

KOTANEE LEE

YT M-17

FINAL ENGINEERING REPORT

for

COLUMBIA ET AL KOTANEELEE YT M-17

D.A. 918

Prepared for:

COLUMBIA GAS DEVELOPMENT OF CANADA LTD.

September, 1979



E. E. Gilbertson

D&S PETROLEUM FIELD SERVICES LTD.

COLUMBIA ET AL KOTANEELEE YT M-17

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D&S PETROLEUM CONSULTANTS LTD.

WELL SUMMARY

73F 1

Well Name COLUMBIA ET AL KOTANEELEE Location M-17

Elevations: GL \_\_\_\_\_ Co-ords \_\_\_\_\_

KB \_\_\_\_\_

Contractor Nabors Rig No. Nine

Dates: Spud June 1, 1979 RR February 26, 1979 Compn February 26, 1979

Hole Size 311 Depth 216 Logs \_\_\_\_\_

215.9 1332 DIL-BHCS 1332-216

CNL-FDC 1332-216

Casing Bowl 10" x 9 5/8" 3000# W.P.

Status Injection well.

Drill Stem Tests \_\_\_\_\_

Perforations 1312.5 - 1317 Type Through tubing Zone Mattson Sand

1300.5 - 1304.5 Gun 13 jsn

1282.5 - 1286

1256.5 - 1261.5

Tubing 88.9 mm 13.87 kg/m CS Hydril Depth 989.42 Packer 978.2

PSN \_\_\_\_\_

PSN \_\_\_\_\_

Treatments \_\_\_\_\_ Zone \_\_\_\_\_

Remarks \_\_\_\_\_

Tool Push Tom Quinn Geologist Ex Log Fld. Supervisor Vern Arndt



D&S PETROLEUM CONSULTANTS LTD.

WELL EQUIPMENT SUMMARY

73F9

Well Name COLUMBIA ET AL KOTANEELEE YT M-17 Date 79 04 16

Wellhead:

Choke \_\_\_\_\_

Wing Valve 2" 3000# WKM Gate

Master Valve 2 1/2" 5000# WKM Gate

Stuffing Box \_\_\_\_\_

Other \_\_\_\_\_

Tubing:

Bonnet 6", 3000# x 1 1/2", 5000# x 2 7/8" EUE

Spool TCM 10", 3000# x 6", 3000#, W/2 - 2", 5000#, S.S.O.

Hanger \_\_\_\_\_

Valves WKM 2", 5000#, FE,

Casing:

Spool C-21 10" X 7"

Slips \_\_\_\_\_

Valves WKM 2" 3000# Standard Trim

Surface Casing:

Bowl C-22 10" 3000# X 9 5/8" w/2 2" LP

Slips \_\_\_\_\_

Valves 1-XH Bull Plug 1-2" LP 2000# Worcester Ball Valve.

Pumping Equipment:

Unit MNF \_\_\_\_\_ Torque \_\_\_\_\_ Beam \_\_\_\_\_ Stroke \_\_\_\_\_

Motor MNF \_\_\_\_\_ Type \_\_\_\_\_ H.P. \_\_\_\_\_ H.P. Conn \_\_\_\_\_

Bottom Hole Pump \_\_\_\_\_ Depth \_\_\_\_\_

Rods: No. \_\_\_\_\_ Size \_\_\_\_\_ Grade \_\_\_\_\_ Length \_\_\_\_\_

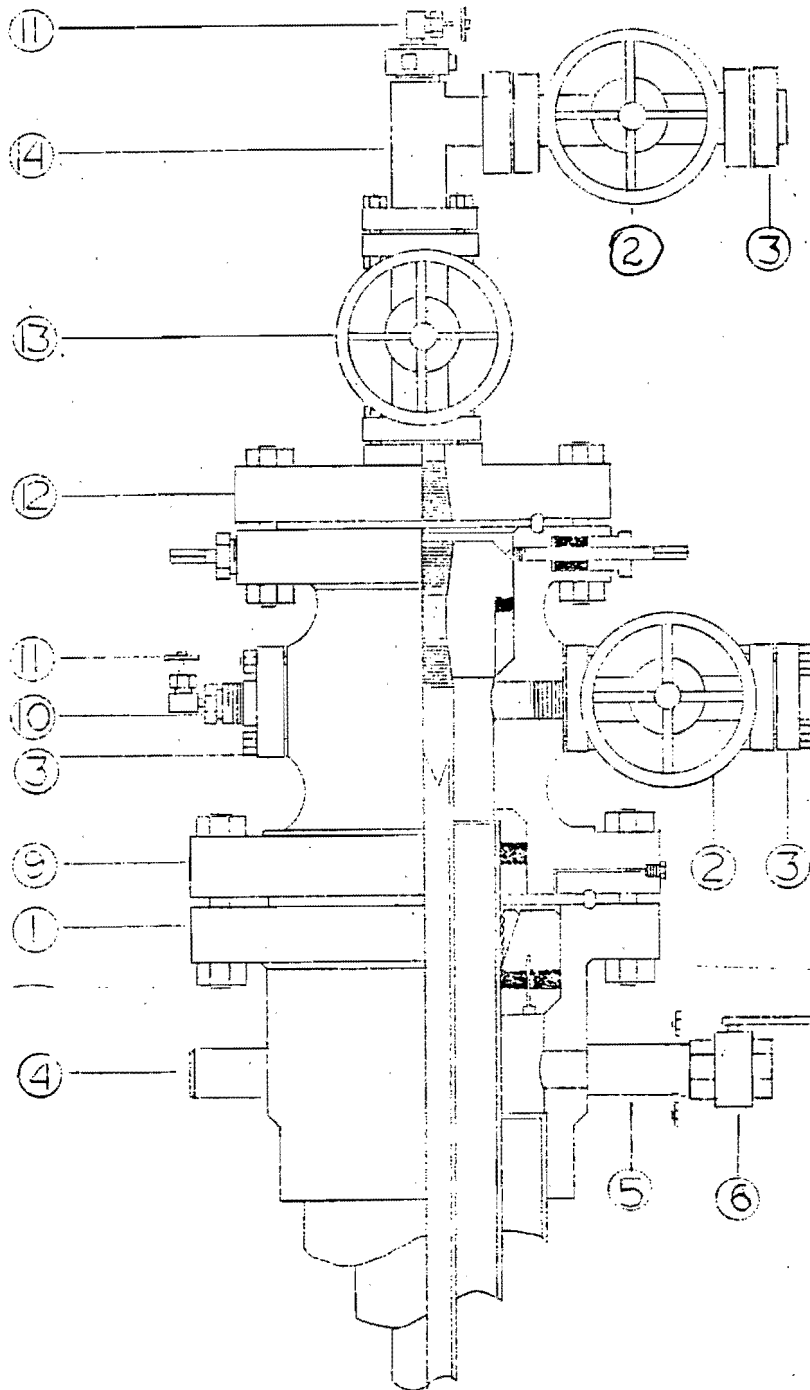
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Pony Rods \_\_\_\_\_

sh Rods \_\_\_\_\_

Remarks \_\_\_\_\_

Field Supervisor Vern Arndt



c/o D & S Consulting  
 X-1643 Kotaneelee Water Injection M-17

PROPERTY OF  
**WELLHEAD CONTROLS LTD.**  
 CALGARY, ALBERTA

PART NO.	SCALE	PATTERN NO.	DATE 7/9/04/11	SIZE	FILE NO.
MATERIAL SPEC.			DRN BY RDS	9-5/8"x2-7/8"	
Columbia Gas			CKD BY	3000#	DWG. NO.
			APPROV.		



D&S PETROLEUM CONSULTANTS LTD. COLUMBIA ET AL KOTANEELEE  
YT M-17

DEVIATION SURVEY SUMMARY

73F7

DEPTH	DEGREES	DEPTH	DEGREES
31.49 m	3/4	586.0 m	6 1/4
43.0 m	0	606.0 m	6 3/8
52.0 m	1/2	616.0 m	6 1/4
72.5 m	1	636.0 m	6 3/4
80.9 m	3/4	654.0 m	7 1/4
97.0 m	3/4	674.0 m	7 1/4
105.0 m	1/2	693.0 m	7 3/4
115.0 m	7/8	712.0 m	8
127.0 m	1	822.0 m	8
136.0 m	1/2	731.0 m	8
144.0 m	1/2	758.0 m	8
155.0 m	1/2	770.0 m	8 1/4
172.0 m	3/8	779.0 m	8 1/4
193.0 m	1/8	789.0 m	7 3/4
234.0 m	0	798.0 m	7 1/2
260.0 m	3/4	808.0 m	7 1/2
270.0 m	1 1/2	818.0 m	7
280.0 m	1 1/4	827.0 m	7 1/2
290.0 m	1 1/2	846.0 m	6 3/4
300.0 m	1 1/2	859.0 m	6
310.0 m	1 1/2	875.0 m	5 7/8
323.0 m	2	885.0 m	5 7/8
348.0 m	2	932.0 m	5 3/4
377.0 m	2 1/2	941.0 m	5 1/4
403.0 m	2 3/4	952.0 m	5
432.0 m	3 1/4	962.0 m	5 1/4
451.0 m	3 1/2	970.0 m	5 1/4
472.0 m	3 1/2	979.0 m	5 1/2
481.0 m	3 3/4	990.0 m	5
499.0 m	4 3/4	999.0 m	5
519.0 m	4 7/8	1007.0 m	4 1/2
529.0 m	5 1/4	1017.0 m	4 1/4
549.0 m	5 1/4	1028.0 m	4 1/4
568.0 m	6	1036.0 m	4 1/4





# BIT RECORD

WELL NAME: COLUMBIA ET AL KOTANEELEE YT M-17  
 OPERATOR: COLUMBIA GAS DEVELOPMENT OF CANADA LTD.  
 CONTRACTOR: NABORS DRILLING

D&S PETROLEUM CONSULTANTS LTD.

DATE \_\_\_\_\_ MO./DAY/YEAR  
 SPUDDED 79 01 01 \_\_\_\_\_ A.M./P.M.  
 SET SURFACE \_\_\_\_\_ A.M./P.M.  
 UNDER SURFACE 79 01 10 \_\_\_\_\_ A.M./P.M.  
 UNDER INTER \_\_\_\_\_ A.M./P.M.  
 COMPLETION \_\_\_\_\_ A.M./P.M.  
 RELEASE 79 02 27 \_\_\_\_\_ A.M./P.M.

OD ID  
 DRILL PIPE SIZE 228 76  
 DRILL COLLARS SIZE 158 73  
 TOOL JOINTS SIZE 127 4 1/2IF

TYPE  
 PUMP No. 1 Emsco DB-1000  
 PUMP No. 2 Nat. H-850

NO	SIZE	MAKE	TYPE	JET SIZE	SERIAL NO.	DEPTH OUT	FEET	HOURS	ACCUM. HOURS	BIT CONDITION			NO OF D.C.	WT. 1000 LBS.	RPM	PUMP PRESS	NO. 1		NO. 2		MUD		
																	SPM	LINER	SPM	LINER	WT	VIS	
1A	311.2	Reed	S13GJ	3-11.1	433770	Dropped on bottom - No apparent damage																	
2A	311.2	Reed	S13GJ	3-11.1	430150	98.7	79.5	24 1/4	24 1/4	3	2	I	18	2.5	60-70	2600	62	165	140	1070	45		
3A	311.2	Sec.	S44	3-12.7	837287	155.5	57.0	20	44 1/4	3	2	I	18	2.6	80-110	4000	58	165	140	1138	59		
4A	311.2	Sec.	S44	3-14.3	839354	216.0	60.5	14 1/4	58 1/2	2	1	I	18	2.5	85	3500	58	165	140	1150	60		
5	215.9	Sec.	M44N	3-8.7	834682	324.0	108.0	34 1/4	92 3/4	3	2	I	18	6	75	7000	50	140		1080	40		
6	215.9	H.W.	J22	3-8.7	33124	616.0	292.0	68 1/4	161	2	3	I	18	5-10	35-75	7500		58	140	1100	40		
7	215.9	Sec.	S88F	3-8.7	677492	713	97.0	25	186	2	2	I	18	4-7	60	7500		140	60	140	1060	35	
8	215.9	H.W.	XDV	3-8.7	31734	758	45.0	16 1/2	202 1/2	4	2	I	18	4	60	8000	58	140		1050	34		
9	215.9	Smith	F3	3-8.7	679NN	848	90.0	80 1/2	283	8	8	4	18	12	60	8500	54	140		1080	35		
10	215.9	H.W.	JD8	3-8.7	29027	859	11.0	13	296	6	4	I	18	10	50	7000		50	152	1080	40		
11	215.9	Reed	FP62	3-8.7	833475	993	134.0	81 1/4	377 1/4	6	4	I	18	13	50	7500	58	140		1080	45		
12	215.9	Reed	FP62	2-7.9 1-8.7	833244	1084	91.0	74 1/4	451 1/2	6	8	2	18	13	50	9000	58	140		1070	45		
13	215.9	Smith	F5	3-8.7	539NV	1104	20.0	15	466 1/2	7	5	I	18	13	50	8500	58	140		1080	48		
14	215.9	Reed	FP63	2-7.1 1-8.7	410760	1205	101.0	81 1/4	547 3/4	8	5	0	"	11-13	50-55	10000	50	140		1070	80		
15	215.9	Sec.	H77SG	3-8.7	738014	1220	15.0	10	557 3/4	6	3	0	18	12	55	8000	52	140		1060	75		
16	215.9	Reed.	FP62	3-8.7	136759	1328	108.0	72 3/4	630 1/2	8	6	0	18	12	42	7000	45	140		1200	75		
17	215.9	H.W.	HD7	3-8.7	31352	1332	4.0	9	639 1/2	8	2	0	18	12	50	7500	45	140		1350	70		
8RR	215.9	H.W.	XDV	3-10.3																			





# D&S PETROLEUM CONSULTANTS LTD.

## CASING SUMMARY

73F2

Casing Size 244.5 Casing Type Surface  
 Well Columbia et al Kotaneelee YT M-17 Date 79 01 06

	CSG WT	GR	RGE	THD	T&C	MAKE	JTS RUN	DEPTH LANDED	m RUN IN WELL
Shoe	MAKE: <u>Wotco</u>		TYPE: <u>Float Shoe</u>					215.84 m	.52 m
Shoe JT.	64.75	N-80	3	8RD	LT&C	Jap.	1	215.32 m	12.10 m
Float Collar	MAKE: <u>Baker</u>		TYPE: <u>Cement Float Collar</u>					203.22 m	.50 m
Casing	64.75	N-80	3	8RD	LT&C	Jap.	17	202.72 m	203.65 m
Casing									
Casing									
Casing									
Casing									

Landing Jt (when used) Length.....	
Overall Length of Casing String.....	216.77 m
Feet up from K.B. (subtract).....	.93 m
Setting Depth: Driller <u>216 m</u> Tally	215.84 m

Centralizers Three

Scratchers Nil

Weld/ Thread Lock (No. Joints) Thread lock and weld first two joints.

Cementing Co. NowSCO Cementer: Don Trotter

Cement Volume 9.4 m<sup>3</sup> at 1868.8 kg/m<sup>3</sup>

Additives 2% CaCl<sub>2</sub> & 34 kg cellophane

Displacement Calculated 7.75 m<sup>3</sup> bbls Measured 7.6 m<sup>3</sup> of water bbls

Top Plug Yes - Wood Bottom Plug Nil Other Nil

Circ. Time Before Cement 1 hour Bbls. Wash 1.59 m<sup>3</sup>

Start Mix 2226 AM 11 min: Displace 14 min:

Plug Down 2259 AM FWP psi BPP 6894 kPa psi

Remarks Held pressure on casing for one minute, then bled back to NowSCO unit, float held O.K. Good returns through out mixing and displacing had approximately .3 m<sup>3</sup> contaminated mud in returns, no mud loss. Cellophane was added to entire slurry. Displacing rate, .795 m<sup>3</sup>/min. Final rate, .159 m<sup>3</sup>/min.

Fld. Supervisor V. Arndt



**D&S PETROLEUM FIELD SERVICES LTD.**  
**TUBULAR TALLY**

73F 4

WELL: COLUMBIA ET AL KOTANEELEE YT M-17 DATE: 79 01 06 19    
 Size 244.5 mm; Weight 64.75 kg/m; Thread 8RD ; Collar LT&C ; Grade N-80 ; Make Jap.

Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH
1	12 10	21		41		61		81	
2	12 03	22		42		62		82	
3	12 10	23		43		63		83	
4	11 90	24		44		64		84	
5	11 97	25		45		65		85	
6	11 96	26		46		66		86	
7	11 81	27		47		67		87	
8	11 99	28		48		68		88	
9	11 92	29		49		69		89	
10	12 08	30		50		70		90	
TOTAL	119 86	TOTAL		TOTAL		TOTAL		TOTAL	
Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH
11	11 99	31		51		71		91	
12	11 92	32		52		72		92	
13	12 14	33		53		73		93	
14	11 96	34		54		74		94	
15	12 02	35		55		75		95	
16	12 05	36		56		76		96	
17	12 02	37		57		77		97	
18	11 79	38		58		78		98	
19	*12 19	39		59		79		99	
20	*12 18	40		60		80		100	
TOTAL	120 26	TOTAL		TOTAL		TOTAL		TOTAL	

**TALLY SUMMARY**

GROUP NO.	LENGTH	JTS	LENGTH
1-10	119 86		
11-20	120 26	20	240 12
21-30		20	240 12
31-40		2	24 37
41-50		18	215 75
51-60			
61-70			
71-80			
81-90			
91-100			
TOTAL	240 12		

BROUGHT FORWARD  
 PAGE TOTAL  
 TOTAL ON LOCATION  
 TOTAL LEFT OUT (incl. LJ.)  
 TOTAL PERMANENTLY IN HOLE

\* Left out  
 \*\* Damaged

(Note transfer of left out joints to where and by whom.)  
 REMARKS: (Use separate page for each weight, grade or thread.)

2 Joints total 24.37 transfered back to casing rack site  
by air strip via truck. Tompkins unit No. 694 cut off  
joint still on location.

Tallied by V. Arndt



D&S PETROLEUM CONSULTANTS LTD.

CASING SUMMARY

73F2

Casing Size 177.8 mm Casing Type Longstring
Well COLUMBIA ET AL KOTANEELEE YT M-17 Date 79 02 18

Table with 10 columns: MAKE, CSG WT, GR, RGE, THD, T&C, MAKE, JTS RUN, DEPTH LANDED, M RUN IN WELL. Rows include Shoe, Shoe JT., Float Collar, and multiple Casing entries.

Landing Jt (when used) Length
Overall Length of Casing String 1336.04
meters up from K.B. (subtract) 3.10
Setting Depth: Driller Tally 1332.94

Centralizers 8, at 1322 m K.B., 1310 m K.B., 1260 m K.B., 1250 m K.B., 1140 m K.B., 1130 m KB
Scratchers Nil 1010 m K.B., 1000 m K.B.

Weld/Thread Lock (No. Joints) Guide Shoe, Float Collar, 2 Bottom Joints

Cementing Co. Nowsco Cementer: D. Trotter

Cement Volume Lead slurry - 21.23 tonnes Class "G" + 8% gel + 0.5% T-10
Tail in slurry - 12.95 tonnes Class "G" + 15% NaCl 0.75% T-10

Displacement Calculated 24.8 m^3 Measured 23.9 m^3

Top Plug Rubber Bottom Plug Rubber Other

Circ. Time Before Cement Five Hours Bbls. Wash 1.59 m^3 H2O

Start Mix 11:16 AM 47 min Displace 33 min

Plug Down 12:48 PM FWP 10,000 kPa psi BPP 14,000 kPa psi

Remarks

V. Arndt
Fld. Supervisor



**D&S PETROLEUM FIELD SERVICES LTD.**  
**TUBULAR TALLY**

73F 4

WELL: COLUMBIA ET AL KOTANEELEE YT M-17 DATE: 79 02 18 19    
 Size 177.8 mm; Weight 47.72 kg/m; Thread 8RD ; Collar LT&C ; Grade N-80 ; Make Used

Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH
1	12 06	21	12 06	41	11 95	61	11 94	81	12 06
2	11 86	22	11 95	42	12 01	62	12 06	82	11 67
3	12 06	23	12 06	43	12 04	63	11 92	83	12 06
4	12 00	24	11 84	44	12 05	64	12 07	84	11 97
5	11 83	25	11 82	45	11 94	65	11 96	85	12 06
6	11 74	26	12 05	46	12 06	66	11 94	86	12 06
7	11 79	27	12 03	47	11 48	67	11 19	87	12 06
8	12 07	28	12 07	48	11 68	68	12 01	88	11 82
9	11 84	29	11 88	49	11 92	69	12 03	89	11 23
10	11 76	30	12 02	50	11 78	70	12 05	90	12 05
TOTAL	119 01	TOTAL	119 78	TOTAL	118 91	TOTAL	119 17	TOTAL	119 04
Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH
11	12 06	31	11 99	51	12 04	71	12 02	91	12 05
12	11 92	32	11 68	52	11 17	72	12 07	92	11 85
13	11 82	33	12 01	53	11 95	73	12 08	93	12 05
14	12 06	34	11 87	54	12 06	74	11 32	94	12 06
15	10 75	35	11 85	55	12 05	75	12 06	95	12 05
16	12 04	36	11 86	56	12 06	76	12 06	96	11 04
17	12 07	37	11 94	57	11 82	77	11 94	97	12 02
18	12 06	38	12 04	58	12 06	78	12 07	98	12 01
19	12 06	39	11 95	59	12 06	79	11 81	99	12 06
20	11 80	40	12 01	60	12 05	80	11 95	100	11 90
TOTAL	118 64	TOTAL	119 20	TOTAL	119 32	TOTAL	119 38	TOTAL	119 09

**TALLY SUMMARY**

GROUP NO.	LENGTH	JTS	LENGTH
1-10	119 01		
11-20	118 64	100	1191 54
21-30	119 78		
31-40	119 20		
41-50	118 91		
51-60	119 32		
61-70	119 17		
71-80	119 38		
81-90	119 04		
91-100	119 09		
TOTAL	1191 54		

BROUGHT FORWARD  
 PAGE TOTAL  
 TOTAL ON LOCATION  
 TOTAL LEFT OUT (Incl. L.J.)  
 TOTAL PERMANENTLY IN HOLE

\* Left out  
 \*\* Damaged

(Note transfer of left out joints to where and by whom.)  
 REMARKS: (Use separate page for each weight, grade or thread.)  
Threads not included in measurements.  
All joints on this page had been run and retrieved  
on some previous well.

Tallied by V. Arndt



# D&S PETROLEUM FIELD SERVICES LTD.

## TUBULAR TALLY

73F 4

WELL: COLUMBIA ET AL KOTANEELEE YT M-17 DATE: 79 02 18 19    
 Size 177.8 mm; Weight 47.72 kg/m; Thread 8RD; Collar       ; Grade N-80; Make Used

Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH
1 u	12 06	21 **	11 56	41		51		81	
2 u	12 06	22 **	11 99	42		62		82	
3 u	11 92	23 **	12 05	43		63		83	
4 u	11 89	24 **	12 05	44		64		84	
5 u	12 07	25 **	12 06	45		65		85	
6 u	12 07	26 **	10 16	46		66		86	
7 u	12 06	27 **	12 05	47		67		87	
8 n	11 86	28 **	11 99	48		68		88	
9 n	11 86	29 **	12 06	49		69		89	
10 n	12 03	30 **	11 93	50		70		90	
TOTAL	119 88	TOTAL	117 90	TOTAL		TOTAL		TOTAL	
Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH
11 n	11 95	31 **	12 07	51		71		91	
12 n	11 92	32 **	12 03	52		72		92	
13 *	12 06	33 **	11 96	53		73		93	
14 *	11 95	34		54		74		94	
15 *	12 06	35		55		75		95	
16 *	11 92	36		56		76		96	
17 *	11 97	37		57		77		97	
18 **	11 81	38		58		78		98	
19 **	12 03	39		59		79		99	
20 **	11 98	40		60		80		100	
TOTAL	119 65	TOTAL	36 06	TOTAL		TOTAL		TOTAL	

### TALLY SUMMARY

GROUP NO.	LENGTH	JTS	LENGTH
1-10	119 88	100	1191 54
11-20	119 65	33	393 49
21-30	117 90	133	1585 03
31-40	36 06	21	250 00
41-50		112	1324 77
51-60			
61-70			
71-80			
81-90			
91-100			
TOTAL	393 49		

BROUGHT FORWARD  
 PAGE TOTAL  
 TOTAL ON LOCATION  
 TOTAL LEFT OUT (Incl. L.J.)  
 TOTAL PERMANENTLY IN HOLE

\* Left out - new  
 \*\* Damaged  
 n-new casing run  
 u-used casing run

(Note transfer of left out joints to where and by whom.)  
 REMARKS: (Use separate page for each weight, grade or thread.)

Threads not included in measurements

Tallied by V. Arndt



D&S PETROLEUM CONSULTANTS LTD.

TUBING SUMMARY

73F3

Well COLUMBIA ET AL KOTANEELEE YT M-17 Date 79 02 24

KB Elevation 419.10 m KB to CSG FLG. 7.62 m KB to TBG TOP 6.86 m

Casing OD 177.8 m WT 47.72 kg/m MIN DIA 151.6 mm

Set At 1332.9 m K.B. PBD 1320 m K.B. PERFS 1256.5 - 1261.5 m K.B.  
1282.5 - 1286 m K.B. 1300.5 - 1304.5 m K.B.  
1312.5 - 1317 m K.B.

Tubing OD 88.9 mm WT 13.87 kg/m Type CS Make Hydril

No. Joints on Location 356 Tally \*

No. Joints Run 107 Tally \*

PERMANENT STRING FROM BOTTOM UP

No. Joints	Description	Measured Length	KB Depth	Remarks
1	88.9 mm Mule Shoe	0.91 m	988.51 m	Fabricated on Loc.
1	88.9 mm CS Hydril Tubing	8.79 m	979.72 m	
1	Baker Model AD-1 Packer	1.52 m	978.20 m	Set in 10,000 daN tension.
105	88.9 mm CS Hydril Tubing	961.37 m	16.83 m	
1	88.9 mm Double Pin XO Sub	1.15 m	15.68 m	
1	88.9 mm CS Hydril Tubing	8.82 m	6.86 m	

Total String Length	982.56
KB to Tubing Top	6.86
String Depth KB	989.42

Remarks \*Of 356 joints brought to location, 235 were rejected because of bad threads or being crimped. Tubing was strapped in hole to set packer.

