ltd. Date Test Run February 21, 1969  
 Testing Company Johnston Testers Ltd. Operator G. Knopp  
 No. & Size Packers 2 - 7 3/4" bob-tail (Blockwall) (Formation) Size Choke 1/2"  
 Other Equipment Safety-joint, multiple shut-in, Bowen hydraulic jars  
 Mud Wt. 9.0, Vis. 33, W.L. 22.8, pH. 10.5

Interval Tested: From 2824 to 3003  
 Full hole 8 3/4"  
 Casing 9 5/8 to 900  
 Upper Packer set at 2817  
 Main Packer set at 2824



Formation Imperial (Devonian) ?  
 Pre-flow 2 min.  
 Time initial shut-in started 8:32 P.M.  
 Time test tool opened 9:00 P.M.  
 Time test tool closed 10:02 P.M.  
 Time packer pulled loose 11:02 P.M.  
 Valve open 60 min. Shut in 30 min. + 60 min.  
 Description of blow Good air blow on pre-flow, Weak air blow on valve open increasing to strong  
 Gas to surface in ..... min. at nil Mcf/day  
 Maximum gas flow ..... Mcf/day  
 Flow stabilized in ..... min. at ..... Mcf/day  
 Measured by: (manometer) (pres. guage) (side static)  
 Gas sample saved after ..... min.  
 Was flare lit ..... Length of flame .....  
 Fluid to surface in ..... min.  
 Nature of fluid flow .....  
 Was test a misrun No  
 Cause of misrun Temp. 83°F.

Rat hole at .....  
 Rat hole size .....  
 Length of tested interval 179  
 Casing perforations ..... to .....  
 Bottom Packer set at .....  
 Total Depth 3003

Remarks: Good air blow on pre-flow, weak air blow when valve open increasing to strong for duration of test. Hole in good condition.

**RECOVERY:**

Total fluid in (size) ..... O.D. drill pipe: 1570 feet ..... barrels  
 (describe fluid) ..... Oil: ..... feet ..... barrels  
muddy gassy fresh Water: 1240 feet ..... barrels  
watery Mud: 330 feet ..... barrels  
 Saved samples at ..... ft. ..... ft. ..... ft. above the test tool

**PRESSURE CHART READINGS:**

Hydrostatic head: Before opened 1292 psi. After pulled 1292 psi.  
 Flowing pressure: Minimum Initial 165 psi. Maximum Final 701 psi.  
 Shut in pressure: Initial 1182 psi. Final 1174 psi.  
 Flow period 60 min. Shut in periods 30 + 60 Bomb capacity ..... psi.  
 Engineer: E. Halkow & D. Hunter

ST 16 E 4B



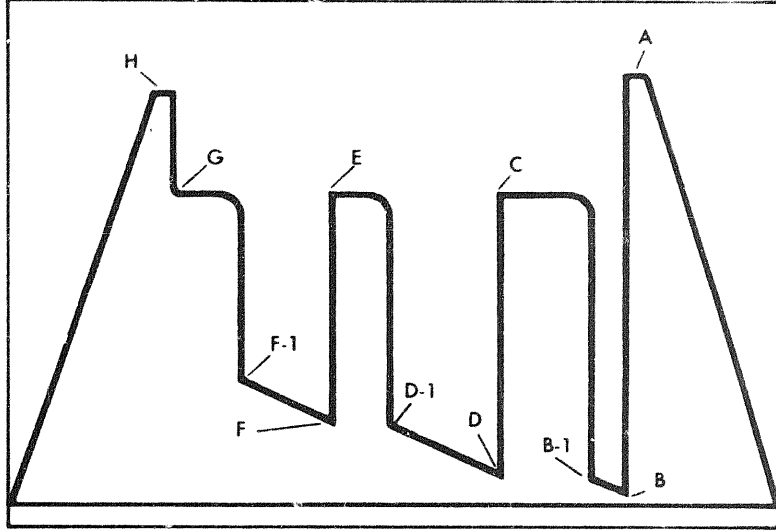
TEST DATA					TOOL SEQUENCE			
Formation	Zone Thickness		Ft		Tool	Length	O.D.	
Interval	2824 To	3003	T.D.	3003	D. P. SUB.	.80	6	
Type of Test	OPEN HOLE, BOTTOM HOLE.							
Time Started in Hole	1830	Hrs	Tool Opened	2028	Hrs	MFE TOOL	9.00 5	
First Flow	2	Min	Initial Shut-In	30	Min	BYPASS TOOL	3.50 5	
Second Flow	60	Min	Second Shut In		Min	SUB.	.85 6	
Third Flow		Min	Final Shut In	60	Min	JARS	6.45 5 3/4	
Pulled Loose Wt	2300	Lbs	Out of Hole	0100	Hrs	SUB.	.80 6	
Wt Set on Packers	40,000	#	Pulled Loose Wt	25,000	#	SAFETY JOINT	1.80 4 3/4	
Description of Blow During Test					S. S. & PACKER 9.00 7 3/4			
WFAK AIR BLOW, INCREASING TO STRONG ON FLOW.					T. C. & PACKER 6.80 7 3/4			
					TOTAL 39.70			
					STUB. 1.50 4 3/4			
<b>FLUID RECOVERY</b> Was Test Reverse Circulated Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					PERF. 10.00 4 3/4			
Total Fluid Recovered 1570					RECORDER 4.40 4 3/4			
Description of Fluid Recovered					PERF. 8.00 4 3/4			
330' WATERY, DRILLING FLUID.					RECORDER 4.40 4 3/4			
1240' GASSIFIED, MUDDY, WATER.					PERF. 20.00 4 3/4			
					SUB. .85 6			
					DRILL COLLAR 116.96 6 1/4			
					SUB. .85 6			
					PERF. 10.00 4 3/4			
					B. N. & PERF. 2.35 4 3/4			
					TOTAL INTERVAL 179.31			
GAS BLOW MEASUREMENT								
Measured With					ID Riser			
Type of Instrument								
Time	Stce	Choke	Reading psi inches	M Cubic Feet Day				
REMARKS					TOTAL LENGTH 219.01			
TEST SATISFACTORY.					Elevation NOT REPORTED.			
					Bottom Hole Choke Size 1/2"			
					Fluid Cushion Type Amt			
					<b>MUD AND HOLE DATA</b>			
					Mud Type XC POLYMER WL 22.8			
					Filter Cake 2/32 Visc 33 Wt 9.0			
					Time Taken			
					Contractor S. & T. DRILLING Co. 1E			
					Drill Pipe Size 4 1/2 FH			
					Drill Collar Size 2 7/8 ID Length 613'			
					Main Hole Size 8 3/4"			
					Rat Hole Size			
					RESISTIVITY			
					CHLORIDE CONTENT			
Recovery Water					ppm.			
Mud Fil sample filtrate					ppm.			
District	EDMONTON		Ticket No.	D 00996		Date	FEB. 21, 1969	
Company	J. RAY McDERMOTT & CO INC				Address	217-ROYALITE BUILDING		
Well Name	MCD GCO NORTHP TAYLOR LAKE YI K-15				CALGARY 2, ALBERTA			
Number	65 54'39.00		Field	TAYLOR LAKE		Province	N.W.T.	
and Interval	2824 - 3003		DST#2	Co. Rep		F. HALKOW (CONSULTANT)		
				Technician		G. KNAPP		
Distribution of Reports					10 - CALGARY.			







