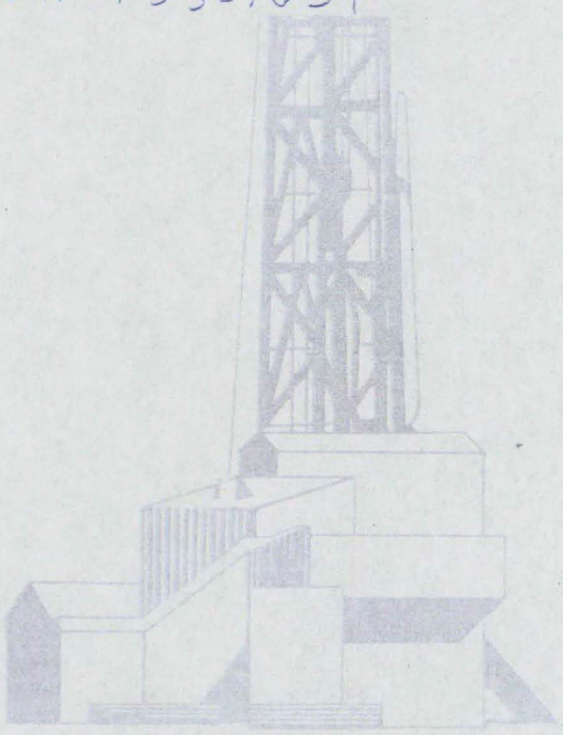
Geological Report

PARAMOUNT et al
ARROWHEAD N65
LAT 60 34' LONG 122 57'

File No: 98N-2036



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CONTINENTAL LABORATORIES

CL CONSULTANTS LIMITED

1958 - 1998

"Logging the Past 40 Years"

PARAMOUNT et al
ARROWHEAD N65
LAT 60 34' LONG 122 57'

File No: 98N-2036

9211-P33-10-1

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PERMIT TO PRACTICE
CL CONSULTANTS LIMITED
Signature:
Date: February 20, 1998
PERMIT NUMBER: P 2911
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

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SYNOPSIS

OPERATOR:	PARAMOUNT RESOURCES LTD.	
WELL NAME:	PARAMOUNT ET AL ARROWHEAD	
LOCATION:	LAT 60 34' LONG 122 57'	
FIELD:	Undefined	
PROVINCE:	NWT	
ELEVATIONS:	G.L. - 567.9 m	K.B. - 574.6 m
SPUD DATE:	January 14, 1998	14:00 hrs
T.D. DATE:	February 14, 1998	18:00 hrs
CONTRACTOR:	Nabors Drilling	Rig: 16
HOLE SIZE:	156 mm	
COLLARS:	149 mm	
MUD TYPE:	air / Cutter D / Nitrogen	
WIRELINE LOGGING CO.:	Western Atlas wireline/Computalog	
LOG RECORD:	Run #1	
1) HDIL-GR	1890 m - 479 m	
2) DAL-GR-XY	1890 m - 479 m	
3) ZDL CN-GR-XY	1890 m - 0 m	
DRILLING SUPERVISION:	Rod MacEachern/Dave Garstad	
GEOLOGICAL SUPERVISION:	D.G. FERGUSON	
TOTAL DEPTH:	2925 meters	

FORMATION TOPS (m)

FORMATION	PROGNOSIS	SAMPLE	LOGS	SUBSEA
Cret Scatter	311m	276m ?	490m	+ 84.6
Cret Garbutt	349m	328m ?	545m	+ 29.6
Miss Chinkeh	--		633m	- 58.4
Miss Flett	451m	628m	682m	- 107.4
Miss Banff	829m	810m	812m	- 237.4
Miss Exshaw	1329m	1318m	1316m	- 741.4
Dev Kotcho	1343m	1329m	1330m	- 755.4
Dev Tetcho	1720m	1725m	1728m	-1153.4
Kakisa	--	1845m	1844m	-1269.4
Ft Simpson	1892m	1870m	1870m	-1295.4
TD Intermediate hole		1890m		
Dev Muskwa	2542m	2498m		
Slave Pt	--	2524m	2524	-1949.4
Watt Mtn	--	2565m		
Sulphur Pt	--	2573m		
Nahanni	2564m	2689m	2689	-2114.4
Headless SH	--	2788m	2788	-2213.4
Landry (Manetoe)		2811m	2811	-2236.4
Arnica	--	2865m	2865	-2290.4
TD		2925m		

DEVIATION SURVEY RECORD

Depth (m)	Deviation	Azimuth	Depth (m)	Deviation	Azimuth
46m	1		2155m	4	
64m	3/4		2241m	2 1/4	
83m	0		2270m	4 1/8	
100m	0		2300m	5	
127m	1/4		2308m	5	
145m	1/2		2385m	3	
173m	1		2414m	2 3/4	
183m	0		2443m	2 7/8	
199m	1/4		2471m	2	
227m	1/4		2503m	1	
242m	3/4		2529m	1	
266m	1/2				
284m	1/2				
303	1/2				
323	1/2				
342m	3/4				
361	1/2				
380m	1/2				
404m	1				
424m	1				
443m	1/2				
462m	2				
471m	2				
480m	1 3/4				
522m	2				
627m	3				
650	2 1/4				
737m	1				
824m	3/4				
920m	3/4				
1014m	1				
1106m	1				
1220m	1				
1330m	3/4				
1445m	1				
153m	1 1/2				
1618m	1 3/4				
1700m	2				
1806m	2				
1884m	2 1/4				
1890m	2 3/4				
1956m	3				
1984m	3				
2012m	2				
2099m	2				