Field Supervisor G. Wierzba



**D&S PETROLEUM FIELD SERVICES LTD.**  
**TUBULAR TALLY**

73F 4

WELL: COLUMBIA ET AL KOTANEELEE YT M-17 DATE: 79 02 24 19      
Size 88.9 mm; Weight 13.87 kg/m; Thread CS Hydril, Collar     ; Grade     ; Make     

Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH
1 ***	0 91	21	26 93	41		61		81	
2	8 79	22	26 71	42		62		82	
3 **	**1 52	23	27 80	43		63		83	
4	26 95	24	26 77	44		64		84	
5	27 60	25	26 77	45		65		85	
6	26 81	26	27 60	46		66		86	
7	27 48	27	28 06	47		67		87	
8	28 51	28	27 88	48		68		88	
9	28 33	29	27 28	49		69		89	
10	27 69	30	27 41	50		70		90	
TOTAL	204 59	TOTAL	273 86	TOTAL		TOTAL		TOTAL	
Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH	Joint Number	LENGTH
11	26 71	31	26 82	51		71		91	
12	27 22	32	27 75	52		72		92	
13	27 83	33	27 96	53		73		93	
14	27 02	34	27 17	54		74		94	
15	27 65	35	28 40	55		75		95	
16	27 09	36	27 51	56		76		96	
17	27 22	37	27 71	57		77		97	
18	27 84	38	26 93	58		78		98	
19	27 60	39 ****	1 15	59		79		99	
20	27 71	40	8 82	60		80		100	
TOTAL	273 89	TOTAL	230 22	TOTAL		TOTAL		TOTAL	

**TALLY SUMMARY**

GROUP NO.	LENGTH	JTS	LENGTH	
1-10	204 59			BROUGHT FORWARD
11-20	273 89	107	982 56	PAGE TOTAL
21-30	273 86			TOTAL ON LOCATION
31-40	230 22			TOTAL LEFT OUT (Incl. L.J.)
41-50		107	982 56	TOTAL PERMANENTLY IN HOLE
51-60				
61-70				
71-80				
81-90				
91-100				
TOTAL	982 56			

\* Left out  
\*\* Damaged  
\*\*\* Mule Shoe  
\*\*\*\* Baker Model  
AD-1 Packer  
\*\*\*\*\* Double Pin Sub

(Note transfer of left out joints to where and by whom.)  
REMARKS: (Use separate page for each weight, grade or thread.)  
Of 356 joints brought to location, 235 were rejected because  
of bad threads or being crimped. This tally is strap in hole  
to set packer after redressing same. Packer set at 978.20 m KB

Tallied by G. Wierzba





# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Sixty-Three

73F 10

COLUMBIA ET AL KOTANEELEE

Date: Mar. 5/79 Well: YT M-17 Depth: \_\_\_\_\_ Progress: \_\_\_\_\_

Activity & Remarks: Rig racked - sub pumps, drawworks, derrick at H-38 campsite. Small equipment still at M-17. Mud tanks at Nabors camp. 5 new sections of matting in, changed out rams in BOP's. Cleaned up old lease. Loaded out pre-mix tank and light plant for Ft. Nelson. Removed shale shakers from mud tank, loaded out 17 joints, N-80, 32#, 7", 8RD casing for Derrick.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt.			Pump	No.
Visc.			Stroke	Ser. No.
WL			Liner Size	Size
FC			SPM	Type
pH			Press.	Jets
Gels			m <sup>3</sup> /MIN.	Out
Sd.			An. Vel.	In
Sids.			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHPB	Cum. Hrs.
Ca			HHPB/HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost			
	Cum. Cost			

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	General	11,275
Length		Tripping	Water	304
Size		Deviation Survey	Rent	15
Thd.		SVC Rig	Contingency	1,159
OD		Cut Drilling Line		
ID		Reaming		
Wt.		Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
DP Size				
Conn.				
			Daily Cost	12,753
			Prev. Cost	1,568,356
			Cum. Cost	1,581,109



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Sixty-Two

73F 10

Date: Mar. 4/79 Well: COLUMBIA ET AL KOTANEELEE Depth: \_\_\_\_\_ Progress: \_\_\_\_\_  
 Well: YT M-17

Activity & Remarks: Moved derrick, boiler, water tank and matting to rack site.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt.			Pump	No.
Visc.			Stroke	Ser. No.
WL			Liner Size	Size
FC			SPM	Type
pH			Press.	Jets
Gels			m <sup>3</sup> /MIN.	Out
Sd.			An. Vel.	In
Sids.			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHP <sub>B</sub>	Cum. Hrs.
Ca			HHP <sub>B</sub> /HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
		Daily Cost		
		Cum. Cost		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	General	11,275
Length		Tripping	Water	304
Size		Deviation Survey	Rent	15
Thd.		SVC Rig	Contingency	1,159
OD		Cut Drilling Line		
ID		Reaming		
Wt.		Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
DP Size				
Conn.				
			Daily Cost	12,753
			Prev. Cost	1,555,603
			Cum. Cost	1,568,356



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Sixty-One

73F 10

Date: Mar. 3/79 Well: COLUMBIA ET AL KOTANEELEE YT M-17 Depth: \_\_\_\_\_ Progress: \_\_\_\_\_

Activity & Remarks: Man motors and load out same. Laid down A-frame. Move various loads up to H-38 rack site.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt.			Pump	No.
Visc.			Stroke	Ser. No.
WL			Liner Size	Size
FC			SPM	Type
pH			Press.	Jets
Gels			m <sup>3</sup> /MIN.	Out
Sd.			An. Vel.	In
Slds.			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHP <sub>B</sub>	Cum. Hrs.
Ca			HHP <sub>B</sub> /HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
		Daily Cost		
		Cum. Cost		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	General	11,275
Length		Tripping	Water	456
Size		Deviation Survey	Rent	15
Thd.		SVC Rig	Contingency	1,174
OD		Cut Drilling Line		
ID		Reaming		
Wt.		Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
DP Size				
Conn.				
			Daily Cost	12,920
			Prev. Cost	1,542,683
			Cum. Cost	1,555,603



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Sixty

73F 10

Date: Mar. 2/79 Well: COLUMBIA ET AL KOTANEHELEE Depth: \_\_\_\_\_ Progress: \_\_\_\_\_  
 Well: YT M-17

Activity & Remarks: Remove Ex-Log unit, mud tanks, pumps and monkey board. Attempted to remove fluid end from D-1000.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt.			Pump	No.
Visc.			Stroke	Ser. No.
WL			Liner Size	Size
FC			SPM	Type
pH			Press.	Jets
Gels			m <sup>3</sup> /MIN.	Out
Sd.			An. Vel.	In
Slds.			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHPb	Cum. Hrs.
Ca			HHPb/HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost			
	Cum. Cost			

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	General	11,275
Length		Tripping	Water	722
Size		Deviation Survey	Rentals	15
Thd.		SVC Rig	Contingency	1,201
OD		Cut Drilling Line		
ID		Reaming		
Wt.		Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
DP Size				
Conn.				
			Daily Cost	13,213
			Prev. Cost	1,529,470
			Cum. Cost	1,542,683



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

73F 10

Day No. Fifty-Nine

COLUMBIA ET AL KOTANEELEE

Date: Mar. 1/79 Well: YT M-17 Depth: \_\_\_\_\_ Progress: \_\_\_\_\_

Activity & Remarks: Tear out rig.

Laid down derrick and prepare for move. Tear out electric lines and mud tanks. Drain brake drum and hydramatic. Split compound, drain motors, jack motor skids apart. Remove tie down on drawworks and de-ice matting.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt.			Pump	No.
Visc.			Stroke	Ser. No.
WL			Liner Size	Size
FC			SPM	Type
pH			Press.	Jets
Gels			m <sup>3</sup> /MIN.	Out
Sd.			An. Vel.	In
Slds.			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHP <sub>B</sub>	Cum. Hrs.
Ca			HHP <sub>B</sub> /HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
		Daily Cost		
		Cum. Cost		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	General	11,275
Length		Tripping	Water	608
Size		Deviation Survey	Rent	88
Thd.		SVC Rig	Contingency	1,197
OD		Cut Drilling Line		
ID		Reaming		
Wt.		Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
DP Size				
Conn.				
			Daily Cost	13,168
			Prev. Cost	1,516,302
			Cum. Cost	1,529,470



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Fifty-Eight

73F 10

Date: Feb. 28/79 Well: COLUMBIA ET AL KOTANEELEE YT M-17 Depth: 1332 m Progress: -

Activity & Remarks: Tear out and de-ice matting.  
Tear out rig floor, flare lines, manifold shack and BOP hydraulic  
lines. Remove tie down bolts on fluid end of D-1000 pump. Tear out de-gasser lines  
drain l valve and seat in H-850 pump. De-ice matting.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt.			Pump	No.
Visc.			Stroke	Ser. No.
WL			Liner Size	Size
FC			SPM	Type
pH			Press.	Jets
Gels			m <sup>3</sup> /MIN.	Out
Sd.			An. Vel.	In
Slds.			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHPB	Cum. Hrs.
Ca			HHPB/HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost			
	Cum. Cost			

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	General	11,275
Length		Tripping	Water	532
Size		Deviation Survey	Rent	106
Thd.		SVC Rig	Contingency	1,191
OD		Cut Drilling Line		
ID		Reaming		
Wt.		Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
DP Size				
Conn.				
			Daily Cost	13,104
			Prev. Cost	1,503,198
			Cum. Cost	1,516,302



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Fifty-Seven

73F 10

Date: Feb. 27/79 Well: COLUMBIA ET AL KOTANELEE  
YT M-17 Depth: 1332 m Progress: \_\_\_\_\_

Activity & Remarks: Tearing out rig.

Shut well in, injected 2 barrels of diesel down tubing. Shut in  
 pressure after 6 hours, 2585 kPa. RIG RELEASED, 1600 HOURS, 79 02 26.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. _____			Pump _____	No. _____
Visc. _____			Stroke _____	Ser. No. _____
WL _____			Liner Size _____	Size _____
FC _____			SPM _____	Type _____
pH _____			Press. _____	Jets _____
Gels _____			m <sup>3</sup> /MIN. _____	Out _____
Sd. _____			An. Vel. _____	In _____
Slds. _____			Jet Vel. _____	Metres _____
Oil _____			HHPs _____	Hours _____
Cl _____			HHPg _____	Cum. Hrs. _____
Ca _____			HHPg/HHPs _____	m/Hr. _____
PV _____				Teeth _____
YP _____				Bear. _____
				Gauge _____
				Wt. _____
				RPM _____
	Daily Cost			
	Cum. Cost			

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C. _____		Drilling _____	General	12,150
Length _____		Tripping _____	Water	570
Size _____		Deviation Survey _____	Rent	106
Thd. _____		SVC Rig _____	Contingency	1,282
OD _____		Cut Drilling Line _____		
ID _____		Reaming _____		
Wt. _____		Condition Mud & Circulating _____		
Eff. Wt. _____		Logging _____		
Stabilizers _____		Repair Rig _____		
DP Size _____				
Conn. _____				
			Daily Cost	14,108
			Prev. Cost	1,489,090
			Cum. Cost	1,503,198



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Fifty-Six

73F 10

Date: Feb. 26/79 Well: COLUMBIA ET AL KOTANEELEE  
YT M-17 Depth: 1332 m Progress: -

Activity & Remarks: Flowing well.

Pull out of hole with Schlumberger. Shut well in for 1 1/4, pres-  
sure built to 2760 kPa. Open to flow, 78 m<sup>3</sup> in 21 hours. Gassing slightly, H<sub>2</sub>S,  
100 ppm.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt.			Pump	No.
Visc.			Stroke	Ser. No.
WL			Liner Size	Size
FC			SPM	Type
pH			Press.	Jets
Gels			m <sup>3</sup> /MIN.	Out
Sd.			An. Vel.	In
Slds.			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHPB	Cum. Hrs.
Ca			HHPB/HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
		Daily Cost		
		Cum. Cost		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	General	12,150
Length		Tripping	Water	456
Size		Deviation Survey	Rent	106
Thd.		SVC Rig	Schlumberger	21,500
OD		Cut Drilling Line	Contingency	3,421
ID		Reaming		
Wt.		Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
DP Size				
Conn.				
			Daily Cost	37,633
			Prev. Cost	1,451,457
			Cum. Cost	1,489,090



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Fifty-Five

73F 10

Date: Feb. 25/79 Well: COLUMBIA ET AL KOTANEELLEE PBD - 1319 m Progress: -  
 Activity & Remarks: Pull out of hole with perforating gun.  
Circulate annulus to inhibited water topped with 0.8 m<sup>3</sup> diesel.  
Land packer in 10,000 daN tension at 980 m K.B. Install wellhead. Pressure test tubing  
and wellhead to 29,000 kPa for 20 minutes, OK. Ran Gamma Ray CCL from 1319 to 1100 m.  
Perforate, 1312.5 - 1317 m, 1300.5 - 1304.5 m, 1282.5 - 1286 m, 1256.5 - 1261.5 m K.B.  
 Deviation Surveys: BHCS log intervals with 54 mm tubing gun at 13 JSPM. 1 misrun.

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt.			Pump	No.
Visc.			Stroke	Ser. No.
WL			Liner Size	Size
FC			SPM	Type
pH			Press.	Jets
Gels			m <sup>3</sup> /MIN.	Out
Sd.			An. Vel.	In
Slds.			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHPb	Cum. Hrs.
Ca			HHPb/HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost			
	Cum. Cost			

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	General	12,150
Length		Tripping	Water	608
Size		Deviation Survey	Rent	106
Thd.		SVC Rig	Powell	6,975
OD		Cut Drilling Line	Nowasco	1,500
ID		Reaming	Weatherford	4,242
Wt.		Condition Mud & Circulating	Contingency	2,558
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
DP Size				
Conn.				
			Daily Cost	28,139
			Prev. Cost	1,423,318
			Cum. Cost	1,451,457



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Fifty-Four

73F 10

Date: Feb. 24/79 Well: COLUMBIA ET AL KOTANEELEE Depth: 1332 m Progress: -

Activity & Remarks: Circulate annulus to inhibited water.

Wait on Nowsco, displace hole to water. Shut down for 2 hours for plant start up. While pulling up to setting depth, packer set and sheared. Strap out of hole. Re-dress packer and ran in hole.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt.			Pump	No.
Visc.			Stroke	Ser. No.
WL			Liner Size	Size
FC			SPM	Type
pH			Press.	Jets
Gels			m <sup>3</sup> /MIN.	Out
Sd.			An. Vel.	In
Slds.			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHPg	Cum. Hrs.
Ca			HHPg/HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost			
	Cum. Cost			

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	General	12,150
Length		Tripping	Water	646
Size		Deviation Survey	Rent	106
Thd.		SVC Rig	Contingency	1,290
OD		Cut Drilling Line		
ID		Reaming		
Wt.		Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
DP Size				
Conn.				
			Daily Cost	14,192
			Prev. Cost	1,409,136
			Cum. Cost	1,423,318





# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

73F 10

Day No. Fifty-Two

Date: Feb. 22/79 Well: COLUMBIA ET AL KOTANEELEE Depth: 1332 m Progress: -

Activity & Remarks: Running 88.9 mm tubing.  
Finish laying down drill pipe. Tear out BOP's, install tubing hanger. Rig up power tongs and run tubing. Run mule shoe, 1 joint tubing, Baker AD-1 packer and tubing.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt.			Pump	No.
Visc.			Stroke	Ser. No.
WL			Liner Size	Size
FC			SPM	Type
pH			Press.	Jets
Gels			m <sup>3</sup> /MIN.	Out
Sd.			An. Vel.	In
Slids.			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHP <sub>B</sub>	Cum. Hrs.
Ca			HHP <sub>B</sub> /HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost			
	Cum. Cost			

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	General	14,550
Length		Tripping	Water	456
Size		Deviation Survey	Rent	106
Thd.		SVC Rig	Power Tong	4,346
OD		Cut Drilling Line	Cement	8,276
ID		Reaming	Contingency	2,774
Wt.		Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
DP Size				
Conn.				
			Daily Cost	30,507
			Prev. Cost	1,364,469
			Cum. Cost	1,394,976



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Fifty-One

73F 10

Date: Feb. 21/79 Well: COLUMBIA ET AL KOTANEELEE Depth: 1332 m Progress: -  
 Well: YT M-17

Activity & Remarks: Laying down drill pipe.  
Circulate to condition mud. Cemented with 21.3 tonnes 0-1-8 with  
0.5% T-10, 12.95 tonnes 0-1-0 with 15% NaCl and 0.7% T-10. Plug down at 1250 hours.  
Bumped with 14,000 kPa. Tore out BOP's, bled off casing at 2300 hours. Cut casing,  
re-installed BOP's. Lay down pipe.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt.			Pump	No.
Visc.			Stroke	Ser. No.
WL			Liner Size	Size
FC			SPM	Type
pH			Press.	Jets
Gels			m <sup>3</sup> /MIN.	Out
Sd.			An. Vel.	In
Sids.			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHP <sub>B</sub>	Cum. Hrs.
Ca			HHP <sub>B</sub> /HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost			
	Cum. Cost			

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	General	11,550
Length		Tripping	Water	646
Size		Deviation Survey	Rentals	106
Thd.	3/4	SVC Rig	Casing	57,250
OD		Cut Drilling Line	Cementing	8,685
ID		Reaming	Contingency	7,824
Wt.	2 1/4	Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers	3	Repair Rig		
		Cementing operations		
DP Size	6 3/4	Wait on cement		
Conn.	1 3/4	Bleed off and cut casing		
	3 1/2	Rig out BOP's		
	6	Lay down drill collar & drill pipe		
			Daily Cost	86,061
			Prev. Cost	1,278,408
			Cum. Cost	1,364,469



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Fifty

73F 10

Date: Feb. 20/79 Well: COLUMBIA ET AL KOTANEELLEE Depth: 1332 m Progress: -  
 Well ID: YT M-17

Activity & Remarks: Circulate and prepare to cement casing.  
Circulate and work casing while waiting on wireline equipment to  
check casing. Rig up wireline tools. Run in hole with rubber plug on sinker bar.  
Tag float collar. Pressure test casing to 9000 kPa for 10 minutes. No bleed off.  
Rig out wireline equipment.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. 1340	Gel 681 kg		Pump D-1000	No.
Visc. 95	Caustic 22.7 kg		Stroke	Ser. No.
WL			Liner Size	Size
FC			SPM 35	Type
pH 9.0			Press. 2000	Jets
Gels			m <sup>3</sup> /MIN.	Out
Sd.			An. Vel.	In
Slds.			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHP <sub>B</sub>	Cum. Hrs.
Ca			HHP <sub>B</sub> /HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost	170		
	Cum. Cost	32852		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	General	11,550
Length		Tripping	Water	646
Size		Deviation Survey	Mud	170
Thd.	3/4	SVC Rig	Rentals	106
OD		Cut Drilling Line	Contingency	1,247
ID		Reaming		
Wt.	10 1/2	Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
	5 3/4	Rig up wireline tools		
DP Size	3	Test casing		
Conn.	4	Circulate and prepare to cement casing		
			Daily Cost	13,719
			Prev. Cost	1,264,689
			Cum. Cost	1,278,408



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Forty-Nine

73F 10

Date: Feb. 19/79 Well: COLUMBIA ET AL KOTANEELEE  
YT M-17 Depth: 1332 m Progress: -

Activity & Remarks: Circulate casing and condition mud.  
Run 112 joints 177 mm, 47.62 kg/m, N-80, 8RD casing. Break circ-  
ulation and circulate at 429 m - 8000 kPa. Run in hole to bottom. Mud coming over  
casing on last 4 m of last several joints. Circulate and condition mud.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. 1370	Gel 363 kg		Pump H-850 D-1000	No.
Visc. 120	Barite 5448		Stroke 381	Ser. No.
WL 8.0			Liner Size 152	Size
FC 2			SPM 40 36	Type
pH 8.0			Press. 1250 2200	Jets
Gels 9/35			m <sup>3</sup> /MIN.	Out
Sd. -			An. Vel.	In
Slids. 19			Jet Vel.	Metres
Oil -			HHPs	Hours
Cl 500			HHPB	Cum. Hrs.
Ca 80			HHPB/HHPs	m/Hr.
PV 55				Teeth
YP 40				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost	1259		
	Cum. Cost	32682		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	General	11,550
Length		Tripping	Water	646
Size		Deviation Survey	Mud	1,259
Thd.	1/4	SVC Rig	Rent	103
OD		Cut Drilling Line	Newsco	600
ID		Reaming	Contingency	1,415
Wt.		Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
	9	Run casing		
DP Size	3 1/2	Circulate casing while running		
Conn.	11 1/4	Circulate casing on bot- tom		
			Daily Cost	15,573
			Prev. Cost	1,249,116
			Cum. Cost	1,264,689



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Forty-Eight

73F 10

Date: Feb. 18/79 Well: COLUMBIA ET AL KOTANEELEE Depth: 1332 m Progress: -  
 Well: YT M-17

Activity & Remarks: Running casing.

Trip and log. Rig with Schlumberger, run CNL-FDC TD - surface casing. Rig out Schlumberger. Trip in hole with bit and BHA. Circulate and condition mud in hole for casing. Pull out of hole, break connections and stand back in derrick. Lay down BHA, change pipe rams and rig to run casing.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. <u>1340</u>	<u>Gel 807 kg</u>		Pump <u>D-1000</u>	No. <u>18RR</u>
Visc. <u>143</u>	<u>Barite 1480</u>		Stroke _____	Ser. No. _____
WL _____	<u>Unical 22.7</u>		Liner Size _____	Size <u>215.9</u>
FC _____			SPM <u>46</u>	Type <u>XDV</u>
pH <u>10.0</u>			Press. <u>5000</u>	Jets _____
Gels _____			m <sup>3</sup> /MIN. <u>1.04</u>	Out <u>Clean out trip</u>
Sd. _____			An. Vel. <u>41.6</u>	In _____
Slds. _____			Jet Vel. _____	Metres _____
Oil _____			HHPs _____	Hours _____
Cl _____			HHPg _____	Cum. Hrs. _____
Ca _____			HHPg/HHPs _____	m/Hr. _____
PV _____				Teeth _____
YP _____				Bear. _____
				Gauge _____
				Wt. _____
				RPM _____
	Daily Cost	<u>521</u>		
	Cum. Cost	<u>1423</u>		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C. _____		Drilling _____	<u>General</u>	<u>11,550</u>
Length _____	<u>9 1/4</u>	Tripping _____	<u>Water</u>	<u>570</u>
Size _____		Deviation Survey _____	<u>Mud</u>	<u>521</u>
Thd. _____	<u>1/4</u>	SVC Rig _____	<u>Rent</u>	<u>358</u>
OD _____		Cut Drilling Line _____	<u>Newsco</u>	<u>600</u>
ID _____		Reaming _____	<u>Schlumberger</u>	<u>24,497</u>
Wt. _____	<u>3 1/2</u>	Condition Mud & Circulating _____	<u>Contingency</u>	<u>3,809</u>
Eff. Wt. _____	<u>5</u>	Logging _____		
Stabilizers _____		Repair Rig _____		
	<u>4 1/2</u>	<u>Rig to run casing</u>		
DP Size _____	<u>1 1/2</u>	<u>Running casing</u>		
Conn. _____				
<u>D.P., crossover, 12</u>				
<u>drill collars, jars, 3</u>				
<u>drill collars, shock sub,</u>				
<u>stabilizer, 2 drill collars,</u>				
<u>stabilizer, 1 drill collar,</u>				
<u>NB reamer, Bit</u>				
			Daily Cost	<u>41,905</u>
			Prev. Cost	<u>1,207,211</u>
			Cum. Cost	<u>1,249,116</u>



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Forty-Seven

73F 10

Date: Feb. 17/79 Well: COLUMBIA ET AL KOTANEELEE Depth: 1332 m Progress: 0  
 Well: YT M-17

Activity & Remarks: Trip out to log.

Remove wiper from BOP's. Rig up and log: DILL-BHCS, CNL-FDC.

Density tool failed. Rig out Schlumberger. Trip in hole. Broke circulation, lost approximately 13-16 m<sup>3</sup> mud to hole. Circulate hole and build mud volume. Measure out.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. 1330	Gel 1906 kg		Pump D-1000	No. 18RR
Visc. 150	Barite 5039		Stroke	Ser. No.
WL	Unical 22.7		Liner Size	Size 215.9
FC	Caustic 22.7 kg		SPM 46	Type XDV
pH			Press. 5000	Jets
Gels 9.5			m <sup>3</sup> /MIN. 1.04	Out
Sd.			An. Vel. 41.6	In <u>Clean out trip</u>
Sids.			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHP <sub>B</sub>	Cum. Hrs.
Ca			HHP <sub>B</sub> /HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost	1551		
	Cum. Cost	30902		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	7 1/4	Drilling	General	11,550
Length		Tripping	Water	380
Size		Deviation Survey	Mud	1,551
Thd.	3/4	SVC Rig	Rent	453
OD	2 3/4	Cut Drilling Line	NowSCO	600
ID		Reaming	Contingency	1,453
Wt.	5 1/2	Condition Mud & Circulating	<u>Build</u>	
Eff. Wt.	7 3/4	Logging	<u>vol.</u>	
Stabilizers		Repair Rig		
DP Size				
Conn.				
			Daily Cost	15,987
			Prev. Cost	1,191,224
			Cum. Cost	1,207,211





# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

73F 10

-28 clear and calm

Day No. Forty-Five

Date: Feb. 15/79 Well: COLUMBIA ET AL KOTANEELEE YT M-17 Depth: 1332 m Progress: 0

Activity & Remarks: Pull out of hole to log.  
Ream bridges from 364-421, 820-840, 1067-1085 and 1208-1227 m. Run in to bottom - no fill. Circulate and condition mud. Pump pill. Dummy trip to casing shoe and return to bottom. No tight spots. Circulate hole clean. Trip out to log.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics		Bits	
Wt. 1360	1134 kg Gel	239	Pump	D1000	No.	17
Visc. 200	4587 kg Barite	996	Stroke	457	Ser. No.	31352215.9
WL	45 kg Unical	57	Liner Size	140	Size	JD7
FC			SPM	45	Type	3 - 8.7's
pH 9.0			Press.	8000	Jets	-
Gels			m <sup>3</sup> /MIN.	1.02	Out	1328
Sd.			An. Vel.	40.7	In	4
Slids.			Jet Vel.		Metres	9
Oil			HHPs		Hours	639
Cl			HHPg		Cum. Hrs.	0.44
Ca			HHPg/HHPs		m/Hr.	
PV					Teeth	
YP					Bear.	
					Gauge	
					Wt.	12
					RPM	50
	Daily Cost	1292				
	Cum. Cost	28935				

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	General	12,350
Length	8 1/4	Tripping	Water	456
Size		Deviation Survey	Rent	453
Thd.	3/4	SVC Rig	Mud	1,292
OD		Cut Drilling Line	Contingency	1,455
ID	9 1/2	Reaming		
Wt.	5 1/2	Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
DP Size				
Conn.				
D.P., crossover, 12				
drill collars, jars, 3				
drill collars, shock sub,				
stabilizer, 2 drill collars,			Daily Cost	16,006
stabilizer, 1 drill collar,			Prev. Cost	1,159,558
NB Reamer, Bit			Cum. Cost	1,175,564



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Forty-Four

73F 10

Date: Feb. 14/79 Well: COLUMBIA ET AL KOTANEELEE Depth: 1332 m Progress: 2 m  
 Well: YT M-17

Activity & Remarks: Circulate and condition hole at 303 m.  
Drill to 1332 m. Slug pipe, pull out to bottom hole assembly. Run in to 285 m.  
Ream and wash sloughing hole from 285 m to 303 m. Strap pipe - no correction made.

Deviation Surveys: \_\_\_\_\_

Properties		MUD Mat'l Used		Cost	Hydraulics		Bits	
Wt.	1350	Gel	590kg	124	Pump	D-1000	No.	17
Visc.	165	Barite	2270kg	493	Stroke		Ser. No.	31352
WL		Caustic	113kg	133	Liner Size		Size	215.9
FC		Unical	45kg	57	SPM	45	Type	JD7
pH	9.5				Press.	7500	Jets	3-8.7's
Gels					m <sup>3</sup> /MIN.	1.02	Out	
Sd.					An. Vel.	40.7	In	1328
Sids.					Jet Vel.		Metres	4
Oil					HHPs		Hours	9
Cl					HHPB		Cum. Hrs.	639
Ca					HHPB/HHPs		m/Hr.	0.44
PV							Teeth	
YP							Bear.	
							Gauge	
							Wt.	12
							RPM	50
		Daily Cost		807				
		Cum. Cost		27643				

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	7	Drilling	General	12,350
Length	3	Tripping	Water	456
Size		Deviation Survey	Mud	807
Thd.	1/4	SVC Rig	Rent	453
OD		Cut Drilling Line	Contingency	1,406
ID	13 3/4	Reaming, Circulate & Cond.		
Wt.		Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
DP Size				
Conn.				
D.P., crossover, 12				
drill collars, jars, 3				
drill collars, shock sub,				
stabilizer, 2 drill collars,			Daily Cost	15,472
stabilizer, 1 drill collar,			Prev. Cost	1,144,086
NB Reamer, Bit			Cum. Cost	1,159,558



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Forty-Three

73F 10

Date: Feb. 13/79 Well: COLUMBIA ET AL KOTANEELEE  
YT M-17 Depth: 1330 m Progress: 2 m

Activity & Remarks: Drilling.  
Drilling Rate - 0.8, Background gas - 1, Cuttings Gas - 0, Flowline Temperature - 30°C,  
Lithology - 100% sandstone. Service rig, circulate and increase mud weight. Trip for  
bit. Turn pins on near bit reamer. Trip in hole to 1310 m. Ream 18 m to bottom.  
Measure out 1.8 metres longer than tally, no adjustment.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. 1350	Barite 22119kg	4805	Pump D-1000	No. 16 17
Visc. 68	Gel 318kg	67	Stroke	Ser. No. 31352
WL			Liner Size	Size
FC			SPM 45	Type JD7
pH 8.5			Press. 7000	Jets 3-8.7's
Gels			m³/MIN. 1.02	Out 1328
Sd.			An. Vel. 40.7	In 1328
Sids.			Jet Vel.	Metres 108 2
Oil			HHPs	Hours 72 3/4 2
Cl			HHPg	Cum. Hrs. 630 632
Ca			HHPg/HHPs	m/Hr. 1
PV				Teeth 8
YP				Bear. 6
				Gauge 2
				Wt. 12M
	Daily Cost 4872			RPM 50
	Cum. Cost 26836			Reamer cutters 1/8" under

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	2	Drilling	General	12,350
Length	6 3/4	Tripping	Water	418
Size		Deviation Survey	Mud	4,872
Thd.	3/4	SVC Rig	Rent	453
OD		Cut Drilling Line	Bit	1,100
ID	1 1/2	Reaming	Contingency	1,919
Wt.	11 3/4	Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
	1 1/4	Tool up		
DP Size				
Conn.				
D.P., crossover, 12				
drill collars, jars, 3				
drill collars, shock sub,				
stabilizer, 2 drill collars,			Daily Cost	21,112
stabilizer, 1 drill collar,			Prev. Cost	1,122,974
NB reamer, bit			Cum. Cost	1,144,086



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

73F 10

-30° Clear and Calm

Day No. Forty-Two

COLUMBIA ET AL KOTANEELEE

Date: Feb. 12/79 Well: YT M-17 Depth: 1328 m Progress: 27 mActivity & Remarks: Circulate and raise mud weight for trip.