### GUIDE TO IDENTIFICATION OF DRILL STEM TEST PRESSURE CHARTS



- A. Initial Hyd. Mud
- B. First Flow
- C. Initial Shut-In
- D. Second Flow
- E. Second Shut-In
- F. Third Flow
- G. Final Shut-In
- H. Final Hyd. Mud

The following points are either fluctuating pressures or points indicating other packer settings (testing different zones).

- A-1, A-2, A-3, etc. Initial Hyd. Pressures
- B, B-1, Initial Flow Pressures
- C, Initial Shut-in
- D-1, D-2, D-3, etc. Second Flow Pressures
- E, Second Shut-In
- F, F-1, F-2. Third Flow Pressures
- G, Final Shut-In
- H, Final Hyd. Pressures
- Z — Special pressure points such as pumping pressures recorded for formation breakdown.

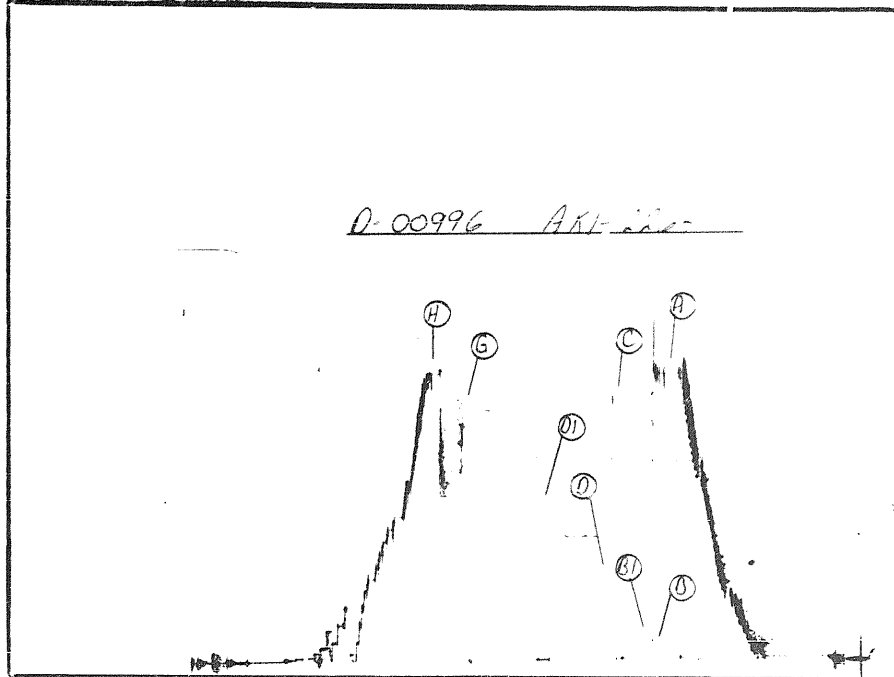


FIELD REPORT NO.  
D 00996

RECORDER NO.  
AK1-2264

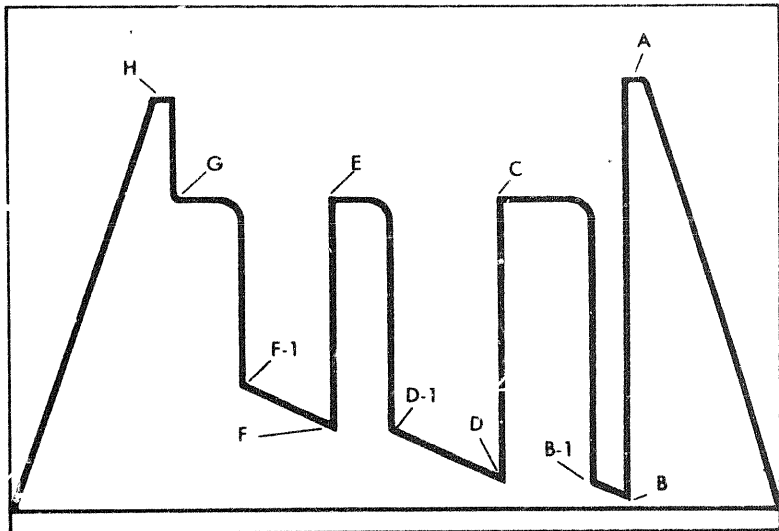
CAPACITY  
3150

REPORTS REQUESTED  
10





**GUIDE TO IDENTIFICATION OF DRILL STEM TEST PRESSURE CHARTS**



- A. Initial Hyd. Mud
- B. First Flow
- C. Initial Shut-In
- D. Second Flow
- E. Second Shut-In
- F. Third Flow
- G. Final Shut-In
- H. Final Hyd. Mud

The following points are either fluctuating pressures or points indicating other packer settings (testing different zones).

- A-1, A-2, A-3, etc. Initial Hyd. Pressures
- B B-1, Initial Flow Pressures
- C, Initial Shut-In
- D-1, D-2, D-3, etc. Second Flow Pressures
- E, Second Shut-In
- F, F-1, F-2. Third Flow Pressures
- G, Final Shut-In
- H, Final Hyd. Pressures
- Z — Special pressure points such as pumping pressures recorded for formation breakdown.



FIELD REPORT NO.

D 00996

RECORDER NO.