BIT RECORD

#	Type	Size (mm)	In	Out	Total (m)	Hrs drilled	FOB (daN)	RPM	Cond. T B G
1a	ReedY11	444	0	185m	185m	28.25	3 /10	100/160	3-2-I
2a	S 13	444	185	395m	210m	28.25	3 /11	100/161	8-1-I
3a	SS 81	444	395	480m	85m	34.00	4 /6	160	2-2-I
1	HP51	311	480	490M	10M	1.50	4 / 5	45/50	3-3-I
2	HP43A	311	490	634M	144M	12.75	1/2	45/50	3-3-I
3	H425ZR3	311	634	1890M	1256M	57.25	1	AIR HAMMER	
1	FDT	216	1890	1893M	3M	1.75	3/4	40	1-1-I
2	H42R8R3	216	1893M	2515M	622M	28.75	0/1	AIR HAMMER	
3	HP 53A	216	2515M	2530M	15M	7.00	10/12	70/80	2-1-I
1	HZS84F	156	2530M	2847M	317M	33.25	10/12	50	6-8-I
2	HZS84F	156	2847M	2925M	78M	77.75	10	50	

BIT CONDITION		SCALE
Tooth Wear	(T)	0 - 8
Bearing Wear	(B)	0 - 8
Gauge	(G)	in or (mm) under
New Bit	T=0	B=0 G=in

DAILY DRILLING CHRONOLOGY

Date	Depth 08:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 08:00 - 08:00
98-01-14	0	0	0000	RIG UP NABORS 16
98-01-15	90	90	13	Dill ahead 444mm sfc hole
98-01-16	185m	95	15.25	Drill ahead with bit #2a
98-01-17	332m	147m	21.2	Drill ahead with bit 2a
98-01-18	395m	63m	17	RIH with bit 3a
98-01-19	460m	63	19	Drill 444mm sfc hole
98-01-20	480m	20	15	hoist to run 339.7mm sfc csg
98-01-21	to 01-25			csg/change drill string/cmt
98-01-26	634m	144m	7.5	make up air hammer /bit
98-01-27	1110m	476m	19.2	drill ahead 311mm hole w/ air
98-01-28	1705m	595m	21	drill ahead 311mm hole w/ air
98-01-29	1890m	185m	6.4	displace hole for logs
98-01-30	1890m	0	0	lay down rotating head and pick up flow nipple
98-01-31-	to 02-02			intermediate casing
98-02-02	1893m	3m	1.75	displace hole with air
98-02-03	2187m	294m	10.7	air dirll 216mm hole
98-02-04	2480m	293m	15.75	air drill 216mm hole
98-02-05	2520m	40m	3.2	drill 216mm hole
98-02-06	2520m	10m	6.2	runn 177.8mmm liner
98-02-06	98-02-09			running liner for open hole
98-02-09	2530	10		RIH w/ 89mm drillstring
98-02-10	2530	0		
98-02-11	2550	20		drill 156mm hole with N2
98-02-12	2636	86		foam underbalance drill 156mm hole
98-02-13	2847	211	18.2	" "" " "
98-02-14	2847	0	0	foam underbalance drill 156mm hole
98-02-15	2925	78	7	WO Loggers