Service rig, check crown-o-matic. Drilled ahead, ran survey, drilled ahead. Start out of hole measuring, well flowing, trip back to bottom. Shut-in well. Shut-in casing pressure 1035 kPa. Circulate and raise mud weight. Drilling rate - .77 m/hr., Background gas - 48 units, cuttings gas - 0, Temperature 36.2°. Lithology: - 100% sandstone. Gain 1/2 m<sup>3</sup>/h prior to trip.

Deviation Surveys: 1323 - 5 1/2°

Properties	MUD Mat'l Used	Cost	Hydraulics		Bits	
Wt.	1200 1725 kg Gel	363	Pump	D-1000	No.	16
Visc.	65 5675 kg Barite	1233	Stroke	457	Ser. No.	136759
WL	23 kg Caustic	27	Liner Size	140	Size	215.9
FC	23 kg Unical	29	SPM	45	Type	FP 62J
pH	9.5		Press.	7000	Jets	8.7
Gels			m <sup>3</sup> /MIN.	1.02	Out	1328
Sd.			An. Vel.	40.7	In	1220
Sids.			Jet Vel.		Metres	108
Oil			HHPs		Hours	72 3/4
Cl			HHPB		Cum. Hrs.	630
Ca			HHPB/HHPs		m/Hr.	
PV					Teeth	
YP					Bear.	
					Gauge	
					Wt.	12000
					RPM	42
	Daily Cost	1652				
	Cum. Cost	21964				

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	19	Drilling	General	12,350
Length	2	Tripping	Water	530
Size	3/4	Deviation Survey	Mud	1,652
Thd.	3/4	SVC Rig	Rental	453
OD		Cut Drilling Line	Contingency	10,498
ID		Reaming		
Wt.	1	Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
	1/2	Well shut-in - check pressures		
DP Size				
Conn.				
D.P., crossover, 12				
drill collars, jars, 3				
drill collars, shock sub,				
stabilizer, 2 drill collars,			Daily Cost	16,485
stabilizer, 1 drill collar,			Prev. Cost	1,106,489
NB reamer, bit			Cum. Cost	1,122,974



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

73F 10

-36°, Clear and calm

Day No. Forty-One

Date: Feb. 11/79 Well: COLUMBIA ET AL KOTANEELEE Depth: 1301 m Progress: 31 m

Activity & Remarks: Drilling.

Service rig, drill. Check annulus pressure - 500 kPa in 5 minutes increasing to 950 kPa in 15 minutes. Survey and drill to 1290 m. Circulate and increase mud weight to 1180.

Drill ahead. Drilling rate - 1 m/hr., Background gas - 0, Temperature - 36°, Lith:- 70% sandstone, 30% limestone.

Deviation Surveys: 1285 - 5 1/2°

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. 1220	Gel 3995kg	841	Pump D-1000	No. 16
Visc. 75	Barite 13080kg	2842	Stroke 457	Ser. No. 136759
WL	Unical 45.4kg	57	Liner Size 140	Size 215.9
FC	Caustic 45.4kg	53	SPM 45	Type FP62
pH 9.5			Press. 6700	Jets 3 - 8.7's
Gels			m <sup>3</sup> /MIN. 1.02	Out -
Sd.			An. Vel. 40.7	In 1220
Slds.			Jet Vel.	Metres 81
Oil			HHPs	Hours 53 1/4
Cl			HHPB	Cum. Hrs. 611
Ca			HHPB/HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt. 12
				RPM 42
	Daily Cost	3793		
	Cum. Cost	20312		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	20	Drilling	General	12,350
Length		Tripping	Water	456
Size	1/2	Deviation Survey	Mud	3,793
Thd.	3/4	SVC Rig	Rent	453
OD		Cut Drilling Line	Contingency	1,705
ID		Reaming		
Wt.	2	Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
	3/4	Record shut-in pressure		
DP Size				
Conn.				
			Daily Cost	18,757
			Prev. Cost	1,087,732
			Cum. Cost	1,106,489



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

73F 10

-30, light snow and calm

Day No. Forty

Date: Feb. 10/79 Well: COLUMBIA ET AL KOTANEELEE Depth: 1270 m Progress: 33 m

Activity & Remarks: Drilling ahead.  
Drilling, service rig. Drilling at 1256 m - had drilling break. Check flow rate-6 m<sup>3</sup>/hr.  
Shut-in over 850 kPa. Drill to 1259 m, check shut-in - 1100 kPa. Service rig and drill  
ahead. Drilling Rate - 1.7 m/hr., Background Gas - 140, Cuttings Gas - 0, Flowline Temp.  
38°C, 2.5 m<sup>3</sup>/hr. average flow. Lithology:- 90% Sandstone, 10% Limestone  
 Deviation Surveys: 1255 m -5 1/2°

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. <u>1060</u>	<u>Gel</u> 3223kg	<u>678</u>	Pump <u>D-1000</u>	No. <u>16</u>
Visc. <u>75</u>	<u>Caustic</u> 68kg	<u>80</u>	Stroke <u>457</u>	Ser. No. <u>136759</u>
WL			Liner Size <u>140</u>	Size <u>215.9</u>
FC			SPM <u>50</u>	Type <u>FP 62 J</u>
pH <u>9.5</u>			Press. <u>7500</u>	Jets <u>3-8.7's</u>
Gels			m <sup>3</sup> /MIN. <u>1.13</u>	Out
Sd.			An. Vel. <u>45.3</u>	In <u>1220</u>
Slds.			Jet Vel.	Metres <u>50</u>
Oil			HHPs	Hours <u>33 1/4</u>
Cl			HHPB	Cum. Hrs. <u>591</u>
Ca			HHPB/HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt. <u>12</u>
				RPM <u>42</u>
	Daily Cost	<u>758</u>		
	Cum. Cost	<u>16519</u>		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	<u>21 3/4</u>	Drilling	<u>General</u>	<u>12,350</u>
Length		Tripping	<u>Water</u>	<u>532</u>
Size	<u>1/2</u>	Deviation Survey	<u>Mud</u>	<u>758</u>
Thd.	<u>3/4</u>	SVC Rig	<u>Rent</u>	<u>453</u>
OD		Cut Drilling Line	<u>Contingency</u>	<u>1,409</u>
ID		Reaming		
Wt.		Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
	<u>1</u>	<u>Check shut-ins</u>		
DP Size				
Conn.				
			Daily Cost	<u>15,502</u>
			Prev. Cost	<u>1,072,230</u>
			Cum. Cost	<u>1,087,732</u>



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Thirty-Nine

73F 10

COLUMBIA ET AL KOTANEELEE

Date: Feb. 9/79 Well: YT M-17 Depth: 1237 m Progress: 17 m

Activity & Remarks: Drilling ahead.  
Drilling Rate - 1.4 m/hr., Background Gas - 90 units, Cuttings Gas - 0 units, Flowline Temperature - 36°C, Lith: 100% Sandstone. Trip for bit, change reamer cutters, pins and 2 blocks. Pick up new shock sub. Trip in with reamer 7 m to bottom. Drilled ahead, rig service, check crown saver and survey. Gained 18 m<sup>3</sup>

Deviation Surveys: fluid on trip out, (1.45 m<sup>3</sup>/hr.). Surveys - 1220 m - 5 1/4°, 1235 m - 5 1/2°

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. 1060	Gel 2451 kg	516	Pump D-1000	No. 15 16
Visc. 70	Caustic 47.8 kg	53	Stroke	Ser. No. 136759
WL			Liner Size	Size -
FC			SPM 50	Type FP62J
pH 10.0			Press. 7000	Jets 3-8.7
Gels			m <sup>3</sup> /MIN. 1.13	Out -
Sd.			An. Vel. 45.3	In 1220
Slds.			Jet Vel.	Metres 17
Oil			HHPs	Hours 11 1/2
Cl			HHPB	Cum. Hrs. 569 1/4
Ca			HHPB/HHPs	m/Hr. 1.5
PV				Teeth 6 -
YP				Bear. 3 -
				Gauge 1/8 -
				Wt. 12
				RPM 44
	Daily Cost	569		
	Cum. Cost	15761		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	11 1/2	Drilling	General	12,350
Length	7	Tripping	Water	380
Size	1/2	Deviation Survey	Mud	569
Thd.	1/4	SVC Rig	Rent	453
OD		Cut Drilling Line	Bit	3,200
ID	1	Reaming	Reamer Cutters	1,260
Wt.		Condition Mud & Circulating	Contingency	1,821
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
	3 3/4	Tool up		
DP Size				
Conn.				
D.P., crossover, 12				
drill collars, jars, 3				
drill collars, shock sub,				
stabilizer, 2 drill collars,			Daily Cost	20,039
stabilizer, 1 drill collar,			Prev. Cost	1,052,191
NB reamer, bit			Cum. Cost	1,072,230



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

73F 10

Day No. Thirty-Eight

Date: Feb. 8/79 Well: COLUMBIA ET AL KOTANEELEE Depth: 1220 m Progress: 15 m  
 Well: YT M-17

Activity & Remarks: Trip for bit.

Drilling Rate - 1.5, Background Gas - 70 units, Flowline Temperature - 37°C, Cuttings Gas - 0 units, Lith: 100% Sandstone. Pull out of hole. Hole tight on 15-17 stands off bottom. Measure out, OK. Turned reamer pins, install float in string service rig, check crown saver and motor shut offs. Trip in hole, ream bottom

Deviation Surveys: 9 m. Drill ahead, circulate for trip, survey and trip out. 10 m<sup>3</sup> pit gain on trip. Survey -1205 m - 5 1/4°

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. 1060	Gel 2642 kg	556	Pump D-1000	No. 14
Visc. 75	Caustic 50 kg	59	Stroke	Ser. No. -
WL			Liner Size	Size 215.9
FC			SPM 52	Type FP63J
pH 10.0			Press. 8000	Jets 1-8.7
Gels			m <sup>3</sup> /MIN. 1.10	Out 1205
Sd.			An. Vel. 45.7	In 1104
Slds.			Jet Vel.	Metres 101
Oil			HHPs	Hours 81 1/4
Cl			HHPB	Cum. Hrs. 547 3/4
Ca			HHPB/HHPs	m/Hr. 1.2
PV				Teeth 8
YP				Bear. 5
				Gauge 3
				Wt. 12
				RPM 55
	Daily Cost	615		
	Cum. Cost	15192		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	10	Drilling	General	12,350
Length	8 1/4	Tripping	Water	456
Size	1/4	Deviation Survey	Mud	615
Thd.	1	SVC Rig	Rent	485
OD		Cut Drilling Line	Bit	1,000
ID	2	Reaming	Contingency	1,490
Wt.	1/4	Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
	2 1/4	Tool up and blow kelly		
DP Size				
Conn.				
D.P., crossover, 12				
drill collars, jars, 3				
drill collars, shock sub,				
stabilizer, 2 drill collars,			Daily Cost	16,396
stabilizer, 1 drill collar,			Prev. Cost	1,035,795
NB reamer, bit			Cum. Cost	1,052,191



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Thirty-Seven

73F 10

Date: Feb. 7/79 Well: COLUMBIA ET AL KOTANEELÉE Depth: 1205 m Progress: 28 m  
 Well: YT M-17

Activity & Remarks: Trip out of hole.

Drilling, service rig, and survey. Flow rate at 1202 m, 1.8 m<sup>3</sup>/hr.

Trip for bit. Drilling Rate - Last 4 m approximately 3 m/hr., Background Gas - 35 units, Cuttings Gas - 0 units, Flowline Temperature - 39°C. Lith: 60% Limestone, 40% Sandstone.

Deviation Surveys: 1187 m - 4 1/2°

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. 1070	Gel 1865 kg	392	Pump D-1000	No. 14
Visc. 80	Caustic 48 kg	56	Stroke 457	Ser. No. 410760
WL	Unical 22 kg	29	Liner Size 140	Size 215.9
FC			SPM 50	Type FP63
pH 10.0			Press. 10000	Jets 2-7.1, 1-8.7
Gels			m <sup>3</sup> /MIN. 1.13	Out 1205
Sd.			An. Vel. 45.2	In 1104
Slds.			Jet Vel.	Metres 101
Oil			HHPs	Hours 81 1/4
Cl			HHPB	Cum. Hrs. 547 3/4
Ca			HHPB/HHPs	m/Hr. -
PV				Teeth -
YP				Bear. -
				Gauge -
				Wt. 12
				RPM 55
	Daily Cost	477		
	Cum. Cost	14577		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	20 3/4	Drilling	General	12,350
Length	1 1/4	Tripping	Water	418
Size	3/4	Deviation Survey	Mud	477
Thd.	3/4	SVC Rig	Rental	485
OD		Cut Drilling Line	Contingency	1,373
ID		Reaming		
Wt.	1/4	Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
	1/4	Flow rate		
DP Size				
Conn.				
D.P., crossover, 12				
drill collars, jars, 3				
drill collars, shock sub,				
stabilizer, 2 drill collars,			Daily Cost	15,103
stabilizer, 1 drill collar,			Prev. Cost	1,020,692
NB reamer, bit			Cum. Cost	1,035,795



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Thirty-Six

73F 10

Date: Feb. 6/79 Well: COLUMBIA ET AL KOTANEELEE YT M-17 Depth: 1177 m Progress: 26 m

Activity & Remarks: Drilling 215.9 mm hole.

Drilling, surveys and work tight hole after survey at 1160. Water influx 900 liters per/hr. Drill ahead. 1.33 m/hr. Background Gas - 80 units, Cuttings Gas - 0 units, Flowline Temperature- 40.8°C, Lith: 30% Limestone, 70% Sandstone

Deviation Surveys: 1150 m - 5 1/2°, 1160 m - 5 3/4°, 1169 m - 5 1/2°

Properties	MUD Mat'l Used	Cost	Hydraulics		Bits	
Wt. 1070	2544 kg Gel	524	Pump	01000	No.	14
Visc. 90	25 kg Caustic	29	Stroke	457	Ser. No.	410760
WL	23 kg Unical	29	Liner Size	140	Size	215.9
FC			SPM	51	Type	FP63J
pH 9.0			Press.	11000	Jets	(2)7.1 (1)8.7
Gels			m <sup>3</sup> /MIN.	1.5	Out	-
Sd.			An. Vel.	46.2	In	1104
Sids.			Jet Vel.		Metres	73
Oil			HHPs		Hours	60 1/2
Cl			HHPb		Cum. Hrs.	527
Ca			HHPb/HHPs		m/Hr.	
PV					Teeth	
YP					Bear.	
					Gauge	
					Wt.	11
					RPM	5
	Daily Cost	582				
	Cum. Cost	14100				

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	21	Drilling	General	12,350
Length		Tripping	Water	494
Size	1 1/2	Deviation Survey	Mud	582
Thd.	3/4	SVC Rig	Rental	485
OD		Cut Drilling Line	Contingency	1,391
ID		Reaming		
Wt.		Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
DP Size	3/4	Work tight hole		
Conn.				
D.P., crossover, 12				
drill collars, jars, 3				
drill collars, shock sub,				
stabilizer, 2 drill collars,			Daily Cost	15,302
stabilizer, 1 drill collar,			Prev. Cost	1,005,390
NB reamer, bit			Cum. Cost	1,020,692



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Thirty-Five

73F 10

Date: Feb. 5/79 Well: YT M-17x Depth: 1151 m Progress: 31 m

Activity & Remarks: Drilling.

Drilling. Run 2 surveys and service rig. Drilling Rate - 1.5 m/hr.,

Background Gas - 80 units, Cuttings Gas - 0 units, Flowline Temperature - 38.5°C,

Lith: 80% Sandstone, 20% Limestone. Gaining 16 barrels of water per hour.

Deviation Surveys: 1120 m - 5 1/2°, 1130 m - 5 1/4°

Properties	MUD Mat'l Used	Cost	Hydraulics		Bits	
Wt. 1065	Gel 2041 kg	430	Pump	D-1000	No.	14
Visc. 68	Caustic 23 kg	27	Stroke	457	Ser. No.	410760
WL			Liner Size	140	Size	215.9
FC			SPM	54	Type	FP63J
pH 9.3			Press.	11,500	Jets	-
Gels			m <sup>3</sup> /MIN.	1.22	Out	-
Sd.			An. Vel.	48.9	In	1104
Slds.			Jet Vel.		Metres	47
Oil			HHPs		Hours	39
Cl			HHPB		Cum. Hrs.	506
Ca			HHPB/HHPs		m/Hr.	1.5
PV					Teeth	-
YP					Bear.	-
					Gauge	-
					Wt.	12
					RPM	50
	Daily Cost	457				
	Cum. Cost	13518				

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	22 1/4	Drilling	General	12,350
Length		Tripping	Water	456
Size	1	Deviation Survey	Mud	457
Thd.	3/4	SVC Rig	Rentals	485
OD		Cut Drilling Line	Contingency	1,374
ID		Reaming		
Wt.		Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
DP Size				
Conn.				
D.P., crossover, 12				
drill collars, jars, 3				
drill collars, shock sub,				
stabilizer, 2 drill collars,			Daily Cost	15,126
stabilizer, 1 drill collar,			Prev. Cost	990,264
NB reamer, bit			Cum. Cost	1,005,390



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Thirty-Four

73F 10

Date: Feb. 4/79 Well: COLUMBIA ET AL KOTANEELEE Depth: 1120 m Progress: 12 m  
 Well: YT M-17

Activity & Remarks: Drilling 215.9 mm hole.  
Work stuck pipe. Came free at 0900 hours. Broke circulation and  
cleaned to bottom. Drilled ahead, service rig. Pulled 5 stands, repair swivel. Ran  
in to bottom, repair No. 1 pump pop valve. Pulled 6 stands and repair swivel again.  
Ran in and drill ahead.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics		Bits	
Wt. 1080	Gel 1906 kg	401	Pump	D-1000	No.	14
Visc. 55	Caustic 25 kg	29	Stroke	457	Ser. No.	410760
WL			Liner Size	140	Size	215.9
FC			SPM	50	Type	FP63J
pH 10.5			Press.	10,800	Jets	2-7.1, 1-8.7
Gels			m <sup>3</sup> /MIN.	1.13	Out.	-
Sd.			An. Vel.	45.3	In	1104
Sids.			Jet Vel.		Metres	16
Oil			HHPs		Hours	17 1/4
Cl			HHP <sub>B</sub>		Cum. Hrs.	483 3/4
Ca			HHP <sub>B</sub> /HHPs		m/Hr.	-
PV					Teeth	-
YP					Bear.	-
					Gauge	-
					Wt.	13
					RPM	50
	Daily Cost	430				
	Cum. Cost	13061				

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	11	Drilling	General	12,350
Length	1/2	Tripping	Water	418
Size		Deviation Survey	Mud	430
Thd.	1/2	SVC Rig	Rental	485
OD		Cut Drilling Line	Contingency	1,368
ID		Reaming		
Wt.		Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers	10 1/2	Repair Rig		
	1/2	Circulate and clean to bottom		
DP Size		Work stuck pipe		
Conn.	1			
D.P., crossover, 12				
drill collars, jars, 3				
drill collars, shock sub,				
stabilizer, 2 drill collars,			Daily Cost	15,051
stabilizer, 1 drill collar,			Prev. Cost	975,213
NB reamer, bit			Cum. Cost	990,264



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Thirty-Three

73F 10

Date: Feb. 3/79 Well: COLUMBIA ET AL KOTANEELEE YT M-17 Depth: 1108 m Progress: 4 m

Activity & Remarks: Working stuck pipe. Bit at 1096 (15' movement).  
Trip out (measuring - OK). Change bit and reamer cutters. Service  
rig, run in hole, cut drill line. Ran to 285 m, ream to 340 m. Run in to 1075, ream  
to 1104 m. Drill to 1108. Background Gas - 60 units, Cuttings Gas - 0 units, Flowline  
Temperature - 39°C. Lith: 90% Siltstone, 10% Shale.

Deviation Surveys: 1103 m - 5°

Properties	MUD Mat'l Used	Cost	Hydraulics		Bits	
Wt. 1080	Gel 726 kg	153	Pump	D-1000	No.	13      14
Visc. 48	Caustic 45 kg	59	Stroke	457	Ser. No.	539NV      410760
WL			Liner Size	140	Size	215.9      215.9
FC			SPM	58	Type	F5      FP63J
pH 10			Press.	12000	Jets	8.7      2-7.1, 1-8.7
Gels			m <sup>3</sup> /MIN.	1.32	Out	1104      -
Sd.			An. Vel.	52.9	In	1084      1104
Slds.			Jet Vel.		Metres	20      4
Oil			HHPs		Hours	15      6 1/4
Cl			HHPg		Cum. Hrs.	466 1/2      472 3/4
Ca			HHPg/HHPs		m/Hr.	.75      -
PV					Teeth	7      -
YP					Bear.	5      -
					Gauge	1      -
					Wt.	13      13
					RPM	50      50
	Daily Cost	212				
	Cum. Cost	12631				

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	6 1/4	Drilling	General	12,350
Length	6 1/4	Tripping	Water	456
Size		Deviation Survey	Mud	212
Thd.	1/2	SVC Rig	Rental	485
OD	3/4	Cut Drilling Line	Bit	3,204
ID	1 1/4	Reaming	Cutters	1,100
Wt.		Condition Mud & Circulating	Contingency	1,780
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
DP Size	9	Work stuck pipe		
Conn.				
D.P., crossover, 12				
drill collars, jars, 3				
drill collars, shock sub,				
stabilizer, 2 drill collars,			Daily Cost	19,587
stabilizer, 1 drill collar,			Prev. Cost	955,626
NB reamer, bit			Cum. Cost	975,213



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

73F 10

Day No. Thirty-Two

Date: Feb. 2/79 Well: COLUMBIA ET AL KOTANEELEE Depth: 1104 m Progress: 20 m  
 Activity & Remarks: Tripping out of hole. Tight hole at 1084 m.  
Service rig. Tripped in hole, ream tight hole from 285 - 350 m.  
Trip in to 1065 m. Reamed under gauge hole from 1065 - 1084 m. Drilled ahead and  
surveyed. Trip out. Drilling Rate - 1.6 m/hr., Cuttings Gas - 0 units, Background  
Gas - 50 units, Flowline Temperature - 35.5°C. Lith: 10% Shale, 90% Siltstone.  
 Deviation Surveys: 1093 m - 4 1/2°

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. 1090	Gel 1362 kg	287	Pump D-1000	No. 13
Visc. 49	Caustic 27 kg	29	Stroke 457	Ser. No. 539NV
WL			Liner Size 140	Size 215.9
FC			SPM 58	Type F5
pH 10.0			Press. 8500	Jets 8.7
Geis			m <sup>3</sup> /MIN. 1.32	Out 1104
Sd.			An. Vel. 52.9	In 1084
Slds.			Jet Vel.	Metres 20
Oil			HHPs	Hours 15
Cl			HHPg	Cum. Hrs. 466 1/2
Ca			HHPg/HHPs	m/Hr. -
PV				Teeth -
YP				Bear. -
				Gauge -
	Daily Cost	316		Wt. 13
	Cum. Cost	12419		RPM 50

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	15	Drilling	General	12,350
Length	4 1/2	Tripping	Water	608
Size	3/4	Deviation Survey	Mud	316
Thd.	3/4	SVC Rig	Rental	485
OD		Cut Drilling Line	Bit	3,237
ID	3	Reaming	Contingency	1,699
Wt.		Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
DP Size				
Conn.				
			Daily Cost	18,696
			Prev. Cost	936,931
			Cum. Cost	955,626



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Thirty-One

Date: Feb. 1/79 Well: COLUMBIA ET AL KOTANEELLEE  
YT M-17 Depth: 1084 m Progress: 27 m

Activity & Remarks: Dress near bit reamer.  
Drilling, survey, service rig and check BOP's. Trip for bit and  
strap pipe. Drilling Rate - 65 m/hr., Cuttings Gas - 0 units, Background Gas -  
52 units, Flowline Temperature - 38°C. Lith: 40% Shale, 60% Sandstone, trace silt  
and limestone.

Deviation Surveys: 1055 m - 4 1/2°, 1066 m - 1 1/8°, 1075 m - 3 7/8°, 1084 m - Misrun

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. 1070	Gel 1135 kg	239	Pump D-1000	No. 12
Visc. 44	Caustic 25 kg	29	Stroke 457	Ser. No. 833244
NL			Liner Size 140	Size 215.9
FC			SPM 58	Type FP62
PH 10.0			Press. 9000	Jets 2-7.9, 1-8.7
Gr'			m <sup>3</sup> /MIN. 1.32	Out 1084
S.			An. Vel. 52.9	In 993
Sids.			Jet Vel.	Metres 91
Oil			HHPs	Hours 74 1/4
Cl			HHPB	Cum. Hrs. 452 3/4
Ca			HHPB/HHPs	m/Hr. -
PV				Teeth 6
YP				Bear. 4
				Gauge 1/4
				Wt. 13
				RPM 50
	Daily Cost	239		
	Cum. Cost	12103		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	18 1/4	Drilling	Daily General	12,350
Length	2 3/4	Tripping	Rent	485
Size	1 1/2	Deviation Survey	Water	456
Thd.	3/4	SVC Rig	Mud	268
OD		Cut Drilling Line	Contingency	1,355
ID		Reaming		
Wt.		Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers	3/4	Repair Rig		
		Service reamer		
DP Size				
crossover, 12				
drill collars, jars, 3				
drill collars, shock sub,				
stabilizer, 2 drill collars,			Daily Cost	14,914
stabilizer, 1 drill collar,			Prev. Cost	922,017
NB reamer, bit			Cum. Cost	936,931



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Thirty

COLUMBIA ET AL KOTANEELEE

Jan. 31/79

Well: YT M-17

Depth: 1057 m

Progress: 26 m

Activity & Remarks:

Drilling.

Drilling, run surveys. Service rig. Drilling Rate - 1.6 m/hr.,

Cuttings Gas - 0 units, Background Gas - 70 units, Flowline Temperature - 39°C.

Lith: 100% Siltstone.

Position Surveys: 1036 m - 4 1/4°, 1046 m - 4 1/4°

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
1070	Gel 1806 kg		Pump D-1000	No. 12
47	Caustic 25 kg		Stroke 457	Ser. No. 833244
			Liner Size 140	Size 215.9
			SPM 58	Type FP62
10			Press. 9000	Jets 2-7.9, 1-8.7
			m <sup>3</sup> /MIN. 1.32	Out -
			An. Vel. 52.9	In 993
			Jet Vel.	Mètres 64
			HHPs	Hours 56
			HHPB	Cum. Hrs. 434 1/2
			HHPB/HHPs	m/Hr. -
				Teeth -
				Bear. -
				Gauge -
				Wt. 13
				RPM 50
	Daily Cost	409		
	Cum. Cost	11835		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	22 1/4	Drilling	General	12,350
Length		Tripping	Rental	485
Size	1	Deviation Survey	Water	456
Thd.	3/4	SVC Rig	Mud	409
OD		Cut Drilling Line	Contingency	10,370
ID		Reaming		
Wt.		Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
DP Size				
C				
			Daily Cost	15,070
			Prev. Cost	906,947
			Cum. Cost	922,017



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Twenty-Nine

COLUMBIA ET AL KOTANEELLEE

Jan. 30/79 Well: YT M-17 Depth: 1031 m Progress: 22 m

Activity & Remarks: Drilling 215.9 mm hole.