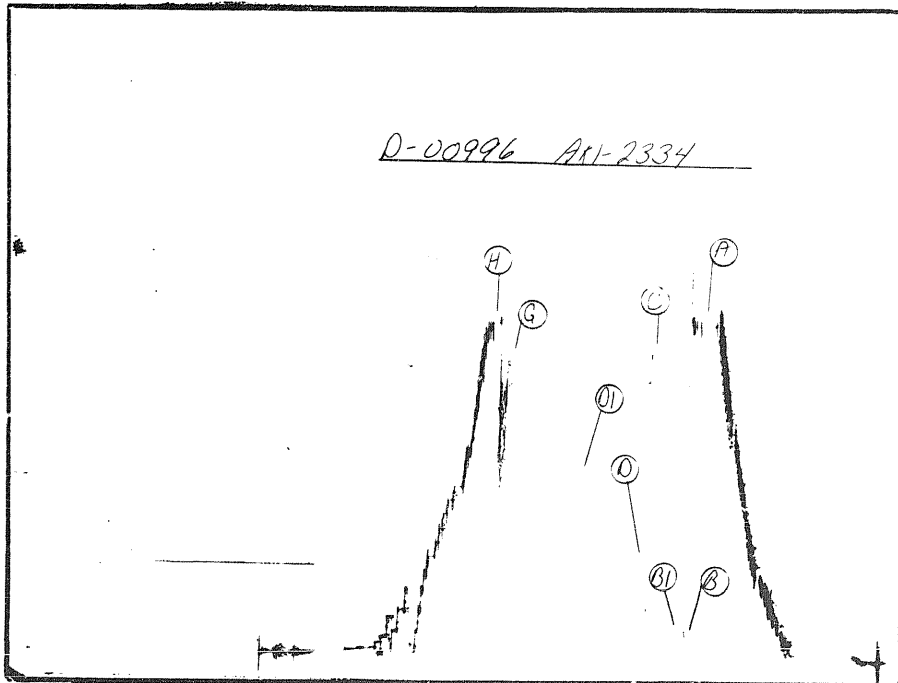
AK1-2334

CAPACITY

2750

REPORTS REQUESTED

10





# DRILL STEM TEST REPORT

Weil Name McD., G. C. O., Northup Taylor Lake Y. T., K-15 Test No. 3

Company J. Ray McDermott Canada Ltd. Date Test Run March 11, 1969

Testing Company Johnston Testers Ltd. Operator J. Mooney

No. & Size Packers 2 - 7 3/4" bob-tail & Conv. (Hookwell) (Formation) Size Choke 1/2"

Other Equipment Safety-joint, multiple shut-in, Bowen jars

Mud Wt. 9.0, Vis. 36, W.L. 9.8, pH. 10.0

Interval Tested: From 5880 to 6076 Formation Bear Rock

Full hole 8 3/4"

Casing 9.5/8" to 900

Upper Packer set at 5873

Main Packer set at 5880

Rat hole at .....

Rat hole size .....

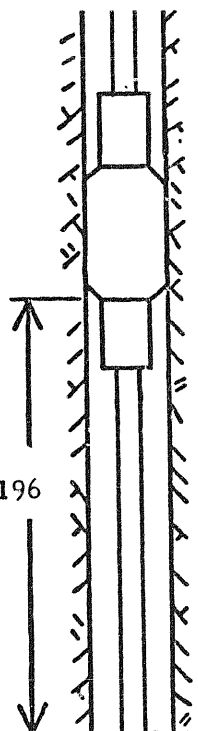
Length of tested interval .....

Casing perforations .....

..... to .....

Bottom Packer set at .....

Total Depth 6076



Pre-flow 2 min.  
 Time initial shut-in started 4:03 P. M.  
 Time test tool opened 4:33 P. M.  
 Time test tool closed 6:03 P. M.  
 Time packer pulled loose 7:33 P. M.  
 Valve open 90 min. Shut in 30 min. + 90 min.  
 Description of blow Fair air blow on pre-flow, Weak air blow on valve open building up to fair.  
 Gas to surface in ..... min. at nil Mcf/day  
 Maximum gas flow ..... Mcf/day  
 Flow stabilized in ..... min. at ..... Mcf/day  
 Measured by: (manometer) (pres. gauge) (side static)  
 Gas sample saved after ..... min.  
 Was flare lit ..... Length of flame .....  
 Fluid to surface in ..... min.  
 Nature of fluid flow .....  
 Was test a misrun No  
 Cause of misrun .....  
 Temp. 68°F (doubtful)

Remarks: Fair air blow on pre-flow, Weak air blow on valve open increasing to fair, No gas to surface, Hole in good condition except for bridge 10 ft. off bottom, Tool opened momentarily on bridge and took on approx. 1 bbl. mud.

**RECOVERY:**

Total fluid in (size) 4" + 6 1/2 D. CO.D. drill pipe: 1640 feet ..... barrels  
 (describe fluid) ..... Oil: ..... feet ..... barrels  
muddy gassy salt Water: 1190 feet ..... barrels  
watery Mud: 450 feet ..... barrels  
 Saved samples at ..... ft. ..... ft. ..... 620 ft. above the test tool

**PRESSURE CHART READINGS:** Field Pressures, Recorder AK1 2264-3150# set @ 6006 ft.

Hydrostatic head: Before opened 2662 psi. After pulled 2676 psi.  
 Flowing pressure: Minimum Initial 389 psi. Maximum Final 778 psi.  
 Shut in pressure: Initial 2104 psi. Final 2089 psi.  
 Flow period 90 min. Shut in periods 30 min. & 90 min. Bomb capacity 3150 psi.  
 Engineer: F. Halkow & S. Pallister & T. Nagle

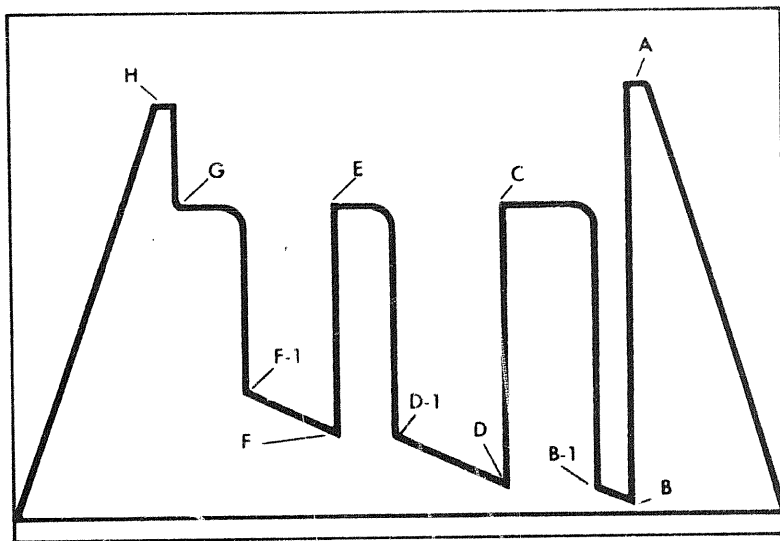








## GUIDE TO IDENTIFICATION OF DRILL STEM TEST PRESSURE CHARTS



- A. Initial Hyd. Mud
- B. First Flow
- C. Initial Shut-In
- D. Second Flow
- E. Second Shut-In
- F. Third Flow
- G. Final Shut-In
- H. Final Hyd. Mud

The following points are either fluctuating pressures or points indicating other packer settings (testing different zones).