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
55 - 80	No sample - NO SAMPLE - predominant lost circulation material;
80 - 100	**SANDSTONE** - light gray, white, predominant quartzose, salt and pepper in part, very fine grained to fine grained, subangular, well sorted, fair to poor intergranular porosity, no visual show, slightly calcareous, trace carbonaceous laminae in part; **SANDSTONE** - light gray, white, predominant quartzose, salt and pepper in part, very fine grained to fine grained, subangular, well sorted, no visual show, no visible porosity, slightly calcareous, trace carbonaceous laminae in part;
100 - 120	**SANDSTONE** - light gray, white, predominant quartzose, salt and pepper in part, very fine grained to fine grained, subangular, well sorted, fair to poor intergranular porosity, no visual show, slightly calcareous, trace carbonaceous laminae in part; **SANDSTONE** - light gray, white, predominant quartzose, salt and pepper in part, very fine grained to fine grained, subangular, well sorted, no visual show, no visible porosity, slightly calcareous, trace carbonaceous laminae in part;
120 - 125	**SANDSTONE** - light gray, white, predominant quartzose, salt and pepper in part, very fine grained to fine grained, subangular, well sorted, no visual show, no visible porosity, slightly calcareous, trace carbonaceous laminae in part;
125 - 145	**SHALE** - medium gray, subfissile to blocky, trace pyrite, trace micromicaceous, slightly silty in part;
145 - 175	**SHALE** - medium gray, subfissile to blocky, trace pyrite, trace micromicaceous, slightly silty in part;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
175 - 195	**SANDSTONE** - light gray, white, predominant quartzose, salt and pepper in part, very fine grained to fine grained, subangular, well sorted, no visual show, no visible porosity, slightly calcareous, trace carbonaceous laminae in part, scattered argillaceous laminae; **SHALE** - medium gray, subfissile to blocky, trace pyrite, trace micromicaceous, slightly silty in part; **SILTSTONE** - medium gray, grading to silty **SHALE**, no visual show, no visible porosity, moderately argillaceous, trace calcareous streaks, trace pyrite;
195 - 205	**SHALE** - medium gray, subfissile to blocky, trace pyrite, trace micromicaceous, moderately silty in part, grading **SILTSTONE** in part; **SILTSTONE** - medium gray, grading to silty **SHALE**, no visual show, no visible porosity, moderately argillaceous, trace calcareous streaks, trace pyrite;
205 - 215	**SANDSTONE** - gray, brown in small part, quartz, trace chert, very fine grained to fine grained, subangular, well sorted, no visual show, no visible porosity, slightly argillaceous, slightly silty, occasionally calcareous in part; **SILTSTONE** - medium gray, grading to silty **SHALE**, no visual show, no visible porosity, moderately argillaceous, trace calcareous streaks, trace pyrite; **SHALE** - medium gray, subfissile to blocky, trace pyrite, trace micromicaceous, moderately silty in part, grading **SILTSTONE** in part;
215 - 220	**SHALE** - medium gray, subfissile to blocky, trace pyrite, trace micromicaceous, moderately silty in part, grading **SILTSTONE** in part;
220 - 225	**SANDSTONE** - light gray, brown in small part, quartz, trace chert, very fine grained to fine grained, subangular, well sorted, no visual show, no visible porosity, slightly argillaceous, slightly silty, moderately siliceous in part, trace calcareous streaks in part; **SHALE** - medium gray, subfissile to blocky, trace pyrite, trace micromicaceous, moderately silty in part, grading **SILTSTONE** in part;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
225 - 230	**SANDSTONE** - light gray, brown in small part, quartz, trace chert, very fine grained to fine grained, subangular, well sorted, no visual show, no visible porosity, slightly argillaceous, slightly silty, moderately calcareous in part; **SHALE** - medium gray, subfissile to blocky, trace pyrite, trace micromicaceous, moderately silty in part, grading **SILTSTONE** in part; **LIMESTONE** - white, translucent, cryptocrystalline, no visual show, no visible porosity, trace sandy streaks in part;
230 - 235	**SANDSTONE** - light gray, brown in small part, quartz, trace chert, very fine grained to fine grained, subangular, well sorted, no visual show, no visible porosity, trace Iron, stained in part, slightly argillaceous, slightly silty, moderately calcareous in part; **SHALE** - medium gray, subfissile to blocky, trace pyrite, trace micromicaceous, moderately silty in part, grading **SILTSTONE** in part;
235 - 255	**SANDSTONE** - light gray, brown in small part, quartz, trace chert, very fine grained to fine grained, subangular, well sorted, no visual show, no visible porosity, trace Iron, stained in part, slightly argillaceous, slightly silty, moderately calcareous in part; **SILTSTONE** - medium gray, grading to silty **SHALE**, no visual show, no visible porosity, moderately argillaceous, trace calcareous streaks, trace pyrite; **SHALE** - medium gray, subfissile to blocky, trace pyrite, trace micromicaceous, moderately silty in part, grading **SILTSTONE** in part;
255 - 275	**SANDSTONE** - light gray, brown in small part, quartz, trace chert, very fine grained to fine grained, subangular to subrounded, well sorted, no visual show, no visible porosity, trace Iron, stained in part, slightly argillaceous, slightly silty, trace kaolinitic in part, trace calcareous streaks in small part; **SHALE** - medium gray, subfissile to blocky, trace pyrite, trace micromicaceous, moderately silty in part, grading **SILTSTONE** in part;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