Drilling Rate - 1.50 m/hr., Drilling Exponent - 1.93, Cuttings Gas - 0 units, Background Gas - 50, Flowline Temperature - 34°C. Lith: 100% Sandstone.

Deviation Surveys: 1007 m - 4 1/2°, 1017 m - 4 1/4°, 1028 m - 4 1/4°

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. 1070	Gel 1135 kg		Pump D-1000	No. 12
Visc. 46	Caustic 25 kg		Stroke 457	Ser. No. 833244
ML			Liner Size 152	Size 215.9
FC			SPM 58	Type FP67
PH 10.0			Press. 9000	Jets 2-7.9, 1-8.7
Gels			m <sup>3</sup> /MIN. 1.23	Out -
S			An. Vel. 51	In 993
Slds.			Jet Vel.	Metres 38
Oil			HHPs	Hours 33 3/4
CI			HHP <sub>B</sub>	Cum. Hrs. 412 1/4
Ca			HHP <sub>B</sub> /HHPs	m/Hr. 1.13
PV				Teeth -
YP				Bear. -
				Gauge -
	Daily Cost 273			Wt. 13
	Cum. Cost 11426			RPM 50

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	21 1/2	Drilling	General	12,350
Length		Tripping	Rent	485
Size	1 3/4	Deviation Survey	Water	326
Thd.	3/4	SVC Rig	Mud	273
OD		Cut Drilling Line	Contingency	1,343
ID		Reaming		
Wt.		Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
DP Size				
Conn.				
			Daily Cost	14,777
			Prev. Cost	892,170
			Cum. Cost	906,947



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Twenty-Eight

Location: COLUMBIA ET AL KOTANEELEE  
 Date: Jan. 29/79 Well: YT M-17 Depth: 1009 m Progress: 17 m

Activity & Remarks: Drilling 215.9 mm hole.  
Drilling Rate - 1.15, Drilling Exponent - 1.90, Cuttings Gas - 0,  
Background Gas - 40-60 units, Flowline Temperature - 32.6°C. Lith: 100% Sandstone,  
fine, hard and tight. Strap out on trip for bit. Strap OK. Hole good. Lay down  
jars. Pick up replacement jars. 2 m fill on trip. 1 m drilling break at 1003.5 m,  
 Deviation Surveys: water flow at 1005, 10.4 m<sup>3</sup>/hr., 0.75 m<sup>3</sup>/hr. while drilling, 0 kpa, shut in  
drill pipe pressure. Surveys - 999 m - 5°

Properties	MUD Mat'l Used	Cost	Hydraulics		Bits	
Wt. 1080	Gel 1000 kg		Pump	H-850	No.	11 12
Visc. 45			Stroke	381	Ser. No.	833475 833244
WL			Liner Size	152	Size	215.9 215.9
FC 10.0			SPM	56	Type	FP62 FP62
pH			Press.	7000	Jets	3-8.7 1-8.7, 2-7.9
Gels			m <sup>3</sup> /MIN.	1.23	Out	993 Running
Sd			An. Vel.	51	In	859 993
Slds.			Jet Vel.		Metres	134 16
Oil			HHPs		Hours	81 1/4 12 1/4
Cl			HHPB		Cum. Hrs.	378 1/2 390 3/4
Ca			HHPB/HHPs		m/Hr.	1.6 1.3
PV					Teeth	6 -
YP					Bear.	4 -
					Gauge	I -
					Wt.	13 13
					RPM	50 50
	Daily Cost	210				
	Cum. Cost	11153				

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	13 1/4	Drilling	General	12,350
Length	5 3/4	Tripping	Rent	485
Size	1/2	Deviation Survey	Water	364
Thd.	3/4	SVC Rig	Mud	210
OD	1 1/4	Cut Drilling Line	Bit	3,200
ID		Reaming	Contingency	1,661
Wt.		Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
	3/4	Tool up		
DP Size	3/4	Circulate to bottom		
Cr	1	Flow check		
D. crossover, 12				
drill collars, jars,				
3 drill collars, shock sub,				
stabilizer, 2 drill collars,			Daily Cost	18,270
stabilizer, 1 drill collar,			Prev. Cost	873,900
NB reamer, bit			Cum. Cost	892,170



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Twenty-Seven

COLUMBIA ET AL KOTANEELEE

Jan. 28/79 Well: M-17 Depth: 992 m Progress: 25 m

Activity & Remarks: Drilling 215.9 mm hole.  
Drilling Rate - 0.85 m/hr., Drilling Exponent - 2.0, Cuttings Gas -  
0 units, Background Gas - 35 units. Lith: 100% Sandstone, trace limestone.

Deviation Surveys: 970 m - 5 1/4°, 979 m - 5 1/2°, 990 m - 5°

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Nt. 1080	Gel 1360 kg		Pump D-1000	No. 11
Visc. 46	Caustic 75 kg		Stroke 457	Ser. No. 833475
WL			Liner Size 140	Size 215.9
FC			SPM 58	Type FP62
pH 10.0			Press. 7500	Jets 3-8.7
Gels			m <sup>3</sup> /MIN. 1.23	Out -
Sr			An. Vel. 51	In 859
Sl			Jet Vel.	Metres 133
Oil			HHPs	Hours 80 1/4
Cl			HHPB	Cum. Hrs. 377 1/2
Ca			HHPB/HHPs	m/Hr. 1.7
PV				Teeth -
YP				Bear. -
				Gauge -
	Daily Cost 383			Wt. 13
	Cum. Cost 10943			RPM 50

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	21 3/4	Drilling	Miscellaneous	12,350
Length		Tripping	Rent	485
Size	1 1/2	Deviation Survey	Water	364
Thd.	3/4	SVC Rig	Mud	383
OD		Cut Drilling Line	Contingency	1,358
ID		Reaming		
Wt.		Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
DP Size				
Conn.				
3 crossover, 12				
11 collars, jars,				
3 drill collars, shock sub,				
stabilizer, 2 drill collars,			Daily Cost	14,940
stabilizer, 1 drill collar,			Prev. Cost	858,960
N.B. reamer, bit			Cum. Cost	873,900



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Twenty-Six

COLUMBIA ET AL KOTANEELEE

Jan. 27/79 Well: YT M-17 Depth: 967 m Progress: 37 m

Work & Remarks: Drilling 215.9 mm hole.

Drilling Rate - 1.43, Drilling Exponent - 1.84, Cuttings Gas - 0,

Background Gas - 45. Lith: 100% Sandstone, Mattson top at 951.

Formation Surveys: 932 m - 5 3/4°, 941 m - 5 1/4°, 952 m - 5°, 962 m - 5 1/4°

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
1080	Gel 808 kg		Pump D-1000	No. 11
44			Stroke 457	Ser. No. 833475
	Mud Stand by,		Liner Size 140	Size 215.9
	1440 Wt.		SPM 58	Type FP62
10.0	90 Visc.		Press. 7500	Jets 3-8.7
			m <sup>3</sup> /MIN. 1.23	Out -
			An. Vel. 51	In. 859
			Jet Vel.	Metres 108
			HHPs	Hours 58 1/2
			HHPg	Cum. Hrs. 355 3/4
			HHPg/HHPs	m/Hr. 1.8
				Teeth -
				Bear. -
				Gauge -
				Wt. 13
				RPM 50
	Daily Cost	172		
	Cum. Cost	10560		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
D.C.	21 1/4	Drilling	Stand by	12,350
gth		Tripping	Rent	485
	2	Deviation Survey	Water	402
	3/4	SVC Rig	Mud	172
		Cut Drilling Line	Contingency	1,341
		Reaming		
		Condition Mud & Circulating		
Wt.		Logging		
billizers		Repair Rig		
Size				
rn.				
P. crossover, 12				
oil collars, jars,				
drill collars, shock sub				
stabilizer, 2 drill collars,			Daily Cost	14,750
stabilizer, 1 drill collar,			Prev. Cost	844,210
reamer, bit			Cum. Cost	858,960



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Twenty-Five

Date: Jan. 26/79 Well: COLUMBIA ET AL KOTANEELEE Depth: 930 m Progress: 36 m

Activity & Remarks: Drilling 215.9 mm hole.  
Drilling Rate - 1.8 m/hr., Drilling Exponent - 1.79, Cuttings Gas - 35 units, Background Gas - 100 units. Lith: 100% Siltstone. 0.5 m<sup>3</sup>/hr., water flow from 909 - 924 m. Total water influx - 5 m<sup>3</sup>.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. <u>1080</u>	<u>Gel 1079 kg</u>		Pump <u>D-1000</u>	No. <u>11</u>
Visc. <u>41</u>	<u>Caustic 25 kg</u>		Stroke <u>457</u>	Ser. No. <u>833475</u>
WL			Liner Size <u>140</u>	Size <u>215.9</u>
FC			SPM <u>58</u>	Type <u>FP62</u>
pH <u>10.0</u>			Press. <u>7500</u>	Jets <u>3-8.7</u>
Gel <sup>e</sup>			m <sup>3</sup> /MIN. <u>1.23</u>	Out <u>-</u>
Sc			An. Vel. <u>51</u>	In <u>859</u>
Slds.			Jet Vel.	Metres <u>71</u>
Oil			HHPs	Hours <u>37 1/4</u>
Cl			HHPB	Cum. Hrs. <u>334 1/2</u>
Ca			HHPB/HHPs	m/Hr. <u>1.9</u>
PV				Teeth <u>-</u>
YP				Bear. <u>-</u>
				Gauge <u>-</u>
				Wt. <u>12-13</u>
				RPM <u>45-50</u>
	Daily Cost	<u>257</u>		
	Cum. Cost	<u>10388</u>		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	<u>21 1/4</u>	Drilling	Rig	<u>6,500</u>
Length		Tripping	Camp	<u>1,000</u>
Size	<u>2</u>	Deviation Survey	Fuel	<u>1,000</u>
Thd.	<u>3/4</u>	SVC Rig	Aircraft	<u>1,600</u>
OD		Cut Drilling Line	Tompkins	<u>1,000</u>
ID		Reaming	Supervision	<u>450</u>
Wt.		Condition Mud & Circulating	Ex-Loggers	<u>800</u>
Eff. Wt.		Logging	Rent	<u>485</u>
Stabilizers		Repair Rig	Water	<u>478</u>
			Mud	<u>257</u>
DP Size			Contingency	<u>1,337</u>
C				
<u>drill crossover, 12</u>				
<u>drill collars, jars,</u>				
<u>3 drill collars, shock sub,</u>				
<u>stabilizer, 2 drill collars</u>			Daily Cost	<u>14,927</u>
<u>stabilizer, 1 drill collar,</u>			Prev. Cost	<u>829,283</u>
<u>NB reamer, bit</u>			Cum. Cost	<u>844,210</u>



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Twenty-Four

Jan. 25/79 Well: COLUMBIA ET AL KOTANEELEE Depth: 894 m Progress: 35 m  
YT M-17

& Remarks: Drilling 215.9 mm hole.  
Drilling Rate - 1.9, Drilling Exponent - 1.68, Cuttings Gas - 6  
units, Background Gas - 100 units. Lith: 70% Siltstone, 30% Chert. Trip for  
bit, change out reamer. 7 m fill on bottom. Hole good.

on Surveys: 859 m - 6°, 875 m - 5 7/8°, 885 m - 5 7/8°

Quantities	MUD Mat'l Used	Cost	Hydraulics	Bits
1080	Gel 768 kg		Pump H-850	No. 10 11
40	Caustic 25 kg		Stroke 381	Ser. No. 20927 833475
			Liner Size 152	Size 215.9 215.9
			SPM 48	Type JD8 FP62
10.0			Press. 7000	Jets 3-8.7 3-8.7
			m³/MIN. 1.06	Out 859 -
			An. Vel. 44	In 848 859
			Jet Vel.	Metres 11 35
			HHPs	Hours 13 16
			HHPg	Cum. Hrs. - 313 1/4
			HHPg/HHPs	m/Hr. .85 2.2
				Teeth 6 -
				Bear. 4 -
				Gauge I -
				Wt. 10 10
				RPM 50 48
	Daily Cost	191		
	Cum. Cost	10131		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
D.C.	16	Drilling	Rig	6,500
Length	2 1/4	Tripping	Camp	1,000
	1	Deviation Survey	Fuel	1,000
	3/4	SVC Rig	Aircraft	1,600
	3/4	Cut Drilling Line	Tompkins	1,000
		Reaming	Supervision	450
		Condition Mud & Circulating	Ex-Loggers	800
Wt.		Logging	Rent	485
Stabilizers		Repair Rig	Water	402
	3 1/4	Wait for NB reamer.	Mud	191
Size			Bit	3,202
Ann			Cutter	1,580
P. crossover, 12			Contingency	1,820
Drill collars, jars,				
Drill collars, shock sub,				
Stabilizer, 2 drill collars,			Daily Cost	20,028
Stabilizer, 1 drill collar,			Prev. Cost	809,255
Reamer, bit.			Cum. Cost	829,283



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Twenty-Three

COLUMBIA ET AL KOTANEELEE

Jan. 24/79 Well: YT M-17 Depth: 859 m Progress: 11 m

ty & Remarks: Tripping for bit.

Drilling Rate - 0.77 m/hr., Drilling Exponent - 1.84, Cuttings Gas -

1 unit, Background Gas - 105 units. Lith: 90% Chert, 10% Siltstone. Reamed

bridges and fill and last 11 m of under gauge hole to bottom.

tion Surveys:

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
1080	Gel 454 kg		Pump 850	No. 10
sc. 40	Caustic 46 kg		Stroke 381	Ser. No. 20927
			Liner Size 152	Size 215.9
			SPM 50	Type JD8
			Press. 7000	Jets 8.7
			m <sup>3</sup> /MIN. 1.1	Out 859
			An. Vel. 45	In 848
			Jet Vel.	Metres 11
			HHPs	Hours 13
			HHPg	Cum. Hrs. 297 1/4
			HHPg/HHPs	m/Hr. .85
				Teeth -
				Bear. -
				Gauge -
				Wt. 10
				RPM 50
	Daily Cost	148		
	Cum. Cost	9940		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
o. D.C.	13	Drilling	Rig	6,500
length	3	Tripping	Camp	1,000
ize	1/4	Deviation Survey	Fuel	1,000
nd.	1/2	SVC Rig	Aircraft	1,600
oD		Cut Drilling Line	Tompkins	1,000
o)	1 3/4	Reaming	Supervision	450
ft.		Condition Mud & Circulating	Ex-Loggers	800
ff. Wt.		Logging	Rent	420
tabilizers		Repair Rig	Water	326
	5 1/2	Clean to bottom.	Mud	148
OP Size			Contingency	1,330
Conr				
o.F crossover, 12				
drill collars, jars,				
drill collars, shock sub,				
tabilizer, 2 drill collars,			Daily Cost	14,624
tabilizer, 1 drill collar,			Prev. Cost	794,631
L.B., reamer, bit			Cum. Cost	809,255



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Twenty-Two

COLUMBIA ET AL KOTANEELEE  
 Jan. 23/79 Well: YT M-17 Depth: 848 m Progress: 18 m  
 Summary & Remarks: Reaming to bottom with bit No. 10.  
Drilling 1.31 m/hr. Drilling Exponent - 1.75, Cuttings Gas - 6  
units, Background Gas - 56. Lith: 70% Siltstone, 30% Chert. Trip for bit.  
Reamer 1/2" under gauge. Change out cutters. Stabilizers O.K. Ream in from  
285 m.  
 Position Surveys: 846 m - 6 3/4°

Properties	MUD Mat'l Used	Cost	Hydraulics		Bits	
1080	Gel 545 kg		Pump	D-1000	No.	9 10
35			Stroke	457	Ser. No.	679NN 29027
			Liner Size	140	Size	215.9 215.9
			SPM	54	Type	F3 JD8
10.5			Press.	8500	Jets	3-8.7 3-8.7
			m <sup>3</sup> /MIN.	1.15	Out	848 -
			An. Vel.	48	In	758 848
			Jet Vel.		Metres	90
			HHPs		Hours	80.5
			HHP <sub>B</sub>		Cum. Hrs.	284 1/2
			HHP <sub>B</sub> /HHPs		m/Hr.	1.1
					Teeth	8
					Bear.	8
					Gauge	4
					Wt.	12
					RPM	60
	Daily Cost	115				
	Cum. Cost	9792				

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
o. D.C.	14 3/4	Drilling	Rig	6,500
Length	4 3/4	Tripping	Camp	1,000
Size	1/4	Deviation Survey	Fuel	1,000
hd.	3/4	SVC Rig	Aircraft	1,600
D		Cut Drilling Line	Tompkins	1,000
D	1 1/2	Reaming	Supervision	450
vt.		Condition Mud & Circulating	Ex-Loggers	800
ff. Wt.		Logging	Miscellaneous	
stabilizers		Repair Rig	Rent	470
	2	Change reamer cutters.	Water	516
P Size			Mud	115
or			Bit	1,100
.. crossover, 12			Reamer	1,500
drill collars, jars,			Contingency	1,613
drill collars, shock sub,				
stabilizer, 2 drill collars,			Daily Cost	17,744
stabilizer, 1 drill collar,			Prev. Cost	776,887
.B., reamer, bit			Cum. Cost	794,631



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Twenty-One

Location: COLUMBIA ET AL KOTANEELEE  
 Date: Jan. 22/79 Well: YT M-17 Depth: 830 m Progress: 25 m

Activity & Remarks: Drilling 215.9 mm hole.  
Background Gas - 50 units, Cuttings Gas - 4 units, Lith: 50% Chert,  
50% Siltstone.

Deviation Surveys: 808 m - 7 1/2°, 818 m - 7°, 827 m - 7 1/2°

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. 1090	Gel 682 kg		Pump D-1000	No. 9
Visc. 38	Caustic 50 kg		Stroke 457	Ser. No. 679NN
WL			Liner Size 140	Size 215.9
FC			SPM 54	Type F3
pH 10.5			Press. 8500	Jets 8.7
Gels			m <sup>3</sup> /MIN. 1.15	Out -
S'			An. Vel. 48	In 758
S			Jet Vel.	Metres 72
Oil			HHPs	Hours 65 3/4
Cl			HHPb	Cum. Hrs. 269 1/2
Ca			HHPb/HHPs	m/Hr. 1.1
PV				Teeth -
YP				Bear. -
				Gauge -
	Daily Cost			Wt. 10-12
	Cum. Cost			RPM 60

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	21 3/4	Drilling	Rig	6,500
Length		Tripping	Camp	1,000
Size	1 1/2	Deviation Survey	Fuel	1,000
Thd.	3/4	SVC Rig	Aircraft	1,600
OD		Cut Drilling Line	Tampkins	1,000
ID		Reaming	Supervision	450
Wt.		Condition Mud & Circulating	Ex-Loggers	800
Eff. Wt.		Logging	Rent	470
Stabilizers		Repair Rig	Water	326
			Mud	185
DP Size			Contingency	1,333
Conn.				
1", crossover, 12				
collars, jars,				
3 drill collars, shock sub,				
stabilizer, 2 drill collars,			Daily Cost	14,664
stabilizer, 1 drill collar,			Prev. Cost	762,223
N.B., reamer, bit			Cum. Cost	776,887



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Twenty

Jan. 21/79 Well: COLUMBIA ET AL KOTANEELEE  
YT M-17 Depth: 805 m Progress: 22 m

Work & Remarks: Drilling.  
Background Gas - 50 units, Cuttings Gas - 4 units, Lith: 70% Chert,  
30% Siltstone. Repair washouts on D-1000.

Position Surveys: 789 m - 7 3/4°, 798 m - 7 1/2°

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
1085	Gel 1590 kg		Pump D-1000	No. 9
43	Caustic 90 kg		Stroke 457	Ser. No. 679NN
			Liner Size 140	Size 215.9
			SPM 54	Type F3
10.5			Press. 8500	Jets 3-8.7
			m <sup>3</sup> /MIN. 1.15	Out -
			An. Vel. 48	In 758
			Jet Vel.	Metres 47
			HHPs	Hours 44
			HHPB	Cum. Hrs. 247 3/4
			HHPB/HHPs	m/Hr. 1.1
				Teeth -
				Bear. -
				Gauge -
				Wt. 10
				RPM 60
	Daily Cost	454		
	Cum. Cost	9492		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
o. D.C.	18	Drilling	Rig	6,500
Length		Tripping	Camp	1,000
Size	3/4	Deviation Survey	Fuel	1,000
hd.	3/4	SVC Rig	Aircraft	1,600
RD		Cut Drilling Line	Tampkins	1,000
D		Reaming	Supervision	450
Wt.		Condition Mud & Circulating	Ex-Loggers	800
ff. Wt.		Logging	Miscellaneous	470
stabilizers	4 1/2	Repair Rig	Water	250
			Mud	454
SP Size			Contingency	1,352
Conn				
D. crossover, 12				
drill collars, jars,				
3 drill collars, shock sub,				
stabilizer, 2 drill collars,			Daily Cost	14,876
stabilizer, 1 drill collar,			Prev. Cost	747,347
I.B., reamer, bit			Cum. Cost	762,223



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Nineteen

10

Date: Jan. 20/79 Well: COLUMBIA ET AL KOTANEELEE  
YT M-17 Depth: 783 m Progress: 21 m

Activity & Remarks: Drilling. Fantasque.  
Drilling, service rig, check lower pipe rams. Increase weight on  
bit. Survey.

Deviation Surveys: 770 m - 8 1/4°, 779 m - 8 1/4°

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. 1070	Gel 4676 kg	984	Pump D-1000	No. 9
Visc. 36	Barite 3360 kg	729	Stroke 457	Ser. No. 679NN
WL			Liner Size 140	Size 215.9
FC			SPM 60	Type F3
pH			Press. 8200	Jets 3-8.7
Gels			m <sup>3</sup> /MIN. 1.27	Out -
S			An. Vel. 50.7	In 758
Slas.			Jet Vel.	Metres 25
Oil			HHPs	Hours 26
Cl			HHP <sub>B</sub>	Cum. Hrs. 229 3/4
Ca			HHP <sub>B</sub> /HHPs	m/Hr. 1
PV				Teeth -
YP				Bear. -
				Gauge -
				Wt. 4-8
				RPM 58
	Daily Cost	1713		
	Cum. Cost	9038		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	22 1/4	Drilling	Rig	6,500
Length		Tripping	Camp	1,000
Size	1	Deviation Survey	Fuel	1,000
Thd.	3/4	SVC Rig	Aircraft	1,600
OD		Cut Drilling Line	Tompkins	450
ID		Reaming	Supervision	1,000
Wt.		Condition Mud & Circulating	Ex-Loggers	800
Eff. Wt.		Logging	Miscellaneous	470
Stabilizers		Repair Rig	Water	570
			Mud	1,713
DP Size			Contingency	1,510
Cr...				
1", crossover, 12				
drill collars, shock sub,				
stabilizer, 2 drill collars,				
stabilizer, 1 drill collar,				
3 drill collars, shock sub,			Daily Cost	16,613
N.B., reamer, bit			Prev. Cost	730,734
			Cum. Cost	747,347



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Eighteen

COLUMBIA ET AL KOTANEELEE

Jan. 19/79

Well:

YT M-17

Depth:

762 m

Progress:

38 m

Activity & Remarks:

Drilling.

Repair 4" Cameron valve, shock hose between pumps, and pop valve

line on No. 2 pump. Trip for bit. Strap pipe. No fill on trip.

Location Surveys: 731 m - 8° 758 m - 8°

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Rate 1050	Gel 1130 kg	238	Pump D-1000	No. 8 9
Size 34	Barite 4540 kg	985	Stroke 457	Ser. No. 31734 679NN
Fluid	Caustic 23 kg	27	Liner Size 140	Size 215.9 215.9
Chemical	Soda 45 kg	23	SPM 58	Type XDV F3
Pressure			Press. 8000	Jets 3-8.7 3-8.7
Flow Rate			m <sup>3</sup> /MIN. 1.31	Out 758 -
Annular Velocity			An. Vel. 52.2	In 713 758
Jet Velocity			Jet Vel.	Metres 45 4
HHPs			HHPs	Hours 16 1/2 3 3/4
HHPg			HHPg	Cum. Hrs. 203 3/4 207 1/2
HHPg/HHPs			HHPg/HHPs	m/Hr. - -
				Teeth 4 -
				Bear. 2 -
				Gauge I -
				Wt. 40 4
				RPM 60 60
	Daily Cost	1273		
	Cum. Cost	7325		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	15 1/4	Drilling	Rig	6,500
Length	4 1/4	Tripping	Camp	1,000
Size	1/2	Deviation Survey	Fuel	1,000
Thd.	3/4	SVC Rig	Aircraft	1,600
OD		Cut Drilling Line	Tampkins	1,000
ID	1/2	Reaming	Supervision	460
Wt.		Condition Mud & Circulating	Ex-Loggers	800
Eff. Wt.		Logging	Miscellaneous	470
Stabilizers	2 3/4	Repair Rig	Water	456
			Mud	1,273
			Bit	3,244
			Contingency	1,779
DP Size				
Crossover, 12				
drill collars, jars,				
3 drill collars, shock sub,				
stabilizer, 2 drill collars,				
stabilizer, 1 drill collar,				
N.B., reamer, bit				
			Daily Cost	19,572
			Prev. Cost	711,162
			Cum. Cost	730,734



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Seventeen

Jan. 18/79 Well: COLUMBIA ET AL KOTANEELEE Depth: 724 m Progress: 12 m  
 Well: YT M-17

Activity & Remarks: Drilling 215.9 mm hole.  
Survey at 712 m, misrun. Washout union in standpipe. Change to  
other standpipe. Repair shock hose. Replace gasket on mud pump. Repair pop  
valve on pump. Work plugged bit. Trip out of hole and strap pipe. Change cut-  
ters in reamer and bit and run in hole. Ream 700 - 712 m. Circulate, surveys  
 Deviation Surveys: misrun. 712 m - 8°, 722 m - 8°

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. 1060	Barite 545 kg	118	Pump H-850	No. 7 8
Disc. 33			Stroke 381	Ser. No. 677492 31734
IL			Liner Size 140	Size 215.9 215.9
C			SPM 60	Type S88F XDV
H			Press. 7500	Jets 3-8.7 3-8.7
Wells			m <sup>3</sup> /MIN. 1.08	Out 713 -
id			An. Vel. 42	In 616 713
oids.			Jet Vel.	Metres 97 9
Dil			HHPs	Hours 25 3
CI			HHPB	Cum. Hrs. - 187 1/4
Ca			HHPB/HHPs	m/Hr. 3.88 3
oy				Teeth 2 -
YP				Bear. 2 -
				Gauge I -
				Wt. 4 4
				RPM 60 60
	Daily Cost	118		
	Cum. Cost	6052		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	4	Drilling	Rig	6,500
Length	6	Tripping	Camp	1,000
Size	2 1/4	Deviation Survey	Fuel	1,000
Thd.	3/4	SVC Rig	Aircraft	1,600
OD		Cut Drilling Line	Tompkins	1,000
ID	3 1/2	Reaming	Supervision	450
Wt.	1/4	Condition Mud & Circulating	Ex-Loggers	800
Eff. Wt.		Logging	Schlumberger	125
Stabilizers	4	Repair Rig	Miscellaneous	470
	3 1/4	Change reamer cutters and	Water	304
DP Size		work plugged bit.	Mud	118
Conn.			Bit	971
1", crossover, 12			Reamer Cutters	1,580
drill collars, jars,			Contingency	1,591
3 drill collars, shock sub,				
stabilizer, 2 drill collars,			Daily Cost	17,509
stabilizer, 1 drill collar,			Prev. Cost	693,653
N.B., reamer, bit			Cum. Cost	711,162



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Sixteen

Jan. 17/79 Well: COLUMBIA ET AL KOTANEELEE Depth: 712 m Progress: 48 m  
 YF M-17  
 Drilling 215.9 mm hole. Toad Grayling.  
 Rig down for 9 3/4 hours. Repair mud pump, changed out two pistons.