- A-1, A-2, A-3, etc. Initial Hyd. Pressures
- B, B-1, Initial Flow Pressures
- C, Initial Shut-In
- D-1, D-2, D-3, etc. Second Flow Pressures
- E, Second Shut-In
- F, F-1, F-2. Third Flow Pressures
- G, Final Shut-In
- H, Final Hyd. Pressures
- Z — Special pressure points such as pumping pressures recorded for formation breakdown.



FIELD REPORT NO.

D 02347

RECORDER NO.

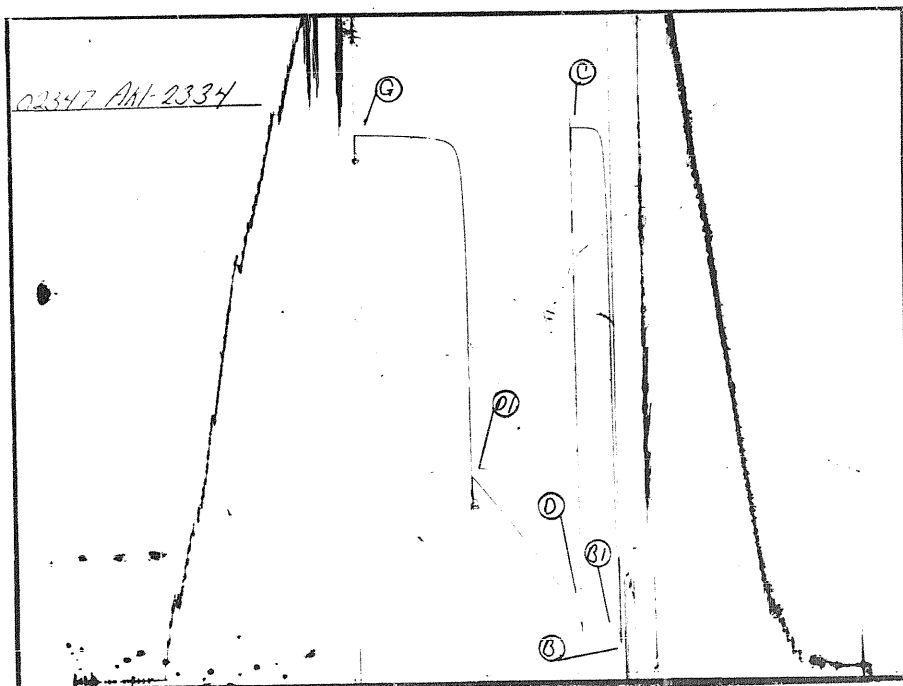
AK1-2334

CAPACITY

2750

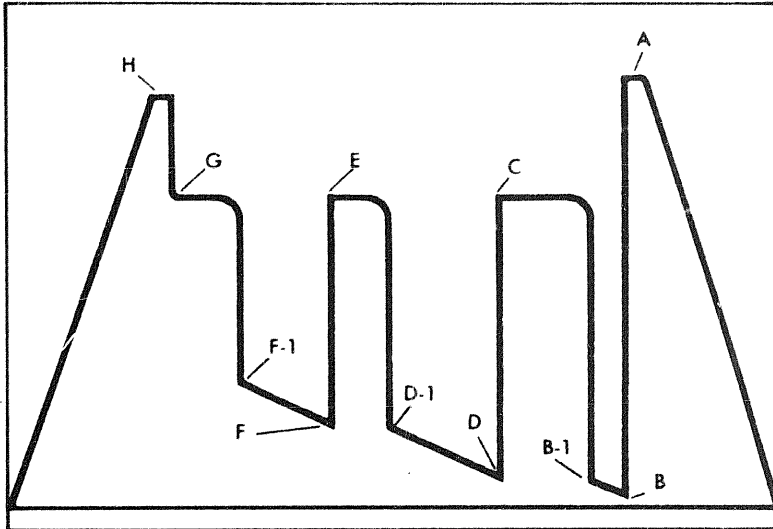
REPORTS REQUESTED

10





## GUIDE TO IDENTIFICATION OF DRILL STEM TEST PRESSURE CHARTS



- A. Initial Hyd. Mud
- B. First Flow
- C. Initial Shut-In
- D. Second Flow
- E. Second Shut-In
- F. Third Flow
- G. Final Shut-In
- H. Final Hyd. Mud

The following points are either fluctuating pressures or points indicating other packer settings (testing different zones).

- A-1, A-2, A-3, etc. Initial Hyd. Pressures
- B, B-1, Initial Flow Pressures
- C, Initial Shut-In
- D-1, D-2, D-3, etc. Second Flow Pressures
- E, Second Shut-In
- F, F-1, F-2. Third Flow Pressures
- G, Final Shut-In
- H, Final Hyd. Pressures
- Z — Special pressure points such as pumping pressures recorded for formation breakdown.