275 - 295	**SANDSTONE** - light gray, brown in small part, quartz, trace chert, very fine grained to fine grained, subangular to subrounded, well sorted, no visual show, no visible porosity, trace Iron, stained in part, slightly argillaceous, slightly silty, trace kaolinitic in part, trace calcareous streaks in small part; **SILTSTONE** - medium gray, grading to silty **SHALE**, no visual show, no visible porosity, moderately argillaceous, trace calcareous streaks, trace pyrite; **SHALE** - medium gray, subfissile to blocky, trace pyrite, trace micromicaceous, moderately silty in part, grading **SILTSTONE** in part;
295 - 315	**SANDSTONE** - light gray, brown in small part, quartz, trace chert, very fine grained to fine grained, subangular to subrounded, well sorted, no visual show, no visible porosity, trace Iron, stained in part, slightly argillaceous, slightly silty, trace kaolinitic in part, trace calcareous streaks in small part; **SHALE** - medium gray, subfissile to blocky, trace pyrite, trace micromicaceous, moderately silty in part, grading **SILTSTONE** in part;
315 - 335	**SANDSTONE** - light gray, brown in small part, quartz, trace chert, very fine grained to fine grained, subangular to subrounded, well sorted, no visual show, no visible porosity, trace Iron, stained in part, slightly argillaceous, slightly silty, trace kaolinitic in part, trace calcareous streaks in small part; **SHALE** - medium gray, subfissile to blocky, trace pyrite, trace micromicaceous, moderately silty in part, grading **SILTSTONE** in part;
335 - 355	**SANDSTONE** - light gray, brown in small part, quartz, trace chert, very fine grained to fine grained, subangular to subrounded, well sorted, no visual show, no visible porosity, trace Iron, stained in part, slightly argillaceous, slightly silty, trace kaolinitic in part, trace calcareous streaks in small part; **SHALE** - medium gray, subfissile to blocky, trace pyrite, trace micromicaceous, trace silty streaks;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
355 - 385	**SANDSTONE** - light gray, brown in small part, quartz, trace chert, very fine grained, subangular, well sorted, no visual show, no visible porosity, slightly argillaceous, with scattered argillaceous laminae, slightly silty, grading to **SILTSTONE** in part, trace kaolinitic in part, trace calcareous streaks in small part; **SILTSTONE** - medium gray, grading to silty **SHALE**, no visual show, no visible porosity, moderately argillaceous, trace calcareous streaks, trace pyrite; **SHALE** - medium gray, subfissile to blocky, scattered **SILTSTONE** streaks, rare pyrite, trace micromicaceous, trace silty streaks;
385 - 415	**SANDSTONE** - light gray, brown in small part, quartz, trace chert, very fine grained, subangular, well sorted, no visual show, no visible porosity, slightly argillaceous, with scattered argillaceous laminae, slightly silty, grading to **SILTSTONE** in part, trace kaolinitic in part, trace calcareous streaks in small part; **SHALE** - medium gray, subfissile to blocky, scattered **SILTSTONE** streaks, rare pyrite, trace micromicaceous, trace silty streaks; **LIMESTONE** - white, translucent, cryptocrystalline, no visual show, no visible porosity, trace sandy streaks in part;
415 - 430	**SILTSTONE** - medium gray, grading to silty **SHALE**, no visual show, no visible porosity, moderately argillaceous, trace calcareous streaks, trace pyrite; **SHALE** - medium gray, subfissile to blocky, scattered **SILTSTONE** streaks, rare pyrite, trace micromicaceous, trace silty streaks;
430 - 445	**SILTSTONE** - medium gray, grading to silty **SHALE**, no visual show, no visible porosity, moderately argillaceous, trace calcareous streaks, trace pyrite; **SHALE** - medium gray, subfissile to blocky, scattered **SILTSTONE** streaks, rare pyrite, trace micromicaceous, trace silty streaks;
445 - 455	**SHALE** - medium gray, subfissile to blocky, scattered **SILTSTONE** streaks, rare pyrite, trace micromicaceous in part, trace silty streaks in small part;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
455 - 470	**SILTSTONE** - medium gray, grading to silty **SHALE**, no visual show, no visible porosity, moderately argillaceous, trace calcareous streaks, trace pyrite; **SHALE** - medium gray, subfissile to blocky, scattered **SILTSTONE** streaks, rare pyrite, trace micromicaceous in part, trace silty streaks in small part;
470 - 480	**SILTSTONE** - medium gray, grading to silty **SHALE**, no visual show, no visible porosity, moderately argillaceous, trace calcareous streaks, trace pyrite; **SHALE** - medium gray, subfissile to blocky, scattered **SILTSTONE** streaks, rare pyrite, trace micromicaceous in part, trace silty streaks in small part;
TD SFC HOLE: 480M	
480 - 490	**SHALE** - medium gray, subfissile, rare pyrite, trace silty streaks in small part;
490 - 505	**SHALE** - medium gray, subfissile, becoming blocky in part, trace pyrite, rare calcareous streaks in part, trace silty streaks; **SILTSTONE** - medium gray, salt and pepper, grading to silty **SHALE**, no visual show, no visible porosity, moderately argillaceous, trace calcareous streaks, trace pyrite;