Position Surveys: 674 m - 7 1/4° 693 m - 7 3/4°

Properties	MUD Mat'l Used	Cost	Hydraulics		Bits	
1080	Barite 1680 kg	364	Pump	H-850	No.	7
sc. 36			Stroke	381	Ser. No.	677492
			Liner Size	140	Size	215.9
	Standby Mud Wt.		SPM	60	Type	S88F
	1440		Press.	10000	Jets	3-8.7
			m <sup>3</sup> /MIN.	1.08	Out	-
			An. Vel.	42	In	616
			Jet Vel.		Metres	96
			HHPs		Hours	23 1/2
			HHPB		Cum. Hrs.	183 1/4
			HHPB/HHPs		m/Hr.	-
					Teeth	-
					Bear.	-
					Gauge	-
					Wt.	4
					RPM	60
	Daily Cost	364				
	Cum. Cost	5934				

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
D.C.	13	Drilling	Rig	6,500
Length		Tripping	Camp	1,000
Size	1/2	Deviation Survey	Fuel	1,000
Id.	3/4	SVC Rig	Aircraft	1,600
D		Cut Drilling Line	Tompkins	1,000
		Reaming	Supervision	450
ft.		Condition Mud & Circulating	Ex-Loggers	800
ff. Wt.		Logging	Schlumberger	125
stabilizers	9 3/4	Repair Rig pump.	Miscellaneous	470
			Water	380
P Size			Mud	364
onn			Contingency	1,369
crossover, 12				
drill collars, jars,				
3 drill collars, shock sub,				
stabilizer, 2 drill collars,			Daily Cost	15,058
stabilizer, 1 drill collars,			Prev. Cost	678,595
NB, reamer, bit			Cum. Cost	693,653



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Fifteen

Date: Jan. 16/79 Well: COLUMBIA ET AL KOTANEELEE YF M-17 Depth: 664 m Progress: 55 m

Activity & Remarks: Drilling 215.9 mm hole. Toad Grayling.

Trip for bit, slip and cut line. Service reamer. No fill on trip.

Twin Otter used by D.O.T., Islander - 2 trips to Nelson, overnight in Nelson.

Deviation Surveys: 616 m - 6 1/4° 636 m - 6 3/4°, 654 m - 7 1/4°

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. 1090	Gel 1360 kg	286	Pump D-1000	No. 6 7
Visc. 41			Stroke 457	Ser. No. 33124 677492
WL			Liner Size 140	Size 215.9 215.9
FC			SPM 58	Type J-22 S88F
pH			Press. 7500	Jets 3-8.7 3-8.7
Gels			m <sup>3</sup> /MIN.	Out 616 -
S			An. Vel.	In 324 616
Slu...			Jet Vel.	Metres 292 48
Oil			HHPs	Hours 68 1/4 10 1/2
Cl			HHPB	Cum. Hrs. 159 3/4 170 1/4
Ca			HHPB/HHPs	m/Hr. 4.28 4.5
PV				Teeth 2 -
YP				Bear. 3 -
				Gauge 1 -
				Wt. 5-10 7-10
				RPM 60 60
	Daily Cost	286		
	Cum. Cost	5570		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	13	Drilling	Rig	6,500
Length	7 1/2	Tripping	Camp	1,000
Size	1	Deviation Survey	Fuel	1,000
Thd.	1/2	SVC Rig	Aircraft	1,600
OD	1	Cut Drilling Line	Tompkins	1,000
ID		Reaming	Supervision	450
Wt.	1	Condition Mud & Circulating	Ex-Loggers	800
Eff. Wt.		Logging	Schlumberger	125
Stabilizers		Repair Rig	Miscellaneous	470
			Water	532
DP Size			Mud	286
Conn.			Loader	160
1" crossover,			Bit	3,248
1/2 drill collars, jars,			Contingency	1,717
3 drill collars, shock sub,				
stabilizer, 2 drill collars,			Daily Cost	18,888
stabilizer, 1 drill collar,			Prev. Cost	659,707
NB, reamer, bit			Cum. Cost	678,595





# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Thirteen

Date: Jan. 14/79 Well: YT M-17 Depth: 542 m Progress: 85 m

Activity & Remarks: Drilling 215.9 mm hole. Toad Grayling

Deviation Surveys: 472 m - 3 1/2° 481 m - 3 3/4° 509 m - 4 3/4° 519 m - 4 7/8° 529 m - 5 1/4°

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. <u>1110</u>	<u>Gel</u> <u>1225 kg</u>	<u>258</u>	Pump <u>D-1000</u>	No. <u>6</u>
Visc. <u>40</u>			Stroke <u>457</u>	Ser. No. <u>33124</u>
ML			Liner Size <u>140</u>	Size <u>215.9</u>
FC			SPM <u>48</u>	Type <u>J-22</u>
pH <u>8.0</u>			Press. <u>7000</u>	Jets <u>3-8.7</u>
Gel			m <sup>3</sup> /MIN.	Out <u>-</u>
Sc			An. Vel.	In <u>324</u>
Slids.			Jet Vel.	Metres <u>218</u>
Oil			HHPs	Hours <u>45 1/2</u>
Cl			HHPB	Cum. Hrs. <u>137</u>
Ca			HHPB/HHPs	m/Hr. <u>4</u>
PV				Teeth <u>-</u>
YP				Bear. <u>-</u>
				Gauge <u>-</u>
				Wt. <u>5-10</u>
				RPM <u>60</u>
	Daily Cost			
	Cum. Cost	<u>5036</u>		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	<u>21</u>	Drilling	Rig	<u>6,500</u>
Length		Tripping	Camp	<u>1,000</u>
Size	<u>1 3/4</u>	Deviation Survey	Fuel	<u>1,000</u>
Thd.	<u>3/4</u>	SVC Rig	Aircraft	<u>1,600</u>
OD		Cut Drilling Line	Tompkins	<u>1,000</u>
ID		Reaming	Supervision	<u>450</u>
Wt.		Condition Mud & Circulating	Ex-Loggers	<u>800</u>
Eff. Wt.		Logging	Schlumberger	<u>125</u>
Stabilizers		Repair Rig	Miscellaneous	<u>470</u>
			Water	<u>304</u>
DP Size			Mud	<u>258</u>
			Contingency	<u>1,350</u>
<u>1 crossover, 9 drill collars, jars, 6 drill collars, shock sub, stabilizer, 2 drill collars, stabilizer, drill collar, reamer, bit</u>			Daily Cost	<u>14,857</u>
			Prev. Cost	<u>629,562</u>
			Cum. Cost	<u>644,419</u>



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Twelve

Jan. 13/79 Well: COLUMBIA ET AL KOTANEELEE Depth: 457 m Progress: 120 m

Activity & Remarks: Drilling 215.9 mm hole.

Location Surveys: 348 m - 2°, 377 m - 2 1/2°, 403 m - 2 3/4°, 432 m - 3 1/4°, 451 m - 3 1/2°

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Vt. 1080	Gel 1360 kg	286	Pump D-1000	No. 6
Disc. 39	Barite 4090 kg	860	Stroke 457	Ser. No. 33124
VL			Liner Size 140	Size 215.9
FC			SPM 48	Type J-22
PH 8			Press. 7200	Jets 3-8.7
Gels			m <sup>3</sup> /MIN.	Out 5
Sd.			An. Vel.	In 324
Sids.			Jet Vel.	Metres 133
Oil			HHPs	Hours 24
Cl			HHPg	Cum. Hrs. 115 1/2
Ca			HHPg/HHPs	m/Hr. 5.5
PV				Teeth -
YP				Bear. -
				Gauge -
	Daily Cost	1146		Wt. 5-8
	Cum. Cost	4778		RPM 35/65

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.	22	Drilling	Rig	6,500
Length		Tripping	Camp	1,000
Size	1 1/4	Deviation Survey	Fuel	1,000
Thd.	3/4	SVC Rig	Aircraft	1,600
OD		Cut Drilling Line	Tompkins	1,000
ID		Reaming	Supervision	450
Wt.		Condition Mud & Circulating	Ex-Loggers	800
Eff. Wt.		Logging	Schlumberger	125
Stabilizers		Repair Rig	Miscellaneous	470
			Water	304
DP Size			Mud	1,146
C			Truck	910
l			Bit, Cutters,	
			Blocks	4,830
			Contingency	2,013
			Daily Cost	22,148
			Prev. Cost	607,414
			Cum. Cost	629,562

1 crossover, 9 drill collars, jars, 6 drill collars, shock sub, stabilizer, 2 drill collars, stabilizer, drill collar, reamer, bit





# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Ten

10

Date: Jan. 11/78 Well: COLUMBIA ET AL KOTANEELEE  
YT M-17 Depth: 282 m Progress: 66 m

Activity & Remarks: Drilling 3 m/hr.  
Drilled cement and clean to bottom. Formation bled off to 2750 kPa.

Deviation Surveys: 234 m - 0°, 260 m - 3/4°, 270 m - 1 1/2°, 280 m - 1 1/4°

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. <u>1060</u>	<u>Unical</u> <u>1</u>		Pump <u>D-1000</u>	No. <u>5</u>
Visc. <u>37</u>	<u>Gel</u> <u>3</u>		Stroke <u>457</u>	Ser. No. <u>834682</u>
WL	<u>Bicarb</u> <u>1</u>		Liner Size <u>140</u>	Size <u>215.9</u>
FC			SPM <u>50</u>	Type <u>M44NG</u>
pH			Press. <u>7000</u>	Jets <u>8.7-3</u>
Gels			m <sup>3</sup> /MIN.	Out <u>-</u>
ε			An. Vel.	In <u>216</u>
Slus.			Jet Vel.	Metres <u>66</u>
Oil			HHPs	Hours <u>19 1/2</u>
Cl			HHPB	Cum. Hrs. <u>-</u>
Ca			HHPB/HHPs	m/Hr. <u>3</u>
PV				Teeth <u>-</u>
YP				Bear. <u>-</u>
				Gauge <u>-</u>
				Wt. <u>6</u>
				RPM <u>75</u>
	Daily Cost	<u>165</u>		
	Cum. Cost	<u>3170</u>		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C. <u>18</u>	<u>16 1/2</u>	Drilling	Rig	<u>6,500</u>
Length <u>162.77</u>		Tripping	Camp	<u>1,000</u>
Size <u>1 1/4</u>		Deviation Survey	Fuel	<u>1,000</u>
Thd. <u>4" ID</u>	<u>3/4</u>	SVC Rig	Aircraft	<u>1,600</u>
OD		Cut Drilling Line	Tampkins	<u>1,000</u>
ID <u>73</u>		Reaming	Supervision	<u>450</u>
Wt.		Condition Mud & Circulating	Ex-Loggers	<u>800</u>
Eff. Wt.		Logging	Schlumberger	<u>125</u>
Stabilizers <u>1</u>		Repair Rig <u>shock hose.</u>	Water	<u>532</u>
			Rent	<u>250</u>
DP Size <u>5"</u>	<u>4</u>	Drilling cement.	Casing Bowl	<u>1,030</u>
Conn. <u>4" IF</u>	<u>1/2</u>	Bleed off.	Mud	<u>165</u>
			Contingency	<u>1,445</u>
			Daily Cost	<u>15,901</u>
			Prev. Cost	<u>575,394</u>
			Cum. Cost	<u>591,295</u>



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Nine

Jan. 10/79 Well: COLUMBIA ET AL KOTANEELEE Depth: 216 m Progress: -  
 YF M-17

Work & Remarks: Drilling out shoe.  
Nipple up. Pressure test blind rams, casing and manifold to  
20,000 kPa. Picked up and ran collars. Pressure test pipe rams to 20,000 kPa.  
and hydril to 10,000 kPa. Drill cement from 209 - 212 m.

Log Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
1140	Bicarb 1 sac	35	Pump D-1000	No. 5
60			Stroke 457	Ser. No. 834682
			Liner Size 140	Size 215.9
			SPM 65	Type M44NG
			Press. 3000	Jets 3-8.7
			m <sup>3</sup> /MIN.	Out -
			An. Vel.	In 216
			Jet Vel.	Metres
			HHPs	Hours
			HHPg	Cum. Hrs.
			HHPg/HHPs	m/Hr.
				Teeth
				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost	35		
	Cum. Cost	3005		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
D.C. 18		Drilling	Rig	6,500
gth 4 3/4		Tripping	Camp	1,000
3 4" IF		Deviation Survey	Fuel	1,000
3/4		SVC Rig	Aircraft	1,600
158.7		Cut Drilling Line	Tompkins	1,000
		Reaming	Supervision	450
		Condition Mud & Circulating	Ex-Loggers	800
Wt.		Logging	Miscellaneous	200
bilizers 1 1/2		Repair Rig pumps.	Schlumberger	125
1 1/2		Drilling cement and float	Water	304
Size 5"	12 3/4	Nipple up.	Cement	3,380
in. 4 1/2 IF	2 3/4	Pressure test.	Nowasco	2,000
			Bit	800
			Mud	35
			Contingency	1,919
			Daily Cost	21,113
			Prev. Cost	554,281
			Cum. Cost	575,394



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Eight

Jan. 9/79 Well: COLUMBIA ET AL KOTANEELLEE  
YT M-17 Depth: 216 m Progress: -

ty & Remarks: Tighten bonnet bolts on 5" rams.  
Nipple up BOP's, choke and kill lines. Hook up hydraulic lines.  
Laid flare line from stack to manifold.

tion Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
			Pump	No.
			Stroke	Ser. No.
			Liner Size	Size
			SPM	Type
			Press.	Jets
			m <sup>3</sup> /MIN.	Out
			An. Vel.	In
			Jet Vel.	Metres
			HHPs	Hours
			HHPb	Cum. Hrs.
			HHPb/HHPs	m/Hr.
				Teeth
				Bear.
				Gauge
				Wt.
				RPM
		Daily Cost		
		Cum. Cost		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
		Drilling	Rig	6,500
		Tripping	Camp	1,000
		Deviation Survey	Fuel	1,000
	3/4	SVC Rig	Aircraft	1,600
		Cut Drilling Line	Tompkins	1,000
		Reaming	Supervision	450
		Condition Mud & Circulating	Ex-Loggers	800
		Logging	Miscellaneous	200
		Repair Rig	Schlumberger	125
	23 1/4	Nipple up and change rams.	Rent	23
			Water	342
			Move out motor	
			from E-37	8,690
			Contingency	2,173
			Daily Cost	23,903
			Prev. Cost	530,378
			Cum. Cost	554,281



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Seven

Jan. 8/79 Well: COLUMBIA ET AL KOTANEELEE Depth: 216 m Progress: -  
 Well: YT M-17

Remarks: Nipple up BOP's.  
Check top of cement outside surface casing. Rig up 2" line. Re-  
cement outside top 5 m of surface casing with 1.13 cu. m OWG cement. Cut off  
conductor. Wait on cement. Cut off surface casing and weld on bowl. Test  
weld to 20,400 kpa. Nipple up BOP's.

Surveys: \_\_\_\_\_

Drill	MUD Mat'l Used	Cost	Hydraulics	Bits
			Pump	No.
			Stroke	Ser. No.
			Liner Size	Size
			SPM	Type
			Press.	Jets
			m <sup>3</sup> /MIN.	Out
			An. Vel.	In
			Jet Vel.	Metres
			HHPs	Hours
			HHPg	Cum. Hrs.
			HHPg/HHPs	m/Hr.
				Teeth
				Bear.
				Gauge
				Wt.
				RPM
			Daily Cost	
			Cum. Cost	

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
D.C.		Drilling	Rig	6,500
th		Tripping	Camp	1,000
		Deviation Survey	Fuel	1,000
	3/4	SVC Rig	Aircraft	1,600
		Cut Drilling Line	Tompkins	1,000
		Reaming	Supervision	450
		Condition Mud & Circulating	Ex-Loggers	800
Wt.		Logging	Miscellaneous	200
ilizers		Repair Rig	Slumberger	125
			Rent	23
Size	23 1/4	Recement casing. Wait on	Water	456
n.		cement and nipple up.	Casing Accessories	1,516
			& Cement Additives	
			Nowco	3,843
			Contingency	1,851
			Daily Cost	20,364
			Prev. Cost	510,014
			Cum. Cost	530,378



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Six

F 10

COLUMBIA ET AL KOTANEELEE

Date: Jan. 7/79 Well: YT M-17 Depth: 216 m Progress: 1 m

Activity & Remarks: Wait on cement. Made wiper trip and strapped pipe.

No fill. Drill to 216 m. Circulate and trip out to run casing.

Rig and run 244 mm casing, as attached. Circulate casing and reduce mud viscosity to

60. Cement casing, as attached. Wait on cement. Ran 18 joints of 244 mm, 64.75 kg/m,

N-80 casing ST&C. Total run - 216.77 m. Landed at 215.84 m. Ran Wotco Float Shoe and

Deviation Surveys: Baker Float Collar, 1 joint up, and 2 centralizers on shoe joint and 1 on

next joint.

Over -

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt.			Pump	No.
Visc.			Stroke	Ser. No.
WL			Liner Size	Size
FC			SPM	Type
pH			Press.	Jets
Gels			m <sup>3</sup> /MIN.	Out
ε			An. Vel.	In
Sus.			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHPg	Cum. Hrs.
Ca			HHPg/HHPS	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost			
	Cum. Cost			

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling		
Length		Tripping		
Size		Deviation Survey		
Thd.		SVC Rig		
OD		Cut Drilling Line		
ID		Reaming		
Wt.		Condition Mud & Circulating		
Eff. Wt.		Logging		
Stabilizers		Repair Rig		
DP Size				
Cor-				
			Daily Cost	
			Prev. Cost	
			Cum. Cost	



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Six (Continued)

COLUMBIA ET AL KOTANEELEE

Jan. 7/79

Well: YT M-17

Depth: 216 m

Progress: 1 m

ity & Remarks: Thread lock and tack weld first two joints. Ran 1.59 m<sup>3</sup> water ahead  
ment 9.4 m<sup>3</sup> OWG with 2% CaCl and 34 kg cellophane. Average slurry weight - 1870 kg/m<sup>3</sup>.  
culated displacement, 7.75 m<sup>3</sup>. Measured displacement, 7.6 m<sup>3</sup>. Plug down at 22:59  
rs, January 6, 1979, with 6894 kPa. Bled off. Float held OK. Good returns through  
x and displacement. Had approximately 0.3 m<sup>3</sup> contaminated mud return at end of dis-  
ation Surveys: placement. , Survey - 215 m - 0°

Properties	MUD Mat'l Used	Cost	Hydraulics		Bits	
1150	Gel 227 kg	47	Pump	D-1000	No.	4A
60	Sand 5 sacs	25	Stroke	457	Ser. No.	839354
			Liner Size	165	Size	311.2
			SPM	58	Type	S-44
8.0			Press.	3500	Jets	3-14.3
			m <sup>3</sup> /MIN.	1.81	Out	216
			An. Vel.	51.8	In	155.5
			Jet Vel.		Metres	60.5
			HHPs		Hours	14 1/4
			HHPg		Cum. Hrs.	59 1/4
			HHPg/HHPs		m/Hr.	-
					Teeth	2
					Bear.	1
					Gauge	I
					Wt.	3000
					RPM	85-100
	Daily Cost	72				
	Cum. Cost	2970				

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
lo. D.C.	1/2	Drilling	Rig	6,500
Length	2 3/4	Tripping	Camp	1,000
Size		Deviation Survey	Fuel	1,000
hd.	3/4	SVC Rig	Aircraft	1,600
DD		Cut Drilling Line	Tompkins	1,000
D		Reaming	Supervision	450
Vt.	1	Condition Mud & Circulating	Ex-Loggers	800
Eff. Wt.		Logging	Miscellaneous	200
Stabilizers		Repair Rig	Schlum. Standby	3,250
	2	Lay down collar	Rent	43
DP Size	8 1/4	Run casing, circulate &	Water	456
Co		cement	Mud	72
	8 3/4	Wait on cement.	Casing	14,153
			Contingency	3,052
			Daily Cost	33,576
			Prev. Cost	476,438
			Cum. Cost	510,014



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Five

Jan. 6/79 Well: COLUMBIA ET AL KOTANEELEE Depth: 215 m Progress: 71.8 m

Remarks: Make wiper trip and strap pipe.  
Strap pipe at 155 m on trip. No fill on trip.

Surveys: 144 m - 1/2°, 155 m - 1/2°, 172 m - 3/8°, 193 m - 1/8°

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
1150	Gel 1952 kg	410	Pump D-1000	No. 3A 4A
104	Soda 45 kg	23	Stroke 457	Ser. No. 837287 839354
			Liner Size 165	Size 311.2 311.2
			SPM 58	Type S-44 S-44
8			Press. 3500	Jets 2-12.7, 14.3 3-14.3
			m <sup>3</sup> /MIN. 1.81	Out 155.5 215
			An. Vel. 51.8	In 98.7 155.5
			Jet Vel.	Metres 56.8 59.5
			HHPs	Hours 20 3/4 13 3/4
			HHPB	Cum. Hrs. - 58 3/4
			HHPB/HHPs	m/Hr. - -
				Teeth 3 -
				Bear. 2 -
				Gauge 1 -
				Wt. 2200 2200
				RPM 110 110
	Daily Cost	433		
	Cum. Cost	2898		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
D.C.	17 1/2	Drilling	Rig	6,500
Length	3 1/2	Tripping	Camp	1,000
e	1 1/4	Deviation Survey	Fuel	1,000
d.	3/4	SVC Rig	Aircraft	1,600
		Cut Drilling Line	Tompkins	1,000
		Reaming	Supervision	450
	1	Condition Mud & Circulating	Ex-Loggers	800
f. Wt.		Logging	Miscellaneous	200
abilizers		Repair Rig	Rent	43
			Water	600
Size			Mud	433
nn			Bit	1,600
			Contingencies	1,523
			Daily Cost	16,757
			Prev. Cost	459,681
			Cum. Cost	476,438



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Four

COLUMBIA ET AL KOTANEELEE

Jan. 5/79

Well: YT M-17

Depth: 143.2 m

Progress: 44.5 m

Activity & Remarks: Drilling 311 mm hole.

Trip for bit. Repair crown saver. One metre fill on trip.

Location Surveys: 97 m - 3/4°, 105 m - 1/2°, 115 m - 7/8°, 127 m - 1°, 136 m - 1/2°

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
1138	Gel 454 kg	95	Pump D-1000	No. 2A 3A
59	Caustic 45 kg	53	Stroke 457	Ser. No. 430150 837287
			Liner Size 165	Size 311 311
			SPM 56	Type S13GJ S44
8.0			Press. 4000	Jets 2-12.7, 1-19 2-12.6, 1-14
			m <sup>3</sup> /MIN. 1.75	Out 98.7 -
			An. Vel. 50	In 0 98.7
			Jet Vel.	Metres 98.7 44.5
			HHPs	Hours 24 1/4 17
			HHP <sub>B</sub>	Cum. Hrs. 24 1/4 41 1/4
			HHP <sub>B</sub> /HHPs	m/Hr. 4.1 2.6
				Teeth 3
				Bear. 2
				Gauge 1
				Wt. 2400 2220
				RPM 65 110
	Daily Cost	148		
	Cum. Cost	2465		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
D.C.	17	Drilling	Rig	6,500
Length	2 3/4	Tripping	Camp	1,000
	1	Deviation Survey	Fuel	1,000
	3/4	SVC Rig	Aircraft	1,600
		Cut Drilling Line	Tompkins	1,000
		Reaming	Supervision	450
	1/2	Condition Mud & Circulating <u>fill</u>	Ex-Loggers	800
Wt.		Logging	Bit	1,600
Blenders	2	Repair Rig	Rental	43
			Water	608
			Mud	148
Size			Miscellaneous	200
on.			Contingency	1,450
			Daily Cost	16,399
			Prev. Cost	443,238
			Cum. Cost	459,637



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Three

3F 10

Date: Jan. 4/79 Well: M-17 Depth: 98.7 m Progress: 51.9 m

Activity & Remarks: Trip for bit.  
Circulate and condition mud. Minor lost circulation at  
50 metres. Mixed sawdust.

Deviation Surveys: 43 m - 0°, 52 m - 1/2°, 72.5 m - 1°, 80.9 m - 3/4°

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. <u>1120</u>	<u>Gel 5351 kg</u>		Pump <u>D-1000</u>	No. <u>2A</u>
Visc. <u>58</u>	<u>Sawdust 10 sax</u>		Stroke <u>457</u>	Ser. No. <u>430150</u>
WL			Liner Size <u>165</u>	Size <u>311</u>
FC			SPM <u>62</u>	Type <u>S13GJ</u>
pH <u>8.0</u>			Press. <u>2550</u>	Jets <u>2-12.7, 1-19</u>
Gels			m <sup>3</sup> /MIN. <u>1.94</u>	Out <u>98.7</u>
Js.			An. Vel. <u>55</u>	In <u>0</u>
Oil			Jet Vel.	Metres <u>98.7</u>
Cl			HHPs	Hours <u>24 1/4</u>
Ca			HHPg	Cum. Hrs. <u>24 1/4</u>
PV			HHPg/HHPs	m/Hr. <u>4.1</u>
YP				Teeth
				Bear.
				Gauge
				Wt. <u>2400</u>
				RPM <u>65</u>
	Daily Cost	<u>1177</u>		
	Cum. Cost	<u>2317</u>		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C. <u>3-220 mm</u>	<u>16 1/4</u>	Drilling	Rig	<u>6,500</u>
Length		Tripping	Camp	<u>1,000</u>
Size	<u>1 1/4</u>	Deviation Survey	Fuel	<u>1,000</u>
Thd.	<u>3/4</u>	SVC Rig	Aircraft	<u>1,600</u>
OD		Cut Drilling Line	Tompkins	<u>1,000</u>
ID		Reaming	Supervision	<u>450</u>
Wt.	<u>5 1/4</u>	Condition Mud & Circulating	Water	<u>570</u>
Eff. Wt.		Logging	Mud	<u>1,177</u>
Stabilizers	<u>1/2</u>	Repair Rig <u>Weight Indicator</u>	Ex-Loggers	<u>800</u>
			Rent	<u>130</u>
DP Size			Miscellaneous	<u>200</u>
Conn.			Contingencies	<u>1,443</u>
<u>t, NBR, Stab.,</u>				
<u>-220 DC, Stab., 1-220</u>				
<u>DC, Crossover</u>				
			Daily Cost	<u>15,870</u>
			Prev. Cost	<u>427,368</u>
			Cum. Cost	<u>443,238</u>



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. Two

Date: Jan. 3/79 Well: COLUMBIA ET AL KOTANEELEE  
YT M-17 Depth: 46.8 m Progress: 10.4 m

Activity & Remarks: Drilling  
Repair mud pumps. Plugged bit - tripped to clear obstruction at  
bit nozzles. Change nozzles. Run in hole, clean out 11 metres  
fill on bottom.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Rate 1080	Gel 545 kg	114	Pump D-1000	No. 2A
Disc. 42			Stroke 457	Ser. No. 430150
VL			Liner Size 165	Size 311
C			SPM 60	Type S13GJ
H 10			Press. 2250	Jets 2-12.7, 1-19
Rate			m <sup>3</sup> /MIN. 1.96	Out -
ic			An. Vel. 53.2	In 0
oids.			Jet Vel.	Metres 46.8
Oil			HHPs	Hours 8
il			HHPg	Cum. Hrs. 8
Ca			HHPg/HHPs	m/Hr. 5.85
W				Teeth
P				Bear.
				Gauge
				Wt. 2225 DaN
				RPM 63
	Daily Cost	114		
	Cum. Cost	1140		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C. 3-220 mm	2	Drilling	Rig	6,500
Length	2	Tripping	Camp	1,000
Size		Deviation Survey	Fuel	1,000
Thd.	3/4	SVC Rig	Aircraft	1,600
OD		Cut Drilling Line	Tompkins	1,000
ID	3 3/4	Reaming	Supervision	450
Wt.	1/2	Condition Mud & Circulating	Water	342
Eff. Wt.		Logging	Mud	114
Stabilizers	15	Repair Rig	Ex-Loggers	600
			Miscellaneous	200
DP Size			Newsco	400
Cr			Rental	2,924
3. NBR, Stab.,			10% Contingency	1,613
1-220 DC, Stab., 1-220				
DC, Crossover				
			Daily Cost	17,743
			Prev. Cost	409,625
			Cum. Cost	427,368



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. One

Date: Jan. 2/79 Well: COLUMBIA ET AL KOTANEELEE  
YT M-17 Depth: 36.4 m Progress: 36.4 m  
 Activity & Remarks: Repair mud pumps.  
Make up bottom hole assembly, mix mud. SPUDDED, 18:00 hours,  
79 01 01.