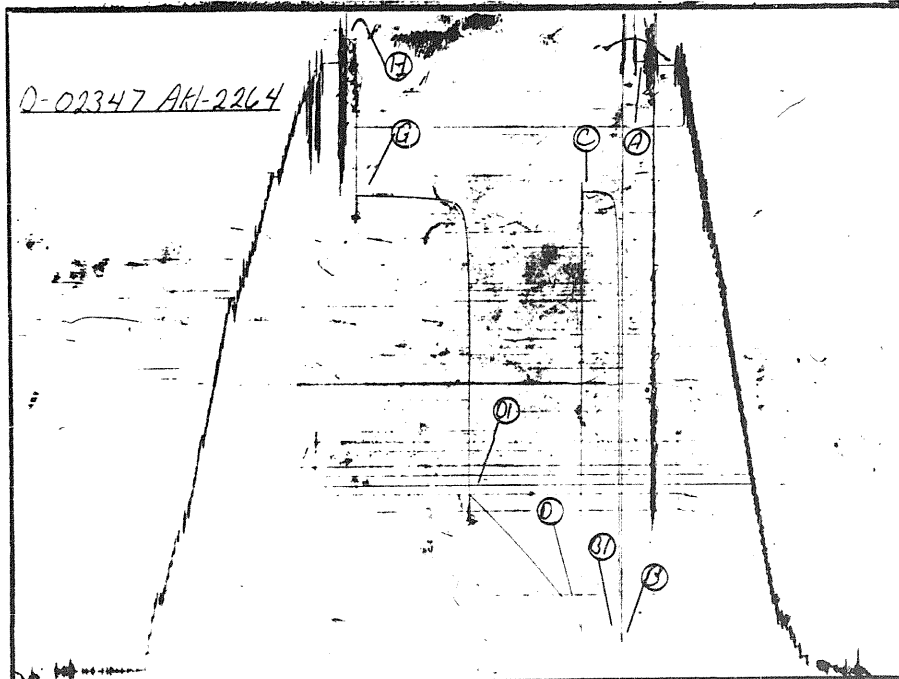


FIELD REPORT NO.  
D 02347

RECORDER NO.  
AK1-2264

CAPACITY  
3150

REPORTS REQUESTED  
10



# DRILL STEM TEST REPORT

Well Name McD. G. C. O. Northup Taylor Lake Y. T. K-15 Test No. 4

Company J. Ray McDermott Canada Ltd. Date Test Run March 26, 1969

Testing Company Johnston Testers Ltd. Operator J. Mooney

No. & Size Packers 2 (Hookwall) (Formation) Size Choke 1/2"

Other Equipment .....

Mud Wt. 9.2, Vis. 60, W.L. 8.4, pH. 10.5

Interval Tested: From 7390 to 7804 Formation Ordovician

Full hole ..... Pre-flow ..... 4 min.

Casing ..... Time initial shut-in ~~30 min.~~ ..... 30 min. M.

Upper Packer set at ..... Time test tool opened ..... 90 min. M.

Main Packer set at ..... Time test tool closed ..... 90 min. M.

..... Time packer pulled loose ..... M.

..... Valve open. 90 Shut in. 30 + 90 min.

..... Description of blow Air

..... Gas to surface in ..... min. at ..... nil Mcf/day

..... Rat hole at ..... Maximum gas flow ..... Mcf/day

..... Rat hole size ..... Flow stabilized in ..... min. at ..... Mcf/day

..... Measured by: (manometer) (pres. guage) (side static)

..... Length of tested interval ..... 414 Gas sample saved after ..... min.

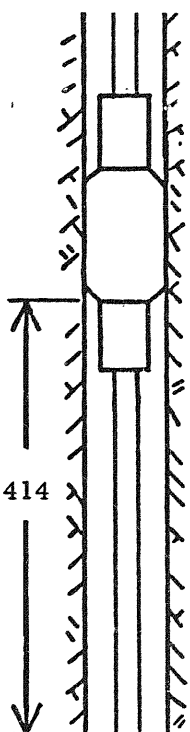
..... Casing perforations ..... Was flare lit..... Length of flame.....

..... to ..... Fluid to surface in ..... min.

..... Bottom Packer set at ..... Nature of fluid flow nil

..... Total Depth 7804 ..... Was test a misrun No

..... Cause of misrun .....



Remarks: Fair initial puff on preflow. Faint air blow on valve open increasing very

slightly throughout test. B.H.T. - 203° F.

**RECOVERY:**

Total fluid in (size) ..... O.D. drill pipe: 910 feet ..... barrels

(describe fluid) ..... Oil: ..... feet ..... barrels

..... Water: ..... feet ..... barrels

..... Salt Water cut ..... Mud: 910 feet ..... barrels

Saved samples at ..... ft. ..... ft. ..... ft. above the test tool

**PRESSURE CHART READINGS: Field Pressures**

Hydrostatic head: Before opened 3407 psi. After pulled 3407 psi.

Flowing pressure: ~~Minimum~~ Initial 201 psi. Maximum Final 403 psi.

Shut in pressure: Initial 2733 psi. Final 2733 psi.

Flow period ..... Shut in periods ..... Bomb capacity ..... psi.

Engineer: J. Britton & T. Nagle

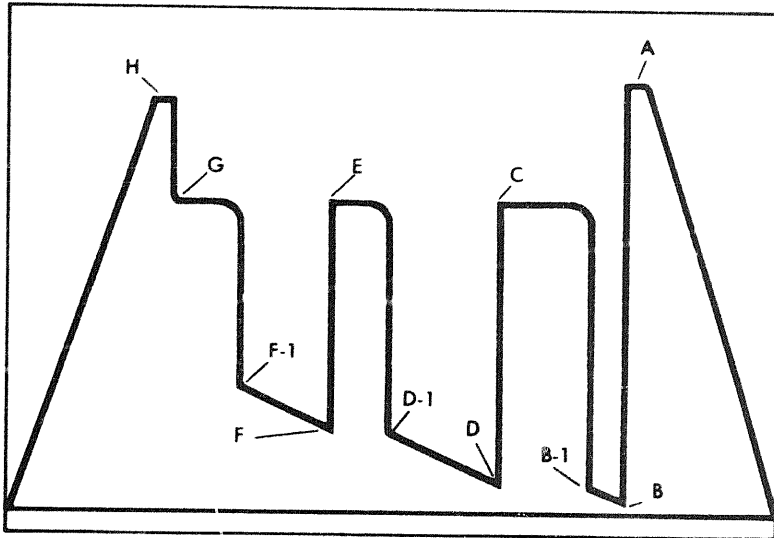








# GUIDE TO IDENTIFICATION OF DRILL STEM TEST PRESSURE CHARTS



- A. Initial Hyd. Mud
- B. First Flow
- C. Initial Shut-In
- D. Second Flow
- E. Second Shut-In
- F. Third Flow
- G. Final Shut-In
- H. Final Hyd. Mud

The following points are either fluctuating pressures or points indicating other packer settings (testing different zones).

- A-1, A-2, A-3, etc. Initial Hyd. Pressures
- B, B-1, Initial Flow Pressures
- C, Initial Shut-In
- D-1, D-2, D-3, etc. Second Flow Pressures
- E, Second Shut-In
- F, F-1, F-2. Third Flow Pressures
- G, Final Shut-In
- H, Final Hyd. Pressures
- Z - Special pressure points such as pumping pressures recorded for formation breakdown.