505 - 515	**SHALE** - medium gray, becoming dark gray in part, subfissile, becoming blocky in part, trace pyrite, rare calcareous streaks in part, trace silty streaks; **SILTSTONE** - medium gray, salt and pepper, grading to silty **SHALE**, no visual show, no visible porosity, moderately argillaceous, trace calcareous streaks, trace pyrite; **SANDSTONE** - light gray, salt and pepper, quartz, trace chert, predominant siliceous cement, very fine grained, subangular, well sorted, no visual show, no visible porosity, slightly argillaceous, with scattered argillaceous laminae, slightly silty, grading to **SILTSTONE** in part, trace dolomitic streaks in small part, trace pyrite in small part;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
515 - 525	**SHALE** - medium gray, becoming dark gray in part, subfissile, becoming blocky in part, trace pyrite, rare calcareous streaks in part, trace silty streaks; **SILTSTONE** - medium gray, salt and pepper, grading to silty **SHALE**, no visual show, no visible porosity, moderately argillaceous, trace calcareous streaks, trace pyrite; **SANDSTONE** - light gray, salt and pepper, quartz, trace chert, predominant siliceous cement, very fine grained, subangular, well sorted, no visual show, no visible porosity, scattered argillaceous laminae, slightly silty, rare dolomitic streaks in small part, trace pyrite;
525 - 535	**SHALE** - medium gray, becoming dark gray in part, subfissile, becoming blocky in part, trace pyrite, rare calcareous streaks in part, trace silty streaks; **SANDSTONE** - light gray, brown, quartz, trace chert, predominant siliceous cement, fine grained to very fine grained and some medium grained, subangular to subrounded, well sorted, light brown oil stain, milky white cut, no visible porosity, secondary dolomite cement in part, slightly argillaceous, slightly silty, trace pyrite;
535 - 540	**SHALE** - medium gray, becoming dark gray in part, subfissile, becoming blocky in part, trace pyrite, rare calcareous streaks in part, trace silty streaks; **SANDSTONE** - light gray, brown, quartz, trace chert, predominant siliceous cement, fine grained to very fine grained and some medium grained, subangular to subrounded, well sorted, light brown oil stain, milky white cut, no visible porosity, secondary dolomite cement in part, slightly argillaceous, slightly silty, trace pyrite;
540 - 560	**SHALE** - dark gray, fissile to subfissile, trace pyrite veining, soft, grading to mudstone in part, trace micromicaceous, rare silty streaks, trace pyrite;
560 - 580	**SHALE** - dark gray, fissile to subfissile, trace pyrite veining, soft, grading to mudstone in part, trace micromicaceous, rare silty streaks, trace pyrite;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
580 - 600	**SHALE** - medium gray, becoming dark gray in part, subfissile, becoming blocky in part, trace pyrite, rare calcareous streaks in part, trace silty streaks; **SHALE** - dark gray, fissile to subfissile, trace pyrite veining, soft, grading to mudstone in part, trace micromicaceous, rare silty streaks, trace pyrite;
600 - 620	**SHALE** - dark gray, fissile to subfissile, trace pyrite veining, soft, grading to mudstone in part, trace micromicaceous, rare silty streaks, trace pyrite;
620 - 630	**SHALE** - dark gray, fissile to subfissile, trace pyrite veining, soft, grading to mudstone in part, trace micromicaceous, rare silty streaks, trace pyrite; **SHALE** - Kaolin, white , fissile;
Miss Flett	628m Sample
630 - 640	**SHALE** - dark gray, fissile to subfissile, trace pyrite veining, soft, grading to mudstone in part, trace micromicaceous, rare silty streaks, trace pyrite; **LIMESTONE** - brown, medium gray in part, microcrystalline to cryptocrystalline, no visual show, no visible porosity, slightly argillaceous in part, trace pyrite;
640 - 650	**SHALE** - medium gray, becoming dark gray in part, subfissile, becoming blocky in part, trace pyrite, rare calcareous streaks in part, trace silty streaks; **SHALE** - dark gray, fissile to subfissile, trace pyrite veining, soft, grading to mudstone in part, trace micromicaceous, rare silty streaks, trace pyrite; **LIMESTONE** - brown, medium gray in part, indistinct fossil fragments in part, microcrystalline to cryptocrystalline, no visual show, no visible porosity, scattered argillaceous laminae in part, rare pyrite;
650 - 660	**SHALE** - medium gray, becoming dark gray in part, subfissile, trace pyrite, trace micromicaceous, trace calcareous streaks; **LIMESTONE** - brown, medium gray in part, indistinct fossil fragments in part, microcrystalline to cryptocrystalline, no visual show, no visible porosity, scattered argillaceous laminae in part, rare pyrite;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
660 - 670	**LIMESTONE** - brown, medium gray in part, indistinct fossil fragments in part, microcrystalline to cryptocrystalline, no visual show, no visible porosity, scattered argillaceous laminae in part, rare pyrite; **SHALE** - medium gray, becoming dark gray in part, subfissile, trace pyrite, trace micromicaceous, trace calcareous streaks;
670 - 685	**LIMESTONE** - brown, medium gray in part, indistinct fossil fragments in part, microcrystalline to cryptocrystalline, no visual show, no visible porosity, scattered argillaceous laminae in part, rare pyrite; **SHALE** - medium gray, becoming dark gray in part, subfissile, trace pyrite, trace micromicaceous, trace calcareous streaks;