Location Surveys: 31.49 m - 3/4<sup>0</sup>

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt. 1070	Gel 1800 kg		Pump D-1000 850	No. 2
Disc. 35	Caustic 20 kg		Stroke 457 381	Ser. No. 430150
W/L	Soda Ash 20 kg		Liner Size 165 140	Size 311.2
C			SPM 40 65	Type S13GJ
H 10			Press. 7500 5500	Jets 3-11's
Levels			m <sup>3</sup> /MIN. 1308 1248	Out -
d			An. Vel. 36 34	In 0
Ids.			Jet Vel.	Metres 36.4
Oil			HHPs	Hours 6
Oil			HHPB	Cum. Hrs. 6
Oil			HHPB/HHPs	m/Hr. 6
Oil				Teeth -
Oil				Bear. -
Oil				Gauge -
Oil				Wt. 4-5
Oil				RPM 55
	Daily Cost	479		
	Cum. Cost	1026		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
Ho. D.C.	2-220 mm DC	6	Drilling	Rig 6,500
Length	1 NBR		Tripping	Camp 1,000
Size	2	1/4	Deviation Survey	Fuel 1,000
Thd.		3/4	SVC Rig	Water 380
DD			Cut Drilling Line	Aircraft 1,600
D			Reaming	Supervision 450
Wt.		6	Condition Mud & Circulating	Tompkins 1,000
Eff. Wt.			Logging	Mud 479
Stabilizers		6 1/2	Repair Rig	Bit 1,597
		3/4	Make up BHA	Miscellaneous 200
DP Size		2	Thaw mud lines	Ex-Loggers 600
Co-		1 3/4	Make connection	Contingency 1,480
B. NBR, Stab. 1-220 DC,				
Stab., 1-220 DC, Crossover				
			Daily Cost	16,286
			Prev. Cost	393,339
			Cum. Cost	409,625



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. \_\_\_\_\_

3F 10

COLUMBIA ET AL KOTANEELEE

Date: Jan. 1/79 Well: YT M-17 Depth: \_\_\_\_\_ Progress: \_\_\_\_\_

Activity & Remarks: Make up new bit. Change liner gaskets and No. 1 pumps.

Thaw kelly hose. Mix mud. Make up bottom hole assembly. While making up bottom hole assembly, broke pin, dropped assembly down conductor hole. Tie onto fish with slings and pull out. Break off bit and make up new bit.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt.	Gel 44		Pump	No. 1A
Visc.	Caustic 2		Stroke	Ser. No. 433770
WL	Soda 1		Liner Size	Size 3-11.2
FC			SPM	Type S13J
pH			Press.	Jets 3-11.1
Gels			m'/MIN.	Out
			An. Vel.	In
.s.			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHPg	Cum. Hrs.
Ca			HHPg/HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost	546		
	Cum. Cost			

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	Rig	5,000
Length		Tripping	Camp	1,000
Size		Deviation Survey	Fuel	1,000
Thd.		SVC Rig	Water	228
OD		Cut Drilling Line	Aircraft	1,600
ID		Reaming	Supervision	400
Wt.		Condition Mud & Circulating	Tompkins	1,000
Eff. Wt.		Logging	Mud	547
Stabilizers		Repair Rig	Miscellaneous	200
			Bit	1,663
DP Size			Contingencies	1,263
Conn.				
			Daily Cost	13,901
			Prev. Cost	379,438
			Cum. Cost	393,339



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. \_\_\_\_\_

0

COLUMBIA ET AL KOTANEELEE

Date: Dec. 31/78 Well: YT M-17 Depth: \_\_\_\_\_ Progress: \_\_\_\_\_

Activity & Remarks: Thaw out kelly hose. Change head gasket in No. 1 pump.  
 Finish hooking up No. 2 motor. Start and adjust motor. Repair clutch leaks. Replace air spear to No. 2 motor clutch. Change head on No. 3 motor. Mix mud.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt.			Pump	No.
Visc.			Stroke	Ser. No.
N/L			Liner Size	Size
°C			SPM	Type
°H			Press.	Jets
3els			m <sup>3</sup> /MIN.	Out
S/			An. Vel.	In
Sluc.			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHPg	Cum. Hrs.
Ca			HHPg/HHPs	m/Hr.
°V				Teeth
°P				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost			
	Cum. Cost			

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
Ho. D.C.		Drilling	Rig	5,000
Length		Tripping	Camp	1,000
Size		Deviation Survey	Fuel	1,000
Thd.		SVC Rig	Water	228
OD		Cut Drilling Line	Aircraft	1,600
D		Reaming	Supervision	400
Vt.		Condition Mud & Circulating	Tompkins	1,000
Eff. Wt.		Logging	Miscellaneous	200
Stabilizers		Repair Rig	Contingencies	1,042
DP Size				
Conn				
			Daily Cost	11,470
			Prev. Cost	367,968
			Cum. Cost	379,438





# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. \_\_\_\_\_

3F 10

COLUMBIA ET AL KOTANEELEE

Date: Dec. 29/78 Well: YT M-17 Depth: \_\_\_\_\_ Progress: \_\_\_\_\_

Activity & Remarks: Repair rig motor.

-32°C, Calm, Clear

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt.			Pump	No.
Visc.			Stroke	Ser. No.
WL			Liner Size	Size
FC			SPM	Type
pH			Press.	Jets
Gels			m <sup>3</sup> /MIN.	Out
			An. Vel.	In
Sus.			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHPB	Cum. Hrs.
Ca			HHPB/HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost			
	Cum. Cost			

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	Rig	5,000
Length		Tripping	Camp	1,000
Size		Deviation Survey	Fuel	1,000
Thd.		SVC Rig	Water	278
OD		Cut Drilling Line	Aircraft	1,600
ID		Reaming	Supervision	400
Wt.		Condition Mud & Circulating	Tompkins	1,000
Eff. Wt.		Logging	Miscellaneous	200
Stabilizers		Repair Rig	Contingencies	1,042
DP Size				
Conn.				
			Daily Cost	11,470
			Prev. Cost	345,028
			Cum. Cost	356,498



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. \_\_\_\_\_

10

COLUMBIA ET AL KOTANEELEE

Date: Dec. 28/78 Well: YT M-17 Depth: \_\_\_\_\_ Progress: \_\_\_\_\_

Activity & Remarks: Repair rig motor.

Crew arrived on location at 2:00 p.m., December 27, 1978.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt.			Pump	No.
Visc.			Stroke	Ser. No.
WL			Liner Size	Size
FC			SPM	Type
pH			Press.	Jets
Gr			m <sup>3</sup> /MIN.	Out
S			An. Vel.	In
Slds.			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHPB	Cum. Hrs.
Ca			HHPB/HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost			
	Cum. Cost			

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	Rig Standby	30,000
Length		Tripping	Camp	6,000
Size		Deviation Survey	Fuel	6,000
Thd.		SVC Rig	Water	1,368
OD		Cut Drilling Line	Aircraft	9,600
ID		Reaming	Supervision	800
Wt.		Condition Mud & Circulating	Tompkins	6,000
Eff. Wt.		Logging	Miscellaneous	200
Stabilizers		Repair Rig	Contingencies	5,996
DP Size				
Cc				
			Daily Cost	65,964
			Prev. Cost	279,064
			Cum. Cost	345,028



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. \_\_\_\_\_

10

Date: Dec. 22/78 Well: COLUMBIA ET AL KOTANEELEE Depth: \_\_\_\_\_ Progress: \_\_\_\_\_  
 Well: YT M-17

Activity & Remarks: Repair rig motor.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt.			Pump	No.
Visc.			Stroke	Ser. No.
WL			Liner Size	Size
FC			SPM	Type
pH			Press.	Jets
Gels			m <sup>3</sup> /MIN.	Out
Sr			An. Vel.	In
Sl			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHPg	Cum. Hrs.
Ca			HHPg/HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost			
	Cum. Cost			

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	Rig	5000
Length		Tripping	Camp	1000
Size		Deviation Survey	Fuel	1000
Thd.		SVC Rig	Water	228
OD		Cut Drilling Line	Aircraft	1000
ID		Reaming	Supervision	400
Wt.		Condition Mud & Circulating	Tompkins	1000
Eff. Wt.		Logging	Ex-Loggers	800
Stabilizers		Repair Rig	Miscellaneous	200
			Contingencies	1123
DP Size				
Conn.				
			Daily Cost	12,351
			Prev. Cost	279,862
			Cum. Cost	292,213



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. \_\_\_\_\_

COLUMBIA ET AL KOTANEELEE

Date: Dec. 21/78 Well: YT M-17 Depth: \_\_\_\_\_ Progress: \_\_\_\_\_

Activity & Remarks: Wait on repairs for rig motor.

Tear down motor No. 2. Otter unable to fly in repair parts due to weather.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Vt.			Pump	No.
Visc.			Stroke	Ser. No.
NL			Liner Size	Size
FC			SPM	Type
SH			Press.	Jets
Gels			m <sup>3</sup> /MIN.	Out
Sd			An. Vel.	In
Slids.			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHPg	Cum. Hrs.
Ca			HHPg/HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost			
	Cum. Cost			

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	Rig	5000
Length		Tripping	Camp	1000
Size		Deviation Survey	Fuel	1000
Thd.		SVC Rig	Water	228
OD		Cut Drilling Line	Aircraft	1000
ID		Reaming	Supervision	400
Wt.		Condition Mud & Circulating	Tompkins	1000
Eff. Wt.		Logging	Ex-Loggers	800
Stabilizers		Repair Rig	Miscellaneous	200
			Contingencies	1123
DP Size				
Cr				
			Daily Cost	12,351
			Prev. Cost	267,511
			Cum. Cost	279,862



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

F 10

Day No. \_\_\_\_\_

COLUMBIA ET AL KOTANEELEE

Date: Dec. 20/78 Well: YT M-17 Depth: \_\_\_\_\_ Progress: \_\_\_\_\_

Activity & Remarks: Tear out motor No. 2.

Rig to spud, No. 2 motor down. Start tear out of motor at 4:00 p.m.

Crankshaft expected to arrive at 2:00 p.m. Crane operator expected at noon.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt.			Pump	No.
Visc.			Stroke	Ser. No.
WL			Liner Size	Size
FC			SPM	Type
pH			Press.	Jets
Gels			m <sup>3</sup> /MIN.	Out
Slds.			An. Vel.	In
Oil			Jet Vel.	Metres
Cl			HHPs	Hours
Ca			HHPb	Cum. Hrs.
PV			HHPb/HHPs	m/Hr.
YP				Teeth
				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost			
	Cum. Cost			

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling _____	Rig	5000
Length		Tripping _____	Camp	1000
Size		Deviation Survey _____	Fuel	1000
Thd.		SVC Rig _____	Water	380
OD		Cut Drilling Line _____	Aircraft	1600
ID		Reaming _____	Supervision	400
Wt.		Condition Mud & Circulating _____	Tompkins	1000
Eff. Wt.		Logging _____	NowSCO	800
Stabilizers		Repair Rig _____	Ex-Loggers	800
			Miscellaneous	200
DP Size			Contingencies	1218
Conn.				
			Daily Cost	13,398
			Prev. Cost	254,113
			Cum. Cost	267,511



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. \_\_\_\_\_

3F 10

COLUMBIA ET AL KOTANEELEE

Date: Dec. 19/78 Well: YT M-17 Depth: \_\_\_\_\_ Progress: \_\_\_\_\_

Activity & Remarks: Rig to spud.

Finish rigging up prefabs. Rigged up drill floor. Picked up kelly.

Cleaning out mud tanks. Transfer 300 sacs of cement into tanks.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt.			Pump	No.
Visc.			Stroke	Ser. No.
WL			Liner Size	Size
FC			SPM	Type
pH			Press.	Jets
Gels			m <sup>3</sup> /MIN.	Out
			An. Vel.	In
Sds.			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHPg	Cum. Hrs.
Ca			HHPg/HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost			
	Cum. Cost			

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	Rig	5000
Length		Tripping	Camp	1000
Size		Deviation Survey	Fuel	1000
Thd.		SVC Rig	Water	228
OD		Cut Drilling Line	Aircraft	1600
ID		Reaming	Supervision	400
Wt.		Condition Mud & Circulating	Tompkins	1000
Eff. Wt.		Logging	Lease Const.	1266
Stabilizers		Repair Rig	Service Crews	800
			Rig Move	48527
DP Size			Miscellaneous	200
Conn.			Contingencies	6102
			Daily Cost	67,123
			Prev. Cost	186,990
			Cum. Cost	254,113



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. \_\_\_\_\_

Location: COLUMBIA ET AL KOTANEELEE  
 Date: Dec. 18/78 Well: YT M-17 Depth: \_\_\_\_\_ Progress: \_\_\_\_\_

Activity & Remarks: Rigging up.

Raised derrick, start setting up prefabs. Estimated spud - December 19, 1978.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Nt.			Pump	No.
/isc.			Stroke	Ser. No.
ML			Liner Size	Size
FC			SPM	Type
OH			Press.	Jets
Gels			m <sup>3</sup> /MIN.	Out.
Sc			An. Vel.	In
Slds.			Jet Vel.	Metres
Dil			HHPs	Hours
Cl			HHPg	Cum. Hrs.
Ca			HHPg/HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
		Daily Cost		
		Cum. Cost		

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	Rig	5000
Length		Tripping	Camp	1000
Size		Deviation Survey	Fuel	1000
Thd.		SVC Rig	Water	228
OD		Cut Drilling Line	Aircraft	1600
ID		Reaming	Supervision	400
Wt.		Condition Mud & Circulating	Tompkins	1000
Eff. Wt.		Logging	Miscellaneous	200
Stabilizers		Repair Rig	Contingencies	1042
DP Size				
Co				
			Daily Cost	11,470
			Prev. Cost	175,520
			Cum. Cost	186,990





# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

F 10

Day No. \_\_\_\_\_

Date: Dec. 16/78 Well: COLUMBIA ET AL KOTANEELEE Depth: \_\_\_\_\_ Progress: \_\_\_\_\_  
 Activity & Remarks: Spotted boiler and choke manifold building. Hook up lines and general rig up.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt.			Pump	No.
Visc.			Stroke	Ser. No.
WL			Liner Size	Size
FC			SPM	Type
pH			Press.	Jets
Cons			m <sup>3</sup> /MIN.	Out
			An. Vel.	In
Slds.			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHPg	Cum. Hrs.
Ca			HHPg/HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost			
	Cum. Cost			

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	Rig	5000
Length		Tripping	Camp	1000
Size		Deviation Survey	Fuel	1000
Thd.		SVC Rig	Water	228
OD		Cut Drilling Line	Aircraft	1600
ID		Reaming	Supervision	400
Wt.		Condition Mud & Circulating	Tompkins	1000
Eff. Wt.		Logging	Miscellaneous	200
Stabilizers		Repair Rig	Contingencies	1042
DP Size				
nn.				
			Daily Cost	11,470
			Prev. Cost	152,580
			Cum. Cost	164,050





# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

Day No. \_\_\_\_\_

73F 10

COLUMBIA ET AL KOTANEELEE

Date: Dec. 14/78 Well: YT M-17 Depth: \_\_\_\_\_ Progress: \_\_\_\_\_

Activity & Remarks: Prepare to spot mud tanks.

Set up motors on sub base. Finish assembly and pin derrick. Spotted mud pumps. Spot matting for mud tanks. Install camp light plant in steel shack. Prepare to change out boiler.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt.			Pump	No.
Visc.			Stroke	Ser. No.
WL			Liner Size	Size
FC			SPM	Type
pH			Press.	Jets
Gels			m <sup>3</sup> /MIN.	Out
J.			An. Vel.	In
Slds.			Jet Vel.	Metres
Oil			HHPs	Hours
Cl			HHPB	Cum. Hrs.
Ca			HHPB/HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost			
	Cum. Cost			

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling	Rig	5000
Length		Tripping	Camp	1000
Size		Deviation Survey	Fuel	1000
Thd.		SVC Rig	Water	228
OD		Cut Drilling Line	Aircraft	1600
ID		Reaming	Supervision	400
Wt.		Condition Mud & Circulating	Conductor	22000
Eff. Wt.		Logging	Miscellaneous	600
Stabilizers		Repair Rig	Tompkins	3000
			Contingencies	3482
DP Size				
Conn.				
			Daily Cost	38,310
			Prev. Cost	102,800
			Cum. Cost	141,110





# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY DRILLING REPORT

10

Day No. \_\_\_\_\_

COLUMBIA ET AL KOTANEELEE

Date: Dec 12/78 Well: M-17 Depth: \_\_\_\_\_ Progress: \_\_\_\_\_

Activity & Remarks: Moved and rigged up camp. Move most miscellaneous equipment to new location. Lay matting for substructure area.

Deviation Surveys: \_\_\_\_\_

Properties	MUD Mat'l Used	Cost	Hydraulics	Bits
Wt.			Pump	No.
Visc.			Stroke	Ser. No.
WL			Liner Size	Size
FC			SPM	Type
pH			Press.	Jets
Gels			m <sup>3</sup> /MIN.	Out
			An. Vel.	In
Cl			Jet Vel.	Metres
Oil			HHPs	Hours
CI			HHPg	Cum. Hrs.
Ca			HHPg/HHPs	m/Hr.
PV				Teeth
YP				Bear.
				Gauge
				Wt.
				RPM
	Daily Cost			
	Cum. Cost			

Mechanics	TIME DISTRIBUTION		COST ANALYSIS	
	Hours	Operation	Items	Cost
No. D.C.		Drilling _____	Rig	5000
Length		Tripping _____	Fuel	1000
Size		Deviation Survey _____	Water	228
Thd.		SVC Rig _____	Camp	1000
OD		Cut Drilling Line _____	Supervision	400
ID		Reaming _____	Aircraft	1600
Wt.		Condition Mud & Circulating _____	Contingencies	922
Eff. Wt.		Logging _____		
Stabilizers		Repair Rig _____		
DP Size				
Conn.				
			Daily Cost	10,150
			Prev. Cost	
			Cum. Cost	10,150





D&S PETROLEUM FIELD SERVICES LTD.

DAILY OPERATIONS REPORT

WELL : COLUMBIA ET AL KOTANEELEE YT M-17

DATE	DEPTH	DETAIL OF OPERATION
1979		
Jan.2	36.4 m	36.4 m Repair mud pumps. Make up bottom hole assembly, mix mud. SPUDED - 1800 hours JANUARY 1, 1979. Surveys - 31.49 - 3/4°. Mud Wt. 1070, Visc. 35.
Jan.3	46.8 m	10.4 m Drilling. Repair mud pumps. Plugged bit - tripped to clear obstruction at bit nozzles. Change nozzles. Run in hole, clean out 11 m fill on bottom. Mud Wt. 1080, Visc. 42.
Jan.4	98.7 m	51.9 m Trip for bit. Circulate and condition mud. Minor lost circulation at 50 m. Mixed sawdust. Surveys - 43 m - 0°, 52 m - 1/2°, 72.5 m - 1°, 80.9 m - 3/4°. Mud Wt. 1120, Visc. 58.
Jan.5	143.2 m	44.5 m Drilling 311 mm hole. Trip for bit. Repair crown saver. One metre fill on trip. Surveys - 97 m - 3/4°, 105 m - 1/2°, 115 m - 7/8°, 127 m - 1°, 136 m - 1/2°. Mud Wt. 1138, Visc. 59.
Jan.6	215.0 m	71.8 m Make wiper trip and strap pipe. Strap pipe at 155 m on trip. No fill on trip. Surveys - 144 m - 1/2°, 155 m - 1/2°, 172 m - 3/8°, 193 m - 1/8°. Mud Wt. 1150, Visc. 104.
Jan.7	216.0 m	1.0 m Wait on cement. Made wiper trip and strapped pipe. No fill. Drill to 215 m. Circulate and trip out to run casing. Rig and run 244 mm casing, as attached. Circulate casing and reduce mud viscosity to 60. Cement casing, as attached. Wait on cement. Ran 18 joints of 244 mm, 64.75 kg/m, N-80 casing ST&C. Total run - 216.77 m. Landed at 215.84 m. Ran Wotco Float Shoe and Baker Float Collar, 1 joint up and 2 centralizers on shoe joint and 1 on next joint. Thread lock and tack weld first two joints. Ran 1.59 m <sup>3</sup> water ahead. Cement 9.4 m <sup>3</sup> OWG with 2% CaCl and 34 kg cellophane. Average slurry weight - 1870 m <sup>3</sup> . Calculated displacement, 7.75 m <sup>3</sup> . Measured displacement, 7.6 m <sup>3</sup> . Plug down at 2259 hours January 6, 1979, with 6894 kps. Bled off. Float held O.K. Good returns through mix and displacement. Had approximately 0.3 m <sup>3</sup> contaminated mud return at end of displacement. Surveys - 215 m - 0°. Mud Wt. 1150, Visc. 60.
Jan.8	216.0 m	0.0 m Nipple up BOP's. Check top of cement outside surface casing. Rig up 2" line. Recement outside top 5 m of surface casing with 1.13 m <sup>3</sup> OWG cement. Cut off conductor. Wait on cement. Cut off surface casing and weld on bowl. Test weld to 20,400 kpa. Nipple up BOP's.



D&S PETROLEUM FIELD SERVICES LTD.

DAILY OPERATIONS REPORT

WELL: COLUMBIA ET AL KOTANEELLEE YT M-17

DATE	DEPTH	DETAIL OF OPERATION
Jan.9	216.0 m	0.0 m Tighten bonnet bolts on 5" rams. Nipple up BOP's, choke and kill lines. Hook up hydraulic lines. Laid flare line from stack to manifold.
Jan.10	216.0 m	0.0 m Drilling out shoe. Nipple up. Pressure test blind rams, casing and manifold to 20,000 kPa. Picked up and ran collars. Pressure test pipe rams to 20,000 kPa and hydril to 10,000 kPa. Drill cement from 209 - 212 m. Mud Wt. 1140, Visc. 60.
Jan.11	282.0 m	66.0 m Drilling 3 m/hr. Drilled cement and clean to bottom. Formation bled off to 2750 kPa. Surveys - 234 m - 0°, 260 m - 3/4°, 270 m - 1/2°, 280 m - 1 1/4°. Mud Wt. 1060, Visc. 37.
Jan.12	337.0 m	55.0 m Drilling. Trip for bit. Ran stiff bottom hole assembly. Ream several tight spots. No fill on bottom. Strap pipe. No correction. Surveys - 290 m - 1 1/2°, 300 m - 1 1/2°, 310 m - 1 1/2°, 323 m - 2°. Mud Wt. 1080, Visc. 40.
Jan.13	457.0 m	120.0 m Drilling 215.9 mm hole. Surveys - 348 m - 2°, 377 m - 2 1/2°, 403 m - 2 3/4°, 432 m - 3 1/4°, 451 m - 3 1/2°. Mud Wt. 1080, Visc. 39.
Jan.14	542.0 m	85.0 m Drilling 215.9 mm hole. Toad Grayling Surveys - 472 m - 3 1/2°, 481 m - 3 3/4°, 509 m - 4 3/4°, 519 m - 4 7/8°, 529 m - 5 1/4°. Mud Wt. 1110, Visc. 40.
Jan.15	609.0 m	67.0 m Drilling 215.9 mm hole. Toad Grayling Surveys - 549 m - 5 1/4°, 568 m - 6°, 586 m - 6 1/4°, 606 m - 6 3/8°. Mud Wt. 1100, Visc. 37.
Jan.16	664.0 m	55.0 m Drilling 215.9 mm hole. Toad Grayling. Trip for bit, slip and cut line. Service reamer. No fill on trip. Twin Otter used by D.O.T., Islander - 2 trips to Nelson, overnight in Nelson. Surveys - 616 m - 6 1/4°, 636 m - 6 3/4°, 654 m - 7 1/4°. Mud Wt. 1090, Visc. 41.
Jan.17	712.0 m	48.0 m Drilling 215.9 mm hole. Toad Grayling. Rig down for 9 3/4 hours. Repair mud pump, changed out two pistons. Surveys - 674 m - 7 1/4°, 693 m - 7 3/4°. Mud Wt. 1080, Visc. 36.
Jan.18	724.0 m	12.0 m Drilling 215.9 mm hole. Survey at 712 m, misrun. Washout union in standpipe. Change to other standpipe. Repair shock hole. Replace gasket on mud pump. Repair pop valve on pump. Work plugged bit. Trip out of hole and strap pipe. Change cutters in reamer and bit and run in hole. Ream 700 - 712 m. Circulate, surveys misrun.



D&S PETROLEUM FIELD SERVICES LTD.

DAILY OPERATIONS REPORT

WELL: COLUMBIA ET AL KOTANEELEE YT M-17

DATE	DEPTH	DETAIL OF OPERATION
Jan.18	Cont'd	Surveys - 712 m - 8°, 722 m - 8°. Mud Wt. 1060, Visc. 33.
Jan.19	762.0 m	38.0 m Drilling. Repair 4" Cameron valve, shock hose between pumps, and pop valve line on No. 2 pump. Trip for bit. Strap pipe. No fill on trip. Surveys - 731 m - 8°, 758 m - 8°. Mud Wt. 1050, Visc. 34.
Jan.20	783.0 m	21.0 m Drilling. Fantasque. Drilling, service rig, check lower pipe rams. Increase weight on bit. Survey. Surveys - 770 m - 8 1/4°, 779 m - 8 1/4°. Mud Wt. 1070, Visc. 36.
Jan.21	805.0 m	22.0 m Drilling. Background Gas - 50 units, Cuttings Gas - 4 units, Lith: 70% Chert, 30% Siltstone. Repair washouts on D-1000. Surveys - 789 m - 7 3/4°, 798 m - 7 1/2°. Mud Wt. 1085, Visc. 43.
Jan.22	830.0 m	25.0 m Drilling 215.9 mm hole. Background Gas - 50 units, Cuttings Gas - 4 units. Lith: 50% Chert, 50% Siltstone. Surveys - 808 m - 7 1/2°, 818 m - 7°, 827 m - 7 1/2°. Mud Wt. 1090, Visc. 38.
Jan.23	848.0 m	18.0 m Reaming to bottom with bit No. 10. Drilling 1.31 m/hr. Drilling Exponent - 1.75, Cuttings Gas - 6 units, Background Gas - 56 units. Lith: 70% Siltstone, 30% Chert. Trip for bit. Reamer 1/2" undergauge Change out cutters. Stabilizers O.K. Ream in from 285 m. Surveys - 846 m - 6 3/4°. Mud Wt. 1080, Visc. 35.
Jan.24	859.0 m	11.0 m Tripping for bit. Drilling Rate - 0.77 m/hr., Drilling Exponent - 1.84, Cuttings Gas - 1 units, Background Gas - 105 units. Lith: 90% Chert, 10% Siltstone. Reamed bridges and fill and last 11 m of under gauge hole to bottom. Mud Wt. 1080, Visc. 40.
Jan.25	894.0 m	35.0 m Drilling 215.9 mm hole. Drilling Rate - 1.9, Drilling Exponent 1.68, Cuttings Gas - 6 units, Background Gas - 100 units. Lith: 70% Siltstone, 30% Chert. Trip for bit, change out reamer. 7 m fill on bottom. Hole good. Surveys - 859 m - 6°, 875 m - 5 7/8°, 885 m - 5 7/8°. Mud Wt. 1080, Visc. 40.
Jan.26	930.0 m	36.0 m Drilling 215.9 mm hole. Drilling Rate - 1.8, Drilling Exponent 1.79, Cuttings Gas - 35 units, Background Gas - 100. Lith: 100% Siltstone. 0.5 m <sup>3</sup> /hr., water flow from 909 - 924 m. Total water influx - 5 m <sup>3</sup> . Surveys - 893 m - 5 3/4°, 903 m - 5°, 914 m - 5°, 923 m - 5 1/2°. Mud Wt. 1080, Visc. 41.



D&S PETROLEUM FIELD SERVICES LTD.