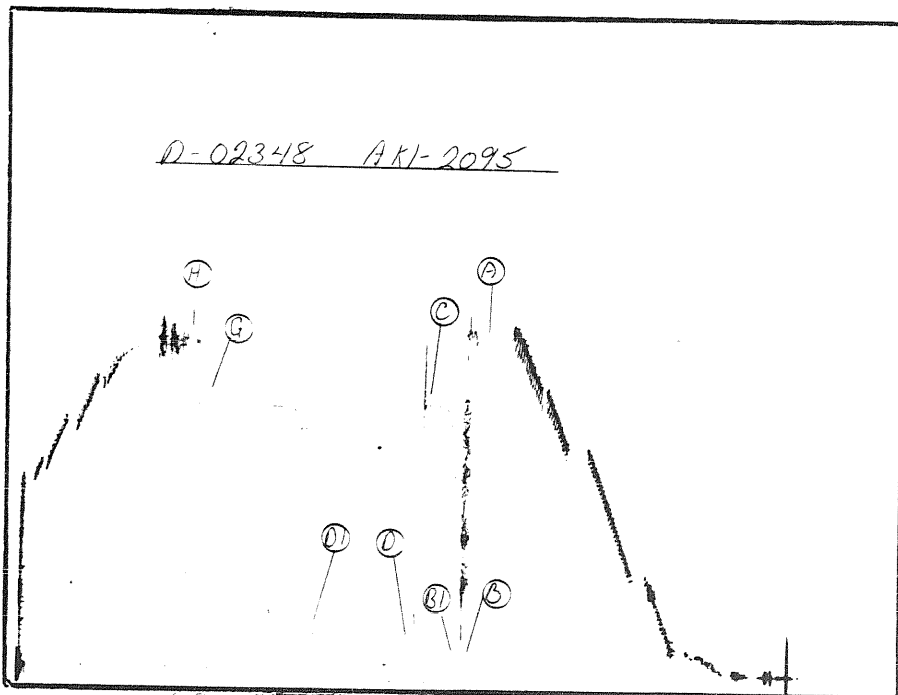


FIELD REPORT NO.  
D 02343

RECORDER NO.  
AK1-2095

CAPACITY  
7450

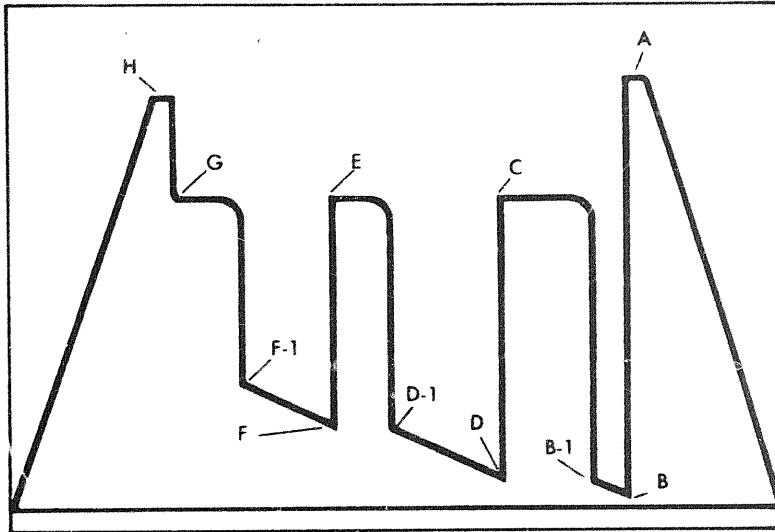
REPORTS REQUESTED  
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### GUIDE TO IDENTIFICATION OF DRILL STEM TEST PRESSURE CHARTS



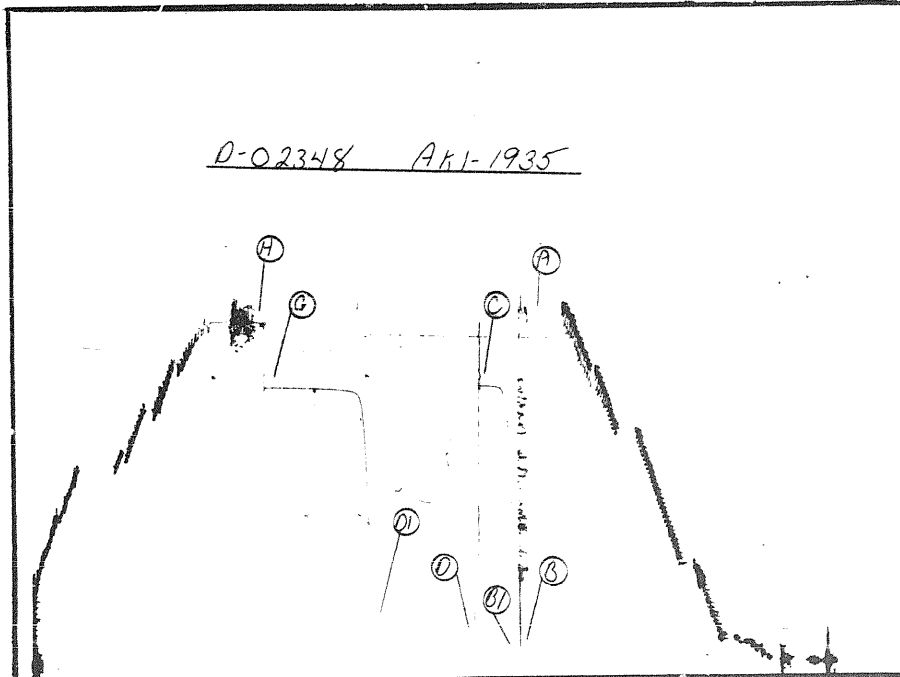
- A. Initial Hyd. Mud
- B. First Flow
- C. Initial Shut-In
- D. Second Flow
- E. Second Shut-In
- F. Third Flow
- G. Final Shut-In
- H. Final Hyd. Mud

The following points are either fluctuating pressures or points indicating other packer settings (testing different zones).

- A-1, A-2, A-3, etc. Initial Hyd. Pressures
- B, B-1, Initial Flow Pressures
- C, Initial Shut-In
- D-1, D-2, D-3, etc. Second Flow Pressures
- E, Second Shut-In
- F, F-1, F-2. Third Flow Pressures
- G, Final Shut-In
- H, Final Hyd. Pressures
- Z — Special pressure points such as pumping pressures recorded for formation breakdown.