685 - 690	**LIMESTONE** - brown, medium gray in part, indistinct fossil fragments in part, microcrystalline to cryptocrystalline, no visual show, no visible porosity, slightly argillaceous in part, slightly fossiliferous; **SHALE** - medium gray, becoming dark gray in part, subfissile, trace pyrite, trace micromicaceous, trace calcareous streaks;
690 - 695	**LIMESTONE** - brown, medium gray in part, indistinct fossil fragments in part, trace coral fragments, microcrystalline to cryptocrystalline, no visual show, no visible porosity, slightly argillaceous in part, slightly fossiliferous; **SHALE** - medium gray, becoming dark gray in part, subfissile, trace pyrite, trace micromicaceous, moderately calcareous, grading to Marlstone in part;
695 - 700	**SHALE** - medium gray, subfissile - fissile, soft, trace pyrite, trace micromicaceous, moderately calcareous, grading to Marlstone in part;
700 - 710	**SHALE** - medium gray, subfissile - fissile, soft, rare pyrite, rare micromicaceous, moderately calcareous, grading to Marlstone in part;
710 - 730	**SHALE** - medium gray, subfissile - fissile, soft, rare pyrite, rare micromicaceous, moderately calcareous, grading to Marlstone in part;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
730 - 750	**SHALE** - medium gray, becoming dark gray, subfissile - fissile, soft, rare pyrite, rare micromicaceous, moderately calcareous, grading to Marlstone in part;
750 - 760	**SHALE** - medium gray, becoming dark gray, subfissile - fissile, soft, rare pyrite, rare micromicaceous, moderately calcareous;
760 - 770	**SHALE** - dark gray, black, fissile, soft, slightly carbonaceous, trace pyrite;
770 - 780	**LIMESTONE** - mottled buff - light brown, fragmental in part, trace indistinct fossil fragments in part, microcrystalline to medium crystalline, dull yellow fluorescence, weak milky cut, no visible porosity, clean, slightly dolomitic with dolomite micro fracture fill (?), slightly fossiliferous;
780 - 785	**LIMESTONE** - medium gray, massive, trace indistinct fossil fragments in part, microcrystalline, no visual show, no visible porosity, moderately argillaceous, grading to calcareous SHALE in part, slightly fossiliferous;
785 - 790	**SHALE** - medium gray, dark gray in part, fissile, soft, trace pyrite, moderately calcareous;
790 - 800	**SHALE** - medium gray, dark gray in part, fissile, soft, trace pyrite, moderately calcareous; **SANDSTONE** - light gray - brown, predominantly quartzose, predominant siliceous cement, very fine grained, subangular, well sorted, no visual show, no visible porosity, slightly silty, trace dolomitic cement, trace pyrite; **LIMESTONE** - mottled buff - light brown, massive, trace indistinct fossil fragments in part, microcrystalline, no visual show, no visible porosity, clean, slightly fossiliferous;
800 - 805	**SHALE** - dark gray, black, fissile, soft, slightly carbonaceous, trace pyrite;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
805 - 810	**SHALE** - medium gray, dark gray in part, fissile, soft, trace pyrite, moderately calcareous; **SANDSTONE** - medium gray, predominantly quartzose, predominant siliceous cement, very fine grained to silt grained, subangular, well sorted, no visual show, no visible porosity, slightly argillaceous, trace dolomitic cement, trace pyrite; **SHALE** - gray - green, soft, fissile, moderately calcareous, grading to calcareous Marlstone in part, scattered quartz grains floating;
Miss Banff	810m Sample
810 - 815	**SHALE** - medium gray, dark gray in part, fissile, soft, trace pyrite, moderately calcareous; **SANDSTONE** - medium gray, predominantly quartzose, predominant siliceous cement, very fine grained to silt grained, subangular, well sorted, no visual show, no visible porosity, slightly argillaceous, trace dolomitic cement, trace pyrite;
815 - 830	**SHALE** - medium gray, dark gray in part, fissile, soft, moderately calcareous; **LIMESTONE** - mottled buff - light brown, massive, trace indistinct fossil fragments in part, microcrystalline, no visual show, no visible porosity, clean, slightly fossiliferous; **SHALE** - gray - green, soft, fissile, moderately calcareous, grading to calcareous Marlstone in part, scattered quartz grains floating;
830 - 840	**LIMESTONE** - mottled buff - light brown, massive, trace indistinct fossil fragments in part, microcrystalline to fine crystalline, no visual show, no visible porosity, clean, slightly fossiliferous;
840 - 850	**LIMESTONE** - mottled buff - light brown, massive, trace indistinct fossil fragments in part, microcrystalline to fine crystalline, no visual show, no visible porosity, clean, slightly fossiliferous; **LIMESTONE** - mottled buff - light brown, trace indistinct fossil fragments in part, microcrystalline to medium crystalline, bright yellow fluorescence, streaming milky cut, no visible porosity, clean, slightly oolitic, slightly fossiliferous;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
850 - 860	**SHALE** - medium gray, light gray in part, subfissile, moderately calcareous; **LIMESTONE** - mottled buff - light brown, trace indistinct fossil fragments in part, microcrystalline to medium crystalline, bright yellow fluorescence, streaming milky cut, no visible porosity, slightly oolitic, slightly fossiliferous, slightly argillaceous in part;
860 - 880	**SHALE** - medium gray, light gray in part, subfissile, moderately calcareous;