DAILY OPERATIONS REPORT

WELL: COLUMBIA ET AL KOTANEELEE YT M-17

DATE	DEPTH	DETAIL OF OPERATION
Jan.27	967.0 m	37.0 m Drilling 215.9 mm hole. Drilling Rate - 1.43, Drilling Exponent - 1.84, Cuttings Gas - 0, Background Gas - 45 units. Lith: 100% Sandstone, Mattson top at 951. Surveys - 932 m - 5 3/4°, 941 m - 5 1/4°, 952 m - 5°, 962 m - 5 1/4°. Mud Wt. 1080, Visc. 44.
Jan.28	992.0 m	25.0 m Drilling 215.9 mm hole. Drilling Rate - 0.85 m/hr., Drilling Exponent - 2.0, Cuttings Gas - 0 units, Background Gas - 35 units. Lith: 100% Sandstone, trace limestone. Surveys - 970 m 5 1/4°, 979 m - 5 1/2°, 990 m - 5°. Mud Wt. 1080, Visc. 46.
Jan.29	1009.0 m	17.0 m Drilling 215.9 mm hole. Drilling Rate - 1.15, Drilling Exponent - 1.90, Cuttings Gas - 0 units, Background Gas - 40-60 units, Flowline Temperature - 32.6°C. Lith: 100% Sandstone, fine, hard and tight. Strap out on trip for bit. Strap OK. Hole good. Lay down jars. Pick up replacement jars. 2 m fill on trip. 1 m drilling break at 1003.5 m, water flow at 1005, 10.4 m <sup>3</sup> /hr. while drilling. 0 kPa, shut in drill pipe pressure. Surveys - 999 m - 5°. Mud Wt. 1080, Visc. 45.
Jan.30	1031.0 m	22.0 m Drilling 215.9 mm hole. Drilling Rate - 1.50 m/hr., Drilling Exponent - 1.93, Cuttings Gas - 0 units, Background Gas - 50 units, Flowline Temperature - 34°C. Lith: 100% Sandstone. Surveys - 1007 m - 4 1/2°, 1017 m - 4 1/4°, 1028 m - 4 1/4°. Mud Wt. 1070, Visc. 46.
Jan.31	1057.0 m	26.0 m Drilling. Drilling, run surveys. Service rig. Drilling Rate - 1.6 m/hr., Cuttings Gas - 0 units, Background Gas - 70 units, Flowline Temperature - 39°C. Lith: 100% Siltstone. Surveys - 1036 m - 4 1/4°, 1046 m - 4 1/4°. Mud Wt. 1070, Visc. 47.
Feb.1	1084.0 m	27.0 m Dress near bit reamer. Drilling, survey, service rig and check BOP's. Trip for bit and strap pipe. Drilling Rate - 65 m/hr., Cuttings Gas - 0 units, Background Gas - 52 units, Flowline Temperature - 38°C. Lith: 40% Shale, 60% Sandstone, trace silt and limestone. Surveys - 1055 m - 4 1/2°, 1066 m - 1 1/8°, 1075 m - 3 7/8°, 1084 m - Misrun. Mud Wt. 1070, Visc. 44.
Feb.2	1104.0 m	20.0 m Tripping out of hole. Tight hole at 1084 m. Service rig. Tripped in hole, ream tight hole from 285 - 350 m. Trip in to 1065 m. Reamed under gauge hole from 1065 - 1084 m. Drilled ahead and surveyed.



D&S PETROLEUM FIELD SERVICES LTD.

DAILY OPERATIONS REPORT

WELL: COLUMBIA ET AL KOTANEELEE YT M-17

DATE	DEPTH	DETAIL OF OPERATION
Feb.2	Cont'd	Trip out. Drilling Rate - 1.6 m/hr., Cuttings Gas - 0 units, Background Gas - 50 units, Flowline Temperature - 35.5°C. Lith: 10% Shale, 90% Siltstone. Surveys - 1093 m - 4 1/2°. Mud Wt. 1090, Visc. 49.
Feb.3	1108.0 m	4.0 m Working stuck pipe. Bit at 1096 m (15' movement). Trip out (measuring OK). Change bit and reamer cutters. Service rig, run in hole, cut drill line. Ran to 285 m, ream to 340 m. Run in to 1075 m, ream to 1104 m. Drill to 1108 m. Background Gas - 60 units, Cuttings Gas - 0 units, Flowline Temperature - 39°C. Lith: 90% Siltstone, 10% Shale. Survey - 1103 m - 5°. Mud Wt. 1080, Visc. 48.
Feb.4	1120.0 m	12.0 m Drilling 215.9 mm hole. Work stuck pipe. Came free at 0900 hours. Broke circulation and cleaned to bottom. Drilled ahead, service rig. Pulled 5 stands, repair swivel. Ran in to bottom, repair No. 1 pump pop valve. Pulled 6 stands and repair swivel again. Ran in and drill ahead. Mud Wt. 1080, Visc. 55.
Feb.5	1151.0 m	31.0 m Drilling. Run 2 surveys and service rig. Drilling Rate - 1.5 m/hr., Background Gas - 80 units, Cuttings Gas - 0 units, Flowline Temperature - 38.5°C. Lith: 80% Sandstone, 20% Limestone. Gaining 16 barrels of water per hour. Surveys - 1120 m - 5 1/2°, 1130 m - 5 1/4°. Mud Wt. 1065, Visc. 68.
Feb.6	1177.0 m	26.0 m Drilling 215.9 mm hole. Drilling, surveys and work tight hole after survey at 1160 m. Water influx 900 liters per hour. Drill ahead. 1.33 m/hr. Background Gas - 80 units, Cuttings Gas - 0 units, Flowline Temperature - 40.8°C, Lith: 30% Limestone, 70% Sandstone. Surveys - 1150 m - 5 1/2°, 1160 m - 5 3/4°, 1169 m - 5 1/2°. Mud Wt. 1070, Visc. 90.
Feb.7	1205.0 m	28.0 m Trip out of hole. Drilling, service rig, and survey. Flow rate at 1202 m, 1.8 m <sup>3</sup> /hr. Trip for bit. Drilling Rate - Last 4 m approximately 3 m/hr., Background Gas - 35 units, Cuttings Gas - 0 units, Flowline Temperature - 39°C. Lith: 60% Limestone, 40% Sandstone. Surveys - 1187 m - 4 1/2°. Mud Wt. 1070, Visc. 80.
Feb.8	1220.0 m	15.0 m Trip for bit. Drilling Rate - 1.5 m/hr., Background Gas - 70 units, Cuttings Gas - 0 units, Flowline Temperature - 37°C. Lith: 100% Sandstone. Pull out of hole. Hole tight on 15-17 stands off bottom. Measure out, OK. Turned reamer pins, install float in string.



# D&S PETROLEUM FIELD SERVICES LTD.

## DAILY OPERATIONS REPORT

WELL: COLUMBIA ET AL KOTANEELEE YT M-17

DATE	DEPTH	DETAIL OF OPERATION
Feb. 8	Cont'd	service rig, check crown saver and motor shut offs. Trip in hole, ream bottom 9 m. Drill ahead, circulate for trip, survey and trip out. 10 m <sup>3</sup> pit gain on trip. Survey - 1205 m - 5 1/4°. Mud Wt. 1060, Visc. 75.
Feb. 9	1237.0 m	17 m Drilling ahead. Drilling Rate - 1.4 m/hr., Background Gas - 90 units, Cuttings Gas - 0 units, Flowline Temperature - 36°C. Lith: 100% Sandstone. Trip for bit, change reamer cutters, pins and 2 blocks. Pick up new shock sub. Trip in with reamer 7 m to bottom. Drilled ahead, rig service, check crown saver and survey. Gained 18 m <sup>3</sup> fluid on trip out, (1.45 m <sup>3</sup> /hr.). Surveys - 1220 m - 5 1/4°, 1235 m - 5 1/2°. Mud Wt. 1060, Visc. 70.
Feb. 10	1270.0 m	33 m Drilling ahead. Drilling, service rig. Drilling at 1256 m - had drilling break. Check flow rate - 6 m <sup>3</sup> /hr. Shut in over 850 kPa. Drill to 1259 m, check shut-in - 1100 kPa. Service rig and drill ahead. Drilling Rate - 1.7 m/hr., Background Gas - 140 units, Cuttings Gas - 0 units, Flowline Temperature - 38°C, 2.5 m <sup>3</sup> /hr. average flow. Lith: 90% Sandstone, 10% Limestone. Survey - 1255 m - 5 1/2°. Mud Wt. 1060, Visc. 75.
Feb. 11	1301.0 m	31 m Drilling. Service rig, drill. Check annulus pressure - 500 kPa in 5 minutes increasing to 950 kPa in 15 minutes. Survey and drill to 1290 m. Circulate and increase mud weight to 1180. Drill ahead. Drilling Rate - 1 m/hr., Background Gas - 0 units, Flowline Temperature - 36°C. Lith: 70% Sandstone, 30% Limestone. Mud Wt. 1220, Visc. 75.
Feb. 12	1328.0 m	27 m Circulate and raise mud weight for trip. Service rig, check crown-o-matic. Drilled ahead, ran survey, drilled ahead. Start out of hole measuring, well flowing, trip back to bottom. Shut in well. Shut in casing pressure, 1035 kPa. Circulate and raise mud weight. Drilling Rate - .77 m/hr., Background Gas - 48 units, Cuttings Gas - 0 units, Flowline Temperature - 36.2°C. Lith: 100% Sandstone. Gain 1/2 m <sup>3</sup> /hr., prior to trip. Survey - 1323 m - 5 1/2°. Mud Wt. 1200, Visc. 65.
Feb. 13	1330.0 m	2 m Drilling. Drilling Rate - 0.8 m/hr. Background Gas - 1 unit, Cuttings Gas - 0 units, Flowline Temperature - 30°C, Lith: 100% Sandstone. Service rig, circulate and increase mud weight. Trip for bit. Turn pins on near bit reamer. Trip in hole to 1310 m. Ream 18 m to



D&S PETROLEUM FIELD SERVICES LTD.

DAILY OPERATIONS REPORT

WELL : COLUMBIA ET AL KOTANEELLEE YT.M-17

DATE	DEPTH	DETAIL OF OPERATION
Feb 13	Cont'd	bottom. Measure out 1.8 metres longer than tally, no adjustment. Mud Wt. 1350, Visc. 68.
Feb 14	1 332 m	2 m. Circulate and condition hole at 303 m. Drill to 1 332 m. Slug pipe, pull out to bottom hole assembly. Run in to 285 m. Ream and wash sloughing hole from 285 m to 303 m. Strap pipe - no correction made. Mud Wt. 1350, Visc. 165.
Feb 15	1 332 m	0 m. Pull out of hole to log. Ream bridges from 364-421, 820-840, 1067 - 1085 and 1208-1227 m. Run in to bottom - no fill. Circulate and condition mud. Pump pill. Dummy trip to casing shoe and return to bottom. No tight spots. Circulate hole clean. Trip out to log. Mud Wt. 1360, Visc. 200.
Feb 16	1 332 m	0 m. Pull out of hole to log and fish pipe stripper out of BOP. Rig service and pull out of hole to log. Rig up Schlumberger and run into 378 m. Hole bridged. Rig out loggers. Run in hole with bit. Reamed bridges from 250 m to bottom. Three metres fill on bottom. Circulate and condition. Pump pill and pull out of hole to log. Mud Wt. 1350, Visc. 198.
Feb 17	1 332 m	0 m. Trip out to log. Remove wiper from BOP's. Rig up and log: DILL-BHCS, CNL-FDC. Density tool failed. Rig out Schlumberger. Trip in hole. Broke circulation, lost approximately 13-16 m <sup>3</sup> mud to hole. Circulate hole and build mud volume. Measure out. Mud Wt. 1330, Visc. 150.
Feb 18	1 332 m	0 m. Running casing. Trip and log. Rig with Schlumberger, run CNL-FDC TD - surface casing. Rig out Schlumberger. Trip in hole with bit and BHA. Circulate and condition mud in hole for casing. Pull out of hole, break connections and stand back in derrick. Lay down BHA, change pipe rams and rig to run casing. Mud Wt. 1340, Visc. 143.
Feb 19	1 332 m	Circulate casing and condition mud. Run 112 joints 177 mm, 47.62 kg/m, N-80, 8RD casing. Break circulation and circulate at 429 m - 8000 kPa. Run in hole to bottom. Mud coming over casing on last 4 m of last several joints. Circulate and condition mud. Mud Wt. 1370, Visc. 120.
Feb 20	1 332 m	0 m. Circulate and prepare to cement casing. Circulate and work casing while waiting on wireline equipment to check casing. Rig up



D&S PETROLEUM FIELD SERVICES LTD.

DAILY OPERATIONS REPORT

WELL: COLUMBIA ET AL KOTANEELEE YT M-17

DATE	DEPTH	DETAIL OF OPERATION
Feb 20	Cont'd	wireline tools. Run in hole with rubber plug on sinker bar. Tag float collar. Pressure test casing to 9000 kPa for 10 minutes. No bleed off. Rig out wireline equipment. Mud Wt. 1340, Visc. 95.
Feb 21	1 332 m	0 m. Laying down drill pipe. Circulate to condition mud. Cemented with 21.3 tonnes 0-1-8 with 0.5% T-10, 12.95 tonnes 0-1-0- with 15% NaCl and 0.7 T-10. Plug down at 12:50 hours. Bumped with 14,000 kPa. Tore out BOP's, bled off casing at 23:00 hours. Cut casing re-installed BOP's. Lay down pipe.
Feb 22	1 332 m	0 m. Running 88.9 mm tubing. Finish laying down drill pipe. Tear out BOP's, install tubing hanger. Rig up power tongs and run tubing. Run mule shoe, 1 joint tubing, Baker AD-1 packer and tubing.
Feb 23	1 332 m	0 m. Preparing to circulate hole to water. Finished sorting and running tubing. Tagged bottom at 1318 m K.B.
Feb 24	1 332 m	0 m. Circulate annulus to inhibited water. Wait on Nowsco, displace hole to water. Shut down for 2 hours for plant start up. While pulling up to setting depth, packer set and sheared. Strap out of hole. Re-dress packer and ran in hole.
Feb 25	1 332 m	0 m. Pull out of hole with perforating gun. Circulate annulus to inhibited water topped with 0.8 m <sup>3</sup> diesel. Land packer in 10,000 daN tension at 980 m K.B. Install wellhead. Pressure test tubing and wellhead to 29,000 kPa for 20 minutes, OK. Ran Gamma Ray CCL from 1319 to 1100 m. Perforate, 1312.5 - 1317 m, 1300.5 - 1304.5 m, 1282.5 - 1286 m, 1256.5 - 1261.5 m K.B. BHCS log intervals with 54 mm tubing gun at 13 JSPM. 1 misrun.
Feb 26	1 332 m	0 m. Flowing well. Pull out of hole with Schlumberger. Shut well in for 1 1/4, pressure built to 2760 kPa. Open to flow, 78 m <sup>3</sup> in 21 hours. Gassing slightly, H <sub>2</sub> S, 100 ppm.
Feb 27	1 332 m	0 m. Tearing out rig. Shut well in, injected 2 barrels of diesel down tubing. Shut in pressure after 6 hours, 2585 kPa. RIG RELEASED, 16:00 hours, 79 02 26.



COLUMBIA GAS DEVELOPMENTS CANADA LTD. ET AL

G E O L O G I C A L   R E P O R T

COLUMBIA GAS ET AL KOTANEELEE YT M-17

February, 1979

Submitted by: B. MacTiernan  
P. Hood

GEOLOGICAL SUMMARY

I FORMATION TOPS FOR KOTANEELEE YT M-17

<u>Age</u>	<u>Formation</u>	<u>Depth</u>	<u>Sub-Sea Depth</u>
Cretaceous	Spirit River	Spud	
Triassic	Toad-Grayling	Above Logged Interval	
Permian	Fantasque	745.6m.	-326.5m.
Mississippian	Mattson	948.5m.	-529.4m.

## II

## CORRELATION OF FORMATION TOPS

For Kotaneelee YT #-37, Kotaneelee YT H-38, N. Beaver R. YT 1-27 and  
Kotaneelee YT M-17

<u>Formation</u>	E-37		H-38		1-27		M-17	
	<u>Depth</u>	<u>Sub Sea</u>	<u>Depth</u>	<u>Sub Sea</u>	<u>Depth</u>	<u>Sub Sea</u>	<u>Depth</u>	<u>Sub Sea</u>
Spirit River	Spud		Spud		Spud		Spud	
Toad-Grayling	Above Logged Interval							
Fantasque	1,980'	38'	1318'	932'	2,320'	-874'	2,446'	-1071'
	603.6m	11.6m	401.8m	284m	707.3m	-266.5m	745.6m	-326.5m
Mattson	2,680'	-642'	1,658'	592'	2,898'	-1,452'	3,111'	-1736
	817m	-195.7m	505.5m	180.5m	883.5m	-442.7m	948.5m	-529.4m

III Water Flows On Kotaneelee YT M-17

<u>Depth Interval</u>	<u>Lithology</u>	<u>Mud Weight</u>	<u>Flow Rate</u>
664 - 713m	Sandstone Siltstone	1070kg/m <sup>3</sup>	1 m <sup>3</sup> /hr
909 - 924m	Siltstone	1080kg/m <sup>3</sup>	0.5m <sup>3</sup> /hr
1003 - 1005m	Sandstone	1070kg/m <sup>3</sup>	10m <sup>3</sup> /hr
1136 - 1140m	Sandstone	1065kg/m <sup>3</sup>	2.5m <sup>3</sup> /hr
1256 - 1260.8m	Sandstone	1070kg/m <sup>3</sup>	6m <sup>3</sup> /hr
1301 - 1305m	Sandstone	1175kg/m <sup>3</sup>	1.5m <sup>3</sup> /hr
1313 - 1316m	Sandstone	1200kg/m <sup>3</sup>	0.5m <sup>3</sup> /hr

SAMPLES DESCRIPTION

- 300-303m Shale, 100% medium to dark grey-brown, moderately hard, fissile, non-calcareous, micromicaceous in part, locally becoming slightly silty.
- 303-318m Shale, 90%, predominantly as above, Grading to Siltstone. Siltstone, 0-5% Sandstone, 5-10, white to light grey, moderately hard, friable, very fine to fine, subangular, containing 20% argillaceous filler, 10% non-calcareous cement.
- 318-321m Shale, 100%, as above.
- 321-327m Shale, 80% as above. Sandstone, 20%, white, soft to firm, occasionally hard, locally friable, moderately sorted, with clear subangular to subrounded, fine grained quartz, speckled with black mica in part, moderately calcareous with calcareous cement.
- 327-357m Shale, 100% medium grey, moderately hard, subfissile, non calcareous, locally with abundant pyrite.
- 357-369m Shale, 90%, as above. Siltstone, trade to 10%, medium grey, grading from Shale, as above.
- 369-372m Shale, 100%, as above.
- 372-381m Shale, 90%, as above. Dolomite, 10%, medium brown, hard, argillaceous, subfissile, cryptocrystalline.
- 381-405m Shale, 90%, as above, occasionally with black-dark green glauconite(?) specks, chlorite(?). Siltstone, 10%, medium grey, grading from Shale.
- 405-420m Shale, 0-10%, as above. Sandstone, 90-100%, light to medium grey, hard, friable, sacchroidal, with fine, clear, subangular to surrounded quartz, abundant green-light blue glauconite, micromicaceous, very silty, grading to Siltstone, moderately calcareous.
- 420-429m Shale, 100%, medium grey, with some light brown, generally as above.
- 429-435m Sandstone, 70%, generally as above with less glauconite. Shale, 30% as above.
- 435-438m Shale, 80%, as above. Sandstone, 20%, as above.
- 438-441m Sandstone, 80%, as above. Shale, 20%, as above.

- 441-447m Shale, 100%, light to medium grey, moderately hard, subfissile non calcareous.
- 447-450m Sandstone, 70%, as above.  
Shale, 30%, as above.
- 450-456m Shale, 100%, light grey green, brick red, firm to moderately hard, subfissile, occasionally becoming silty, grading to Siltstone, very occasionally grading to sandy Siltstone non calcareous.
- 456-459m Shale, 40-60%, light grey and red brown (brick red), firm moderately hard, subfissile, non calcareous.  
Siltstone, 10%, light blue, moderately hard, grading to Shale.  
Sandstone, 30-50%, light grey to light blue grey, moderately hard, blocky, subrounded, very fine, subfissile, non calcareous, moderately sorted.
- 459-465m Shale, 100%, generally as above
- 465-477m Shale, 20-60%, as above, locally grading to Siltstone, trace-20%, as above.  
Sandy Siltstone, 10-30%, grading from Sandstone, 10-40%, argillaceous, generally as above.
- 477-480m Shale, 100%, locally silty, non calcareous, generally as above.
- 480-495m Shale, 20-50%, as above, occasionally grading to Siltstone, 20-30%, generally red brown, hard.  
Sandy Siltstone, trace-10%, very argillaceous, grading from Sandstone, 20-50%, generally light grey, very fine, quartzitic, hard, occasionally pink grey, fine.
- 495-501m Shale, 60-80%, generally as above.  
Siltstone, 10%, grading from Shale above.  
Sandy Siltstone, 0-10%, grading from Sandstone, 0-30%, as above
- 501-504m Shale, 10%, as above, grading to Siltstone, 10%, as above.  
Sandstone, 80%, as above.
- 504-522m Shale, 30-70%, generally brick red, also light and dark grey, firm to hard, non calcareous, occasionally micromicaceous, subfissile, locally blocky, silty, grading to Siltstone, 10-20%, as above.  
Sandstone, 10-50%, locally argillaceous, as above.
- 522-540m Shale, 20-70%, as above, grading to Siltstone, 10-40%, as above.  
Sandstone, 20-60%, as above
- 540-552m Shale, 80-100%, brick red, occasionally light blue-grey, moderately hard, subfissile, non calcareous.  
Siltstone, 0-20%, light to medium grey, firm to moderately hard, grading to Shale.

- 558-567m Shale, 30-50%, red-brown, as above, locally grading to Siltstone, 10-30%, generally medium grey, some red-brown, firm to hard, argillaceous, subfissile, non calcareous. Sandstone, 20-40%, medium grey, as above, locally grading to Siltstone.
- 567-591m Sandstone, 90-100%, white to medium grey, moderately hard to hard, friable, moderately sorted, subangular to subrounded, fine, non to slightly calcareous, tight, clean, micromicaceous in part.
- 591-600m Sandstone, 40-60%, generally medium grey, occasionally dark grey, generally very fine locally fine, firm, sacchroidal, blocky, moderately sorted, very slight to moderately calcareous, argillaceous in part.  
Siltstone, 20-50%, medium grey, occasionally dark grey, moderately hard to hard, grading from Sandstone.  
Shale, 0-10%, medium to dark grey, moderately hard, subfissile, non calcareous.
- 600-615m Sandstone, 80-90%, medium grey, hard, blocky, very fine to fine, argillaceous, slightly calcareous, tight, grading to Siltstone, 10-20%, medium grey, hard, blocky, slight to moderate calcareous.
- 615-624m Sandstone, 70-80%, as above.  
Siltstone, 30-40%, as above.
- 624-636m Shale, 70-100%, brick red, locally medium grey, blocky-subfissile, moderately hard, slight to moderately calcareous.  
Siltstone, 0-10%, as above.  
Sandstone, 0-20%, as above.
- 636-663m Shale, 70-90%, brick red, and medium grey, grey Shale increasing towards bottom, generally as above, moderately calcareous, locally grading to Siltstone, trace to 20%, medium grey, hard, occasionally grading to a very fine Sandstone.  
Sandstone, 10-30%, medium grey, occasionally white to light grey, hard, blocky, friable, very fine, moderately sorted, slight to moderately calcareous.
- 663-669m Shale, 20-30%, red-brown, occasionally medium grey, firm to moderately hard, subfissile, non calcareous, with occasional very fine Sandstone laminations, 1-2mm thick.  
Siltstone, 10-40%, red-brown and light to medium grey, firm to hard, subfissile, slightly calcareous.  
Sandstone, 40-60%, medium grey, speckled, with black mica, hard, blocky, very fine to fine, slightly calcareous, occasionally grading to medium grey Siltstone.
- 669-684m Shale, 20-40%, as above.  
Siltstone, 60-80%, generally medium grey, hard, locally very hard, blocky, occasionally splintery, locally subfissile, dolomitic in part.

- 684-690m Shale, 70-90%, medium grey and red brown, as above.  
Siltstone, 10-20%, as above.  
Sandstone, trace-10%, as above.
- 690-693m Shale, 40%, as above, becoming slightly dolomitic.  
Siltstone, 50%, as above.  
Sandstone, 10%, as above.
- 693 -711m Shale, 70-100%, generally medium grey, occasionally red brown, slightly to moderately dolomitic, as above.  
Siltstone, trace-10%, medium grey, hard, occasionally very hard, blocky speckled, slightly calcareous/dolomitic, grading to Dolomite, trace-10%, medium grey, hard to very hard, blocky, splintery, brittle, angular, very silty.
- 711-723 Shale, 100%, medium grey, occasionally medium brown and dark to very dark brown, moderately hard, subfissile to blocky, non to very slightly calcareous, micromicaceous in part.  
Dolomite, trace, light to medium grey, very hard, blocky, splintery, angular, brittle, microcrystalline, very silty.
- 723-729 Shale, 60-50%, as above.  
Siltstone, 30-40%, light to medium grey, subfissile soft to medium hard, very argillaceous, occasionally slightly sandy, slightly calcareous.  
Sandstone, 10%, medium grey, blocky, hard, occasionally becoming slightly argillaceous, moderately calcareous,.
- 729-744m Shale, 90-100%, red brown and medium grey, interbedded generally as above.  
Siltstone, trace-10%, medium grey, slightly dolomitic as above.  
Dolomite, trace, medium grey, hard, blocky, angular, brittle.
- 744-747m Shale, 50-80%, generally as above.  
Siltstone, trace-20%, as above.  
Chert, 0-50%, first appearance in spot sample at 746m very dark grey to black, very hard mottled with quartz crystals, blocky, angular, splintery, translucent in part, very silty.
- Note, drillers depth correction, new depth: 761m
- 762-768m Siltstone, 30%, medium grey and very dark grey, very hard, occasionally, hard, blocky, brittle, angular, siliceous, trace glauconite.  
Chert, 70%, dark grey to black, very hard, blocky, angular, with quartz inclusions, generally very silty, locally grading to Siltstone.
- 768-774m Chert, 100%, as above.
- 774-777m Siltstone, 100%, as above.  
Chert, trace, as above, brown/white mottled

- 777-786m Siltstone, 20-30%, medium to dark grey, firm to hard, siliceous, blocky, subfissile, brittle.  
Chert, 70-80%, dark grey to black, locally translucent brown, very hard, blocky, angular, argillaceous, with quartz inclusions.
- 786-795m Siltstone, 40%, as above.  
Chert, 60%, as above, locally vitreous and translucent, abundant clear quartz.
- 795-798m Siltstone, 20%, as above.  
Chert, 80%, generally as above, generally dark brown/grey, locally translucent brown and white, locally clear, abundant glauconite.
- 798-801m Siltstone, 10%, as above.  
Chert, 90%, as above.
- 801-804m Siltstone, 30%, as above, occasional glauconite  
Chert, 70%, as above, occasionally white to light grey, translucent, occasional glauconite.
- 804-807m Siltstone, 50%, light to dark grey, medium to dark brown, hard, locally subfissile, siliceous  
Chert, 50%, light to dark brown, very hard, vitreous, blocky.
- 807-810m Siltstone, 30%, as above.  
Chert, 70%, as above, with abundant milky and clear quartz.
- 810-819m Siltstone, 40%, as above.  
Chert, 60%, as above, with pyrite and glauconite locally very abundant, argillaceous.
- 819-828m Siltstone, 40-50%, as above.  
Chert, 50-60%, as above, commonly translucent and white, also clear quartz, with needle like inclusions of mica occasional pyrite.
- 828-831m Chert, 50%, light-dark grey, very hard, vitreous, block, angular, quartz with inclusions, occasional glauconite, silty, grading to Siltstone, 50%, light-dark grey, medium to dark brown, soft to very hard, siliceous.
- 831-834m Siltstone, 30%, as above  
Chert, 70%, as above.
- 834-840m Siltstone, 60-70%, dark brown, blocky, very hard, siliceous, as above.  
Chert, 40-30%, as above.
- 840-843m Siltstone, 40%, as above.  
Chert, 60%, generally clear to white to light brown, as above.
- 843-849m Siltstone, 70%, dark brown, very hard, blocky, siliceous.  
Chert, 30%, light to dark brown, very hard, vitreous, blocky, angular, quartz with inclusions, common transparent fragments, trace pyrite, silty grading to Siltstone.