FIELD REPORT NO.	RECORDER NO.	CAPACITY	REPORTS REQUESTED
D 02348	AK1-1935	7000	10



# DRILL STEM TEST REPORT

Well Name McD. G. C. O. Northup Taylor Lake Y. T. K-15 Test No. 5

Company J. Ray McDermott Canada Ltd. Date Test Run March 26, 1969

Testing Company Johnson Testers Ltd. Operator J. Mooney

No. & Size Packers ..... (Hookwall)  
 ..... (Formation) Size Choke .....

Other Equipment .....

Mud Wt. 9.2, Vis. 60, W.L. 8.4, pH 10.5

Interval Tested: From 5640 to 5740 Formation Bear Rock

Full hole 8 3/4" Pre-flow 4 min.

Casing 9 5/8" to 900 Time initial shut-in started 30 min. M.

Upper Packer set at ..... Time test tool opened 60 min. M.

Main Packer set at ..... Time test tool closed 60 min. M.

Rat hole at ..... Time packer pulled loose ..... M.

Rat hole size ..... Valve open 60 min. Shut in 30 + 60 min.

Length of tested interval 100 Description of blow Air

Casing perforations ..... Gas to surface in ..... min. at nil Mcf/day

Bottom Packer set at 5740 Maximum gas flow ..... Mcf/day

Total Depth 7804 Flow stabilized in ..... min. at ..... Mcf/day

Remarks: Good initial puff on preflow. Faint blow on valve open increasing to good air

blow in 10 min. and remaining steady throughout remainder of test.

**RECOVERY:**

Total fluid in (size) ..... O.D. drill pipe: 1270 feet ..... barrels

(describe fluid) ..... Oil: ..... feet ..... barrels

..... muddy salt Water: 1270 feet ..... barrels

..... Mud: ..... feet ..... barrels

Saved samples at ..... ft. .... ft. .... ft. above the test tool

**PRESSURE CHART READINGS: Field Pressures**

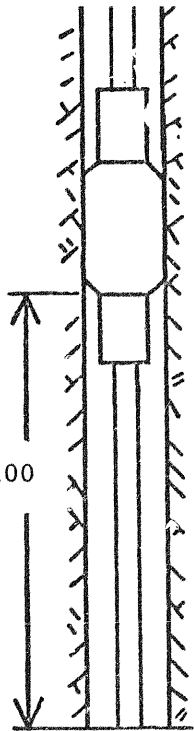
Hydrostatic head: Before opened 2735 psi. After pulled 2735 psi.

Flowing pressure: Minimum Initial 113 psi. Maximum Final 735 psi.

Shut in pressure: Initial 2100 psi. Final 2059 psi.

Flow period ..... Shut in periods ..... Bomb capacity ..... psi.

Engineer: J. Britton & T. Nagle





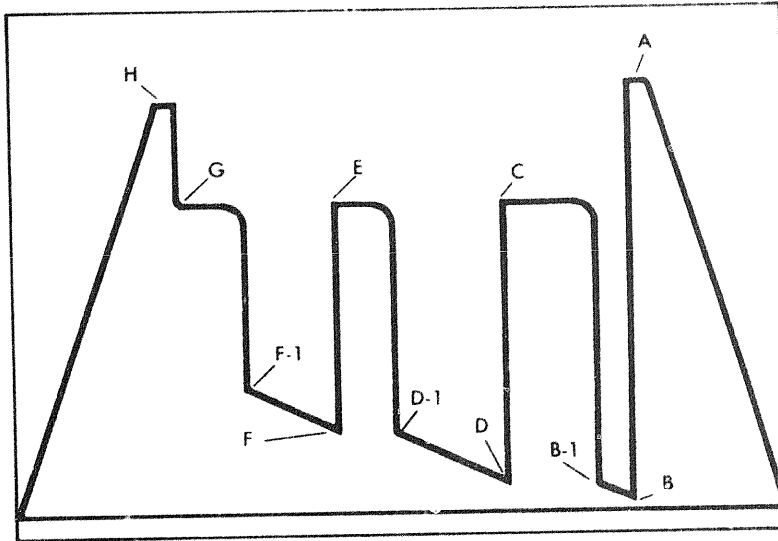
TEST DATA						TOOL SEQUENCE		
Formation		Zone Thickness		Ft.		Tool	Length	O.D.
Interval	5640 To	5740	T.D.	7804	Ft.	D. P. SUB.	.90	
Type of Test	OPEN HOLE, STRADDLE, BYPASS.							
Time Started in Hole	1830	Hrs.	Tool Opened	2119	Hrs.	MFE TOOL	9.10	
First Flow	4	Min.	Initial Shut-In	30	Min.	BYPASS TOOL	3.00	
Second Flow	60	Min.	Second Shut In		Min.	SUB.	.85	
Third Flow		Min.	Final Shut in	60	Min.	JARS	6.60	
Pulled Loose in	2353	Hrs.	Out of Hole	0330	Hrs.	SUB.	.80	
Wt. Set on Packers	45,000	#	Pulled Loose Wt		#	SAFETY JOINT	1.80	
Description of Blow During Test						S. S. & PACKER	9.20	
FAIR AIR FLOW, INCREASING TO GOOD.						T. C. & PACKER	5.70	
						TOTAL	37.95	
						STUB.	1.50	
<b>FLUID RECOVERY</b> Was Test Reverse Circulated Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>						PERF.	23.00	
Total Fluid Recovered	1270				Ft.	R. SUB.	.85	
Description of Fluid Recovered						RECORDER	4.40	
1270' MUDDY, SALT WATER.						RECORDER	4.40	
						SUB.	.80	
						DRILL COLLAR	61.03	
						SUB.	.85	
						T. C. & STUB.	3.50	
						TOTAL INTERVAL	100.33	
						PACKER	3.00	
<b>GAS BLOW MEASUREMENT</b>						T. C. & PACKER	6.95	
Measured With I.D. Riser						PERF.	4.00	
Type of Instrument						SUB.	.65	
Time	Size, Choke	Reading psi inches	M Cubic Feet Day			DRILL PIPE	2047.00	
						SUB.	.75	
						B. N. & PERF.	2.35	
						TOTAL BELOW INTY.	2064.70	
						TOTAL LENGTH	2202.98	
						Elevation	NOT REPORTED.	
						Bottom Hole Choke Size	1 1/2"	
REMARKS						Fluid Cushion Type	Amt.	
TEST SATISFACTORY.						<b>MUD AND HOLE DATA</b>		
						Mud Type	W.L. 8.4	
						Filter Cake	2/32 Visc 60 Wt. 9.3	
						Time Taken		
						Contractor	S & T DRILLING Rig No. 1E	
						Drill Pipe Size	3 1/2 IF	
						Drill Collar Size	Length	
						Main Hole Size	8 3/4"	
						Rat Hole Size		
RESISTIVITY						CHLORIDE CONTENT		
Recovery Water			F 15,000		ppm.			
Mud Pit sample filtrate			F		ppm.			
District	EDMONTON	Ticket No.	D 02349	Date	MARCH 26, 1969	Test No.	5	J.T. No. 5
Company	J. RAY McDERMOTT & Co INC				Address	217-ROYALITE BUILDING		
Well Name	MCD 500 NORTHUP TAYLOR LAKE YT K-15					CALGARY 2, ALBERTA		
Number	65 54 39.00	Field	TAYLOR LAKE	Province	N.W.T.			
and Interval	133 03100.00	Co. Rep.	T. NAGLE	Technician	J. MOONEY			
Distribution of Report						10 - CALGARY.		