880 - 895	**SHALE** - medium gray, light gray in part, subfissile, moderately calcareous;
895 - 905	**SHALE** - medium gray, subfissile - fissile, soft, slightly calcareous in part, trace pyrite;
905 - 930	**SHALE** - medium gray, becoming light gray in part, subfissile, soft, moderately calcareous, trace pyrite;
930 - 955	**SHALE** - medium gray, becoming light gray in part, subfissile, soft, moderately calcareous, trace pyrite;
955 - 985	**SHALE** - medium gray, becoming light gray in part, subfissile, soft, moderately calcareous, trace pyrite in part;
985 - 1015	**SHALE** - medium gray, becoming light gray in part, subfissile, soft, moderately calcareous, trace pyrite in part;
1015 - 1045	**SHALE** - medium gray, becoming light gray in part, subfissile, soft, moderately calcareous, trace pyrite in part;
1045 - 1050	**SHALE** - dark gray, medium gray in part, fissile, soft, slightly carbonaceous, trace pyrite in small part, slightly calcareous;
1050 - 1080	**SHALE** - medium gray, becoming light gray in part, subfissile, soft, moderately calcareous, trace pyrite in part;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
1080 - 1100	**SHALE** - medium gray, becoming light gray in part, subfissile, soft, moderately calcareous, trace pyrite in part;
1100 - 1130	**SHALE** - medium gray, becoming light gray in part, subfissile, soft, moderately calcareous, trace pyrite in part;
1130 - 1160	**SHALE** - medium gray, becoming dark gray in part, subfissile, soft, slightly calcareous, trace pyrite in small part;
1160 - 1190	**SHALE** - medium gray, becoming dark gray in part, subfissile, trace calcareous in small part, scattered pyrite disseminated throughout;
1190 - 1220	**SHALE** - medium gray, becoming dark gray in part, subfissile, scattered pyrite disseminated throughout;
1220 - 1250	**SHALE** - medium gray, becoming dark gray in part, subfissile, scattered pyrite disseminated throughout;
1250 - 1280	**SHALE** - dark gray, medium gray in part, fissile, soft, slightly carbonaceous in small part, trace pyrite disseminated throughout;
1280 - 1300	**SHALE** - dark gray, medium gray in part, fissile, soft, slightly carbonaceous in small part, trace pyrite disseminated throughout;
1300 - 1305	**SHALE** - dark gray, brown in part, fissile, soft, slightly carbonaceous in small part, trace pyrite disseminated throughout;
1305 - 1315	**SHALE** - dark gray, brown in part, fissile, slightly carbonaceous, scattered pyrite crystals;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
1315 - 1330	**SHALE** - medium gray in part, subfissile - fissile, moderately calcareous, marly in part, scattered pyrite disseminated throughout; **SHALE** - dark gray, brown in part, fissile, slightly carbonaceous, scattered pyrite crystals; **SHALE** - dark gray to black, brown in part, fissile, possible micro fractures in part, slightly carbonaceous, scattered pyrite crystals, trace calcareous streaks;
Miss Exshaw	1318m Sample
Dev Kotcho	1329m Sample
1330 - 1360	**SHALE** - medium gray in part, subfissile - fissile, moderately calcareous, marly in part, scattered pyrite disseminated throughout;
1360 - 1390	**SHALE** - medium gray in part, light gray in part, subfissile - fissile, moderately calcareous, marly in part, trace pyrite;
1390 - 1420	**SHALE** - medium - light gray, subfissile - fissile, moderately calcareous, marly in part, trace pyrite;
1420 - 1450	**SHALE** - medium - light gray, subfissile - fissile, moderately calcareous, marly in part, trace pyrite;
1450 - 1480	**SHALE** - medium - light gray, subfissile - fissile, moderately calcareous, marly in part, trace pyrite;
1480 - 1510	**SHALE** - medium - light gray, subfissile - fissile, waxy in part, moderately calcareous, marly in part, trace pyrite;
1510 - 1540	**SHALE** - medium - light gray, subfissile - fissile, waxy in part, moderately calcareous, marly in part, trace pyrite;
1540 - 1570	**SHALE** - medium - light gray, subfissile - fissile, waxy in part, moderately calcareous, marly in part, trace pyrite; **SHALE** - medium gray, subfissile - fissile, scattered pyrite disseminated throughout;
1570 - 1600	**SHALE** - medium gray, subfissile - fissile, scattered pyrite disseminated throughout;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
1600 - 1630	**SHALE** - medium gray, subfissile - fissile, waxy in part, moderately calcareous, marly in part, trace pyrite;
1630 - 1660	**SHALE** - medium gray, subfissile - fissile, becoming medium -dark gray brown in part, moderately calcareous, marly in part, trace pyrite;
1660 - 1690	**SHALE** - medium gray, subfissile - fissile, becoming medium - dark gray brown in part, moderately calcareous, marly in part, trace pyrite;
1690 - 1720	**SHALE** - medium gray, subfissile - fissile, becoming medium - dark gray brown in part, moderately calcareous, marly in part, trace pyrite;
1720 - 1725	**SHALE** - medium gray, dark gray brown, subfissile - fissile, moderately calcareous, trace pyrite in part;
Dev Tetcho	1725m Sample
1725 - 1735	**LIMESTONE** - light gray brown, medium gray in part, cryptocrystalline, no visual show, no visible porosity, slightly argillaceous, trace pyrite;
1735 - 1750	**SHALE** - medium gray, dark gray brown, blocky, moderately calcareous, trace pyrite in part; **LIMESTONE** - light gray brown, medium gray in part, cryptocrystalline, no visual show, no visible porosity, slightly argillaceous, grading to moderately argillaceous in part, trace pyrite;