- 849-858m Siltstone, 0-20%, as above.  
Chert, 80-100%, as above.
- 858-864m Siltstone, 60%, generally as above, trace pyrite.  
Chert, 40%, generally as above, dark brown grading to Siltstone,  
and clear quartz fragments with inclusions.
- 864-888m Siltstone, 0-30%, as above.  
Chert, 70-100%, as above.
- 888-891m Siltstone, 50-70%, as above, with good trace pyrite.  
Chert, 30-50%, as above.
- 891-927m Siltstone, 100%, dark brown, moderately to very hard, blocky  
to subfissile, locally siliceous, micromicaceous, occasionally  
slightly calcareous, trace pyrite.
- 927-949m Siltstone, 100%, dark brown, moderately hard, to very hard,  
locally with conchoidal fracture, slightly siliceous, slightly  
calcareous, blocky to subfissile, with some pyrite, some silica  
fossil replacement.
- 949-981m Sandstone, 100%, predominantly light to medium grey, also  
medium to dark brown, occasionally white, moderately hard, to  
hard, friable, blocky, very fine to fine grained, subangular to  
subrounded, well sorted, moderate to very calcareous,  
occasionally dirty, medium to dark brown, no shows.
- 981-984m Sandstone, 80%, as above.  
Siltstone, 10%, medium to light brown, very hard, blocky,  
generally noncalcareous with siliceous cement.  
Limestone, 10%, medium brown, blocky, very hard, silty.
- 984-993m Sandstone, 100%, white to light grey to dark grey, moderately  
hard to very hard, friable, blocky, very fine to fine grained,  
subangular to subrounded, calcareous matrix, 25% oil show at  
987m, yellow fluorescence, slightly streaming pale yellow cut  
fluorescence, blue-white crush cut fluorescence throughout.
- 993-996m Sandstone, 80%, light to dark grey, some dark brown, moderately  
hard to hard, occasionally very hard, siliceous, friable in  
part, very fine to fine grained, subrounded, moderately sorted,  
calcareous cement, tight, pale yellow fluorescence with blue-white  
cut fluorescence.  
Siltstone, 20%, dark grey, very hard, sandy in part.
- 996-1005m Sandstone, 100%, medium grey, some light and dark grey, hard,  
blocky to subfissile, very fine grained, subangular, moderately  
sorted, slightly to moderately calcareous, tight, yellow  
fluorescence with blue-white cut fluorescence.
- 1005-1008m Sandstone, 100%, white to grey, moderately hard, very fine to  
fine grained, subangular, well sorted, moderately calcareous  
matrix, with mafic minerals present, whitish-yellow  
fluorescence with a blue-white crush cut.

- 1008-1014m Sandstone, 70-80%, as 1005-1008m interval.  
Siltstone, 20-30%, grey, soft, fissile, very slightly calcareous, yellow fluorescence.
- 1014-1017m Sandstone, 10%, as above.  
Siltstone, 90%, grey, hard, moderately calcareous, otherwise as above.
- 1017-1023m Sandstone, a trace.  
Siltstone, 80%, dark grey, hard to very hard, subfissile to blocky, with occasional conchoidal fracture, slightly to moderately calcareous, argillaceous in part.  
Limestone, 20% white to light grey, dirty, very argillaceous, firm to hard, silty, some dark grey-brown, microcrystalline, hard.
- 1023-1026m Sandstone, 40%, dark grey to brown, hard, blocky, moderately calcareous, slightly argillaceous, tight.  
Siltstone, 40%, as above grading to very fine grained sandstone.  
Limestone, 20%, as above.
- 1026-1029m Sandstone, 100%, light to medium grey, occasionally dark grey, hard, blocky, very fine grain angular to subangular, moderately sorted, tight, moderately to very calcareous, pale yellow fluorescence, no cut.
- 1029-1032m Sandstone, 90%, light to medium grey, occasional dark gray, hard, blocky, very fine grained, angular to subangular, moderately sorted, moderately calcareous, tight, pale yellow fluorescence, occasional blue-white cut fluorescence.  
Siltstone, 10%, dark gray, moderately hard, slightly calcareous.
- 1032-1035m Sandstone, 10%, white to light to dark gray, moderately hard, blocky, very fine grained, subangular, well sorted, moderately calcareous cement.  
Siltstone, 90%, dark gray, moderately hard, subfissile, slightly calcareous.
- 1035-1038m Sandstone, 65%, predominantly light gray, very calcareous grading in part to sandy limestone, otherwise as above.  
Siltstone, 30%, as in 1032-1035m.  
Limestone, 5%, medium brown to light gray, very argillaceous and sandy.
- 1038-1044m Sandstone, 70-90%, light to medium gray, occasional gray-brown, hard blocky, very fine grained, 30% having calcareous cement, subangular, moderately sorted, tight.  
Siltstone, 10-30%, very dark brown-gray, hard, subfissile to blocky, slightly calcareous.
- 1044-1047m Sandstone, 50%, as above, no shows.  
Siltstone, 50%, predominantly as above, occasionally becoming coarse grading to very fine grained sandstone, a trace of calcite veining.

- 1047-1050m Sandstone, 50%, as above, no shows.  
Siltstone, 70%, as above with occasional microfossils replaced by calcite.  
Limestone, 10%, white to light gray, firm to moderately hard, grading to sandstone, some dark gray, hard, micro crystalline.
- 1050-1053m Sandstone, 40%, white to light gray, hard, very fine grained, very calcareous occasionally grading to sandy limestone.  
Siltstone, 30%, as above, very calcareous, occasional microfossils replaced by calcite.  
Limestone, 30%, white to light to dark gray-brown, hard, microcrystalline, argillaceous, silty.
- 1053-1056m Sandstone, 100%, medium gray, hard, blocky, very fine grained, subangular, moderately sorted, moderately to very calcareous, tight, pale yellow fluorescence, occasional blue-white cut fluorescence.
- 1056-1071m Sandstone, 40-60%, white to medium gray, moderately hard, very fine grained, subangular to subrounded, moderately sorted, moderately to very calcareous, tight, 30-50% pale yellow sample fluorescence, occasional blue-white cut fluorescence.  
Siltstone, 40-60%, medium to dark gray, moderately hard to hard, subfissile, occasionally fissile, slightly calcareous.
- 1071-1077m Sandstone, 60-70%, white to light gray (60%), moderately hard to hard, friable, blocky, very fine to fine grained. Occasionally medium grained, subangular, moderately sorted, moderately to very calcareous, no shows; dark gray, (40%), hard, blocky, argillaceous, grading to sandy siltstone.  
Sandy Siltstone, 10%, slightly calcareous.  
Siltstone, a trace to 10%, very dark gray to black, hard to very hard, subfissile, slightly calcareous.  
Shale, 20%, some red-brown interbedded with dark grey very fine grained sandstone, hard, fissile, slightly calcareous.
- 1077-1080m Sandstone, 10%, as above.  
Siltstone, 10%, as above.  
Shale, 80%, very dark gray, hard, occasionally very hard, fissile to subfissile, slightly calcareous, occasionally blocky, black, slightly silty.
- 1080-1083m Sandstone, 60%, as above, becoming very calcareous in part, grading to sandy limestone.  
Shale, 40%, dark gray and black, hard to very hard, fissile to blocky, slightly calcareous.
- 1083-1086m Sandstone, 40%, white to gray, fine to very fine grained, moderately hard, subangular to subrounded, moderately sorted, moderately calcareous matrix, moderately tight, a trace of pyrite, 70% yellow fluorescence.  
Siltstone, 60%, light to dark gray, moderately soft to hard, subfissile, moderately calcareous matrix.
- 1086-1089m Sandstone, 20%, as above with mafic minerals, moderate porosity, 40% yellow fluorescence a trace of pyrite, a trace of chert, no cut.

- 1089-1092m Sandstone, 70%, as above.  
Siltstone, 20%, as above.  
Shale, 10%, dark gray, moderately hard, fissile to subfissile, slightly calcareous.
- 1092-1095m Sandstone, 70%, light gray to light brown, hard, friable, fine grained, occasionally very fine grained, angular to subangular, moderately sorted, slightly to very calcareous, pale yellow fluorescence.  
Siltstone, 10%, as above.  
Shale, 20%, as above with occasional blocky, occasional silty, very hard fragments.
- 1095-1101m Sandstone, 90%, as above.  
Shale, 10% as above.
- 1101-1104m Shale, 90%, dark gray, moderately hard, subfissile to fissile, slightly calcareous.  
Siltstone, 10%, very dark gray, hard, occasionally very hard, subfissile, slightly calcareous.  
Sandstone, a trace.  
This was a poor sample logged after a trip.
- 1104-1116m Sandstone, 90%, light gray, occasionally dark gray, hard, blocky, very fine to fine grained, very occasionally medium grained, friable in part, subangular to subrounded, moderately sorted, slightly to very calcareous, dominant clear quartz grains with some mafic and white calcite inclusions, tight, 20% yellow fluorescence, yellow streaming cut fluorescence.  
Shale, 10%, dark gray, moderately hard, subfissile to fissile, slightly calcareous, occasionally becoming black, very hard, and silty.
- 1116-1119m Sandstone, 90%, light to dark gray, dominant clear quartz grains, very fine to fine grained, soft to firm occasionally hard to very hard, friable, subrounded to rounded, slightly to very calcareous matrix, argillaceous in part, mafic minerals common, 20% yellow fluorescence, yellow streaming cut fluorescence.  
Shale, 10%, dark gray, moderately hard, subfissile to fissile, occasionally blocky, slightly silty, very hard.
- 1119-1125m Sandstone, 0-10%, as above.  
Siltstone, 40-60%, brown to very dark brown, firm to moderately hard, highly calcareous, occasionally sandy, subfissile to blocky.  
Limestone, 40-50%, white to brown, firm to hard, blocky, dirty, argillaceous, sandy in part, grading to siltstone.
- 1125-1131m Sandstone, 10-20%, gray to dark brown, subangular to subrounded, firm to hard very fine to fine grained, dirty, argillaceous, grading to sandy siltstone, very calcareous matrix.  
Siltstone, 20-30%, dark brown, firm to hard, blocky to subfissile, slightly to very calcareous, sandy.  
Limestone, 50-70%, as above.

- 1131-1149m Sandstone, 80-100%, light gray to medium brown, moderately hard to hard, friable, very fine to fine grained, occasionally becoming medium grained, subangular to subrounded, slightly argillaceous in part, very calcareous grading to sandy limestone, tight sandstone becoming friable, fine to medium grained, moderately to poorly sorted, with 20% calcareous cement, clear quartz dominant, poor porosity occasionally becoming fair porosity, (some calcite, up to 10%, white, soft) dark yellow fluorescence, with a very slow blue-white streaming cut fluorescence.  
Limestone, 0-20%, white argillaceous, sandy, soft almost pure calcite.
- 1149-1167m Sandstone, 100%, white to light gray to brown, firm to hard, very fine to fine grained occasionally medium grained, angular to subrounded, friable, some dirty, argillaceous, predominantly clear quartz grains, non to very calcareous, moderately to well sorted, poor porosity, occasional pyrite, no cut.
- 1167-1170m Sandstone, 90%, as above becoming very calcareous in part grading to limestone.  
Shale, 10%, dark gray, hard subfissile, slightly calcareous.
- 1170-1173m Sandstone, 70%, white to light gray, very fine to fine grained, predominantly as above.  
Limestone, 30%, white to light gray (70%), cryptocrystalline, moderately hard to hard, argillaceous, blocky, locally becoming sandy grading to sandstone, bluish-gray (30%), hard, crystalline, blocky, containing fossil fragments.
- 1173-1176m Limestone, 80%, as above.  
Sandstone, 20%, as above.
- 1176-1185m Limestone, 100%, brown, firm to hard, microcrystalline, blocky, dirty, trace of fossil fragments, trace siltstone.
- 1185-1188m Limestone, light brown, light grey to dark brown, mottled, hard, microcrystalline, blocky, argillaceous, sandy in part, occasionally grading to siltstone.
- 1188-1197m Limestone, 90-100%, as above, locally light brown grading to Sandstone, trace to 10%, very calcareous, fine grained, dirty, trace of calcite veining.
- 1197-1200m Limestone, 100%, as above, with abundant fossil fragments.
- 1200-1206m Limestone, 60%, as above, locally grading to siltstone.  
Sandstone, 40%, white to light brown, very fine to fine, occasionally medium, poor to well sorted, angular to subangular, firm, friable, very calcareous, grading to sandy limestone.
- 1206-1209m Limestone, 90%, white, soft to hard, sandy, abundant pure calcite, occasionally mylonite.  
Chert, 10%, clear to translucent, very hard, vitreous, brittle.

- 1209-1218m Sandstone, 100%, white, soft to firm, angular to subrounded, very fine to medium, friable, dominantly clear quartz, very calcareous cement; trace limestone; trace chert.
- 1218-1224m Sandstone, 50%, white, soft to firm, dominantly clean clear quartz grains, subangular to rounded, very fine to medium, friable in part, very calcareous cement, tight.  
Limestone, 50%, blue-grey, hard cryptocrystalline, blocky, some white, sandy in part, soft to hard.
- 1224-1248m Sandstone, 80-100%, white to light grey, firm to hard, blocky, well cemented, very calcareous, very fine to fine, subangular to subrounded, moderately sorted, poor porosity, occasionally grading to Limestone and/or siltstone.  
Limestone, 0-20%, white, hard, very sandy, occasionally light brown, trace chert.  
Siltstone, dark brown, soft to hard, blocky, calcareous.
- 1248-1254m Limestone, 70-80%, light brown to dark brown, mottled, hard, microcrystalline to crystalline, trace of fossil fragments.  
Siltstone, 10%, a/a.  
Sandstone, 10-20%, white to light grey to light brown, hard, blocky, brittle, very well cemented, calcareous, argillaceous in part, very fine to fine, subangular to subrounded, poor to moderately sorted, tight.
- 1254-1257m Limestone, 60%, as above, with abundant fossil fragments.  
Sandstone, 40%, as above.
- 1257-1260m Sandstone, 100%, clear, soft to firm, friable, very fine to fine, subangular to rounded, totally clean clear quartz, non to slightly calcareous cement, fair to moderate porosity, 15-25% pore space, good interconnection of pores.
- 1260-1263m Sandstone, 100%, white to light grey to light brown, hard, blocky, friable, very well cemented, calcareous cement, very fine to fine, subangular to subrounded, poor to moderate sorting, argillaceous in part, tight.
- 1263-1269m Sandstone, 90-100%, white to light grey, occasionally light brown, firm to moderately hard, occasionally hard, friable, blocky, dominantly clear quartz grains, very fine to fine, subangular, moderately sorted, moderately calcareous, occasionally becoming slightly argillaceous, grading in part to sandy siltstone, occasionally becoming very calcareous grading to limestone, poor to fair porosity, 20% dark yellow to orange fluorescence, no cut fluorescence.  
Limestone, 0-10%, light to dark brown, mottled, as above.
- 1269-1275m Sandstone, 100%, clear to white to light grey, generally as above, non to slightly calcareous, poor porosity, no show, trace kaolin, white, soft.
- 1275-1278m Sandstone, 100%, white, hard, friable, non to slightly calcareous, clean clear quartz, poor porosity.

- 1278-1281m Sandstone, 100%, clear to white (60%), hard, friable, well cemented, as above, light brown to medium brown (40%), hard, occasionally very hard, angular, brittle, occasionally friable. locally becoming argillaceous, soft to firm.
- 1281-1287m Sandstone, 100%, white to clear, as above, poor porosity, non to slightly dolomitic.
- 1287-1293m Limestone, 100%, white to light brown to medium brown, firm to hard, brittle, cryptocrystalline; trace siltstone, trace sandstone.
- 1293-1296m Sandstone, 70%, white to light grey, very fine to fine, occasionally medium, angular to subrounded, dominantly clear quartz, firm to hard, non calcareous, locally moderately calcareous.
- 1296-1299m Sandstone, 70%, as above.  
Limestone, 30%, brown, hard, dirty, microcrystalline, containing chert fragments.
- 1299-1302m Sandstone, 70%, clear to white, (50%), soft to hard, friable, clean clear quartz grains, very fine to fine, subrounded, moderately sorted, non-calcareous, fair porosity; light grey (50%), hard, blocky, tight, becoming light brown, silty grading to sandy siltstone.  
Sandy Siltstone, 20%, light to dark brown, hard, slightly calcareous.  
Chert, 10%, very dark brown, to black, very hard with conchoidal fracture.
- 1302-1305m Sandstone, 100%, generally as above, 50% white, 50% light to dark grey.
- 1305-1308m Sandy Siltstone, 60%, dark brown, occasionally light to dark brown, mottled, firm to hard, occasionally very hard, non calcareous/dolomitic, poor porosity, occasionally becoming fair, soft, dark brown siltstone locally grading to siltstone.  
Siltstone, 10%, dark brown, hard.  
Sandstone, 30%, light grey, hard, tight, as above.
- 1308-1311m Limestone, 50%, light to dark brown, mottled, moderately hard, subfissile, silty in part, cryptocrystalline.  
Sandy Siltstone, 20%, as above.  
Siltstone, 20%, as above.  
Sandstone, 10%, clear, occasionally dark brown, soft to hard, grading to siltstone.
- 1311-1317m Sandstone, 85%, clear to white, soft to hard, blocky, very fine to fine, subrounded, moderately sorted, poor porosity, no show.  
Siltstone, 10%, dark brown, as above, poor porosity.  
Limestone, light to dark brown, mottled, as above.

1317-1326m Sandstone, 90-100%, generally as above  
Limestone, 5%, as above.  
Siltstone, 5%, as above.

1326-1333m Sandstone, 100%, clear to white, moderately hard, friable  
subfissile, very fine to fine grained, subangular, poor  
porosity.

1333m Total Depth.

## PRESSURE DATA INTERPRETATION

As on Kotaneelee E-37 a pressure data log was prepared at the wellsite during drilling. In this report, since the purpose of the well was different, and the depth of the well shallower, the report will be divided into three sections based on the three formations drilled: the Toad-Grayling, the Fantasque and the Mattson, plus an additional section on water flows in the well.

The log was drawn on a scale 1 cm = 30m (1:3000) and was divided into five vertical columns:

- Engineering Data/Corrected Drilling Exponent (Dxc)
- Flowline Temperature (T°C)
- Gas/Mud Weight
- Engineering Data/Shale Density
- Lithology/Remarks

### SECTION 1: The Toad-Grayling 300m - 749m

The diameter of the hole drilled was 215.9mm, and since this is of a much smaller diameter than on the previous two wells a faster drilling rate was to be expected. An average drill rate of 4 m/hr was achieved, and a good bit life meant only three bits were used to reach the Fantasque. All bits were in gauge, however, deviation problems were encountered, and a deviation of 8° was recorded at 708m.

The Corrected Drilling Exponent (Dxc) in this section was of very limited value in this section as a good Shale trend was not established. Value of Dxc ranged from 0.93 to 1.44.

The Flowline Temperature plot gave value of between 17 and 27°C. No sharp gains or losses are seen, except those associated with trips and surveys.

A small background gas down to 560 meters increased markedly on drilling into a Sandstone sequence and connection gases of 400 - 500 units were recorded in the lower half of the Toad-Grayling.

A water flow was noticed whilst tripping at 713 meters, a gain of 1 m<sup>3</sup>/hr was recorded for 3 hours. The mud weight was 1085 kg/hr. The water is thought to be coming from the Sandstone/Siltstone sequence between 664m and 683m. These formations are tight and the flow is probably insignificant.

Shale density measurements ranged from 2.42 to 2.66 gm/cm<sup>3</sup> and are not continuous due to Sandstone and Siltstone beds.

### SECTION 2: The Fantasque 749m - 950m

The Fantasque was drilled at a slower average rate of 1.45 m/hr. The lower Siltstone sequence tended to drill faster than the Chert sequence overlying it. Hole deviation was controlled over

this section, the deviation being brought back slowly to  $5\frac{1}{2}^{\circ}$  at the top of the Mattson.

Tight hole was encountered at 285 meters, when running in the hole with NB #10 at 848 meters. 11 Joints had to be reamed. Mud weight was 1080 and viscosity 40.

The Dxc plot after an initial shift due to running a tooth bit, settled into a slight trend, which remained steady throughout the Fantasque.

The temperature plot showed no unusual increases or decreases.

Gas reading increased in the lower half of the Fantasque from 85m onwards. There being an average background gas of 100 to 200 units.

A small pit volume gain was noticed between 909 and 924 meters, and a flow of  $0.5\text{m}^3/\text{hr}$ . was estimated, in all  $7.5\text{m}^3$  of water were gained. The mud weight was 1090 and viscosity 40. Some doubt is placed on the presence of this flow and it may be that it was not a flow but just a transfer of mud between tanks. It stopped unexpectedly at 924 meters.

Shale densities were not recorded in this section as no Shale was encountered.

### Section 3: The Mattson 949m - 1332m

An average drilling rate of  $1.40\text{m}/\text{hr}$ . was recorded throughout the Mattson. Many drilling breaks were encountered in the Sandstone and some water flows were also encountered associated with these drilling breaks. These are discussed further in a later section.

The Dxc plot was unable to determine any deviation away from the general trend established in the Fantasque until 1215 meters. At 1215 meters, there is a slight lessening of gradient which continues until 1326 meters. This trend is not clear due to a tooth bit which was run between 1205 and 1220 meters. However, for the bit run from 1220 to 1328m. (NB#16), a lessening of gradient can be detected especially at 1251 meters where there is a sharp deviation to the left, this is indicative of entering an overpressure zone. At 1256m, a water flow was detected in a Sandstone. Over lying the overpressure zone is a Limestone cap rock.

The flowline temperature plot shows a steady increase, which is broken by drops in the temperature at new bit runs. At 1254m, there is a slight decrease in temperature, this may be connected with the water flow detected at 1256 meters.

A larger background gas of around 100 units total gas was detected in the Mattson, due to the abundance of Sandstone and drilling in an underbalanced situation.

Water flows were encountered in the Mattson at 1003-1005 meters, 1136-1140 meters and 1256-1259 meters. These flows were allowed to flow until 1291 meters then the mud weight was increased from 1070 to 1200 kg/m<sup>3</sup>. A further two flows were detected at 1308 and 1315 meters with a mud weight of 1175 and 1200 kg/m<sup>3</sup> respectively. On pulling out of the hole at 1328 meters a flow was detected 12 stands off bottom, after running back to bottom the mud weight was increased to 1350 kg/m<sup>3</sup>, which effectively killed the flow. A shut in pressure of 1328 kPa (150 psi) was recorded for the flow, with an 1190 kg/m<sup>3</sup> mud weight.

Shale densities were not taken in the Mattson, as not enough Shale was drilled to establish a trend.

Sloughing Shales between 285 and 340 meters caused tight hole conditions throughout the hole, an increase in viscosity from 40 to 90 alleviated the problem.

#### SECTION 4: WATER FLOWS IN M-17

Two good water flows were recorded in this well, with another possible four flows, of less importance.

The first of the major flows occurred at 1138.5 meters and appears to be associated with the drilling break from 1136 to 1138.4 meters. The drilling break occurred in a very fine to fine grained Sandstone, almost silty in part with angular to subangular, occasionally rounded grains. There is an estimated 15% visible pore space, and fair intergranular porosity. An initial flow of 2½ m<sup>3</sup>/hr. was recorded with a mud weight of 1065 kg/m<sup>3</sup>. The Sandstone continued to flow at an average rate of 1.6 m<sup>3</sup>/hr, for 7 days until another water flow at 1256m obscured this flow. A very calcareous Sandstone/Limestone sequence overlies this Sandstone. The Sandstone exhibits poor to fair porosity down to 1143 meters after which it once again becomes hard, tight with a calcareous cement. There is an estimated 2 to 3 meters of fair porosity Sandstone over the interval 1134 to 1146m.

The other major water flow occurred at 1256 meters, a drilling break between 1256.2m and 1260.8m produced an increase in the flow rate from 1.6 m<sup>3</sup>/hr. to 6 m<sup>3</sup>/hr. A shut in pressure of 160 psi (1100 kPa) was recorded at 1259 meters. The drilling break occurred in a Sandstone, very fine to coarse, angular to subrounded, composed totally of clean clear quartz grains. The Sandstone had a 15 to 25% visible pore space, showing fair to good intergranular porosity. The pores appeared to be well interconnected. Overlying this Sandstone, is a well cemented, very calcareous Sandstone, with up to 5% porosity. There is an estimated 2 meters of good porosity Sandstone over the interval 1256 to 1261 meters. This Sandstone continued to flow at 4 m<sup>3</sup>/hr. until an increase in mud weight from 1070 to 1200 kg/m<sup>3</sup> at 1291 meters. A pressure test at 1285 meters gave a shut in pressure of 950 kPa (138psi) after 20 minutes.

Numerous drilling breaks occurred in the section below 1260 meters and further water flows from these breaks may have been obscured by the major flow at 1256 meters. Drilling breaks of note are 1264-1267.5 meters, 1271.5 to 1275 meters and 1281 to 1285 meters. These all occurred in Sandstones, often hard but friable with estimated porosities of up to 10%.

Another drilling break occurred at 1300 to 1303.4 meters, with a mud weight of 1175 kg/m<sup>3</sup> a small flow of 1.5m<sup>3</sup>/hr was detected. Considering the high mud weight this could prove to be another substantial water zone. The drilling break revealed interbedded clear and light to dark gray Sandstones. The clear Sandstone is soft, friable and has a fair porosity, the light to dark gray Sandstone appears tight. An increased mud weight of 1200 kg/m<sup>3</sup> stopped this flow.

A flow of 0.5 m<sup>3</sup>/hr. was recorded at 1316 meters and is probably associated with the drilling break between 1313 and 1316 meters. Again, there appears to be an interbedded soft, clear Sandstone and harder, tight, gray Sandstone sequence. Mud weight was 1200 kg/m<sup>3</sup>. A shut in pressure of 1034 kg/m<sup>3</sup> (150 psi) was recorded at 1325m, when a flow occurred whilst tripping, mud weight was 1190 kg/m<sup>3</sup>.

Other water flows in M-17 are one recorded whilst tripping at 713 meters of 1 m<sup>3</sup>/hr for 3 hours. This is probably coming from the Sandstone/Siltstone sequence between 664 meters and 683 meters and is probably insignificant. Another occurred between 909 and 924 meters where a flow of 0.5 m<sup>3</sup>/hr. was recorded with a total increase in volume of 7½ m<sup>3</sup>. There is some doubt whether this actually was a flow, it may have been a redistribution of mud in the mud tanks.

A flow rate of 1.6 m<sup>3</sup> in 10 minutes was recorded at 1005 meters, which is equivalent to 10 m<sup>3</sup>/hr. However, there was no shut in pressure. A drilling break occurred between 1003 and 1005 meters, the flow could possibly be coming from a calcareous Sandstone, which is generally tight, but locally becoming friable with poor to fair porosity. It is probably a small zone of no more than 0.5 meter, probably between 1003.4 and 1003.9 meters.

## DISCUSSION

This well followed a similar pattern to the two previous wells, except in its much greater deviation. This is obviously due to the smaller diameter of the hole. Since the object of the well was to look for a porous Sandstone which might be used for water disposal, comparison of flows on H-38 and E-37 to those on M-17 may be of some help.

On both E-37 and H-38 water flows were encountered in the Toad-Grayling, Fantasque and Mattson. On E-37, a water flow at 1300 feet produced a drop in mud temperature of 10°C. At 2283 feet, a significant flow leading to a 120 barrel rise in volume was obtained, both of these flows occurred above the Mattson, in the Toad-Grayling and Fantasque respectively. On H-38 a water flow was seen between 1100 and 1200 feet, an increase in mud weight from 9.1 to 9.6 ppg (1090 to 1150 kg/m<sup>3</sup>) failed to hold the flow back and it was not stopped until it was finally held back by a mud weight of 9.9 ppg (1190 kg/m<sup>3</sup>) at 1350 feet. A further flow was encountered between 1600 and 1850 feet.

At 2550 feet on H-38, there was a significant increase in gas, with an associated water flow, a 10.2 ppg (1220 kg/m<sup>3</sup>) was being used, this flow continued until 2900 feet. After setting 13 3/8" casing on H-38 at 3025 feet, the mud weight was reduced to 9.2 ppg. With this weight, there was a slight water flow suggesting that the Lower Mattson also held a water zone of high pressure and low volume.

Correlation between H-38 and M-17 in the Mattson is good, M-17 being 1595 feet deeper than H-38 (or 486 meters), on H-38 the water flow between 1600 and 1850 feet correlates with the flow seen at 1005 meters whilst the flow at 2550 feet is close to the position of the flow at 1259 m. on M-17 (2550 feet is at the equivalent formation depth of 1275 meters on M-17). E-37 does not correlate at all.

The well I-27 is situated only 500 meters from M-17 and the well logs for the two wells are very similar. I-27's formations are 61 meters shallower. Unfortunately, no water flow information is available.