## GUIDE TO IDENTIFICATION OF DRILL STEM TEST PRESSURE CHARTS



- A. Initial Hyd. Mud
- B. First Flow
- C. Initial Shut-In
- D. Second Flow
- E. Second Shut-In
- F. Third Flow
- G. Final Shut-In
- H. Final Hyd. Mud

The following points are either fluctuating pressures or points indicating other packer settings (testing different zones).

- A-1, A 2, A-3, etc. Initial Hyd. Pressures
- B, B-1, Initial Flow Pressures
- C, Initial Shut-In
- D-1, D-2, D-3, etc. Second Flow Pressures
- E, Second Shut-In
- F, F-1, F-2. Third Flow Pressures
- G, Final Shut-In
- H, Final Hyd. Pressures
- Z — Special pressure points such as pumping pressures recorded for formation breakdown.

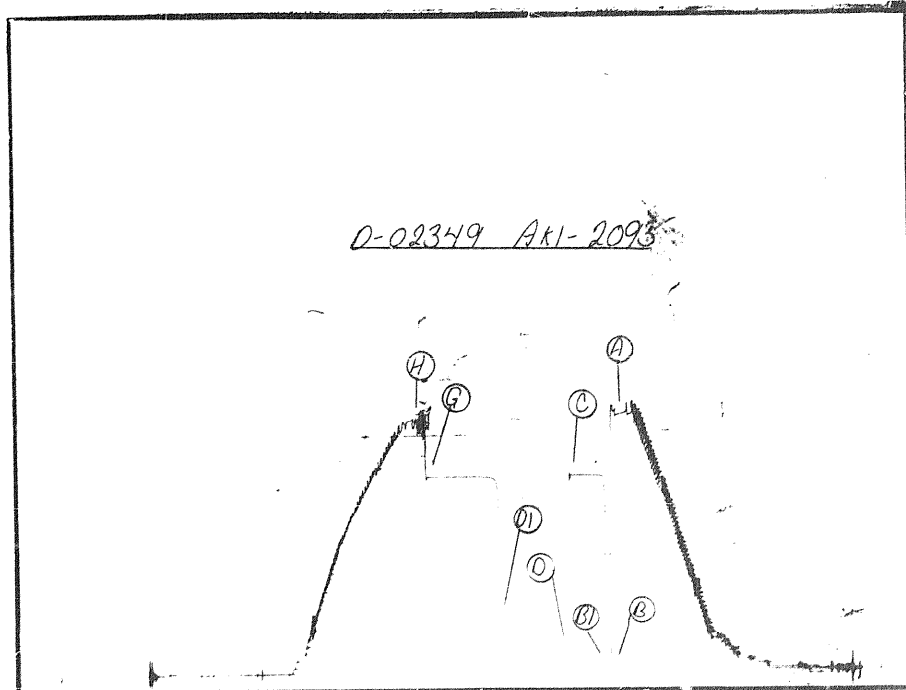


FIELD REPORT NO.  
D 02349

RECORDER NO.  
AK1-2095

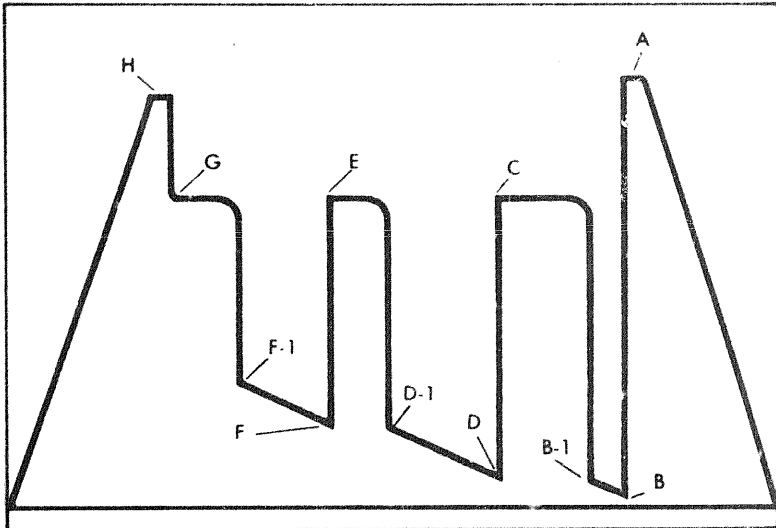
CAPACITY  
7450

REPORTS REQUESTED  
10





### GUIDE TO IDENTIFICATION OF DRILL STEM TEST PRESSURE CHARTS



- A. Initial Hyd. Mud
- B. First Flow
- C. Initial Shut-In
- D. Second Flow
- E. Second Shut-In
- F. Third Flow
- G. Final Shut-In
- H. Final Hyd. Mud

The following points are either fluctuating pressures or points indicating other packer settings (testing different zones).

- A-1, A-2, A-3, etc. Initial Hyd. Pressures
- B, B-1, Initial Flow Pressures
- C, Initial Shut-In
- D-1, D-2, D-3, etc. Second Flow Pressures
- E, Second Shut-In
- F, F-1, F-2. Third Flow Pressures
- G, Final Shut-In
- H, Final Hyd. Pressures
- Z — Special pressure points such as pumping pressures recorded for formation breakdown.



FIELD REPORT NO.	RECORDER NO.	CAPACITY	REPORTS REQUESTED
D 02349	AK1-1935	7000	10