1750 - 1755	**SHALE** - medium gray, dark gray in part, blocky, moderately calcareous, trace pyrite; **LIMESTONE** - light gray brown, medium gray in part, cryptocrystalline, no visual show, no visible porosity, slightly argillaceous, grading to moderately argillaceous in part, trace pyrite;
1755 - 1760	**SHALE** - medium gray, dark gray brown, blocky, moderately calcareous, trace pyrite in part; **LIMESTONE** - light gray brown, medium gray in part, cryptocrystalline, no visual show, no visible porosity, slightly argillaceous, trace pyrite;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
1760 - 1770	**SHALE** - medium gray, blocky, moderately calcareous, trace pyrite in part, scattered **SILTSTONE** streaks; **SILTSTONE** - light gray, occasionally medium gray in part, predominant quartz, grading to very fine grained **SANDSTONE** in part, no visual show, no visible porosity, slightly argillaceous in part, slightly calcareous;
1770 - 1775	**SHALE** - medium gray, blocky, moderately calcareous, trace pyrite in part, scattered **SILTSTONE** streaks; **SILTSTONE** - light gray, occasionally medium gray in part, predominant quartz, no visual show, no visible porosity, moderately argillaceous in part, grading to silty calcareous **SHALE** in part, slightly calcareous;
1775 - 1780	**SHALE** - medium gray, blocky, slightly calcareous, trace pyrite in part, scattered **SILTSTONE** streaks; **SILTSTONE** - light gray, occasionally medium gray in part, predominant quartz, no visual show, no visible porosity, moderately argillaceous in part, grading to silty calcareous **SHALE** in part, trace calcareous streaks in part, becoming dolomitic in part, trace siliceous cement;
1780 - 1785	**SHALE** - medium gray, blocky, slightly calcareous, trace pyrite in part, scattered **SILTSTONE** streaks; **SILTSTONE** - light gray, occasionally medium gray in part, predominant quartz, no visual show, no visible porosity, moderately argillaceous in part, grading to silty calcareous **SHALE** in part, trace calcareous streaks in part, becoming dolomitic in part, trace siliceous cement;
1785 - 1790	**SHALE** - medium gray, blocky, slightly calcareous, trace pyrite in part, scattered **SILTSTONE** streaks;
1790 - 1800	**SHALE** - medium gray, blocky, slightly calcareous, trace pyrite in part, scattered **SILTSTONE** streaks;
1800 - 1815	**SHALE** - medium gray, blocky, slightly calcareous, trace pyrite in part, scattered **SILTSTONE** streaks; **SILTSTONE** - light gray, occasionally medium gray in part, predominant quartz, no visual show, no visible porosity, moderately argillaceous in part, grading to silty calcareous **SHALE** in part, trace calcareous streaks in part, becoming dolomitic in part, trace siliceous cement;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
1815 - 1845	**SHALE** - medium gray, blocky, slightly calcareous, trace pyrite in part, scattered **SILTSTONE** streaks;
Kakisa	1845m Sample
1845 - 1850	**SHALE** - medium gray, blocky, slightly calcareous, trace pyrite in part, scattered **SILTSTONE** streaks; **SILTSTONE** - light gray, occasionally medium gray in part, predominant quartz, grading to very fine grained **SANDSTONE** in part, no visual show, no visible porosity, slightly argillaceous in part, trace calcareous, becoming slightly dolomitic in part, trace siliceous cement;
1850 - 1860	**SHALE** - medium gray, blocky, slightly calcareous, trace pyrite in part, scattered **SILTSTONE** streaks; **SILTSTONE** - light gray, occasionally medium gray in part, predominant quartz, no visual show, no visible porosity, moderately argillaceous in part, grading to silty calcareous **SHALE** in part, moderately calcareous, grading to silty **LIMESTONE** in part, trace siliceous cement;
1860 - 1865	**SHALE** - medium gray, subfissile, blocky in part, slightly calcareous, trace pyrite in small part;
1865 - 1870	**SHALE** - medium gray, subfissile, blocky in part, slightly calcareous, trace pyrite in small part; **LIMESTONE** - medium gray brown, cryptocrystalline to microcrystalline, no visual show, no visible porosity, moderately argillaceous, trace pyrite, scattered silty streaks, grading in part to calcareous **SILTSTONE; SILTSTONE** - light gray, occasionally medium gray in part, predominant quartz, no visual show, no visible porosity, moderately argillaceous in part, grading to silty calcareous **SHALE** in part, moderately calcareous, grading to silty **LIMESTONE** in part, trace siliceous cement;
Ft Simpson	1870m Sample
1870 - 1890	**SHALE** - medium gray, blocky in part, moderately calcareous, trace pyrite disseminated throughout, scattered **SILTSTONE** streaks;

TD Intermediate Hole 1890m

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
1890 - 1905	**SHALE** - medium gray, subfissile - blocky, becoming light gray in part, moderately calcareous streaks, trace pyrite disseminated throughout, scattered **SILTSTONE** streaks in small part;
1905 - 1935	**SHALE** - medium gray, subfissile - blocky, becoming light gray in part, moderately calcareous streaks, trace pyrite disseminated throughout, scattered **SILTSTONE** streaks in small part;
1935 - 1965	**SHALE** - medium gray, subfissile - blocky, moderately calcareous streaks, trace pyrite disseminated throughout, trace **SILTSTONE** streaks in small part;
1965 - 1995	**SHALE** - medium gray, subfissile - blocky, slightly calcareous in part, trace pyrite disseminated throughout, trace **SILTSTONE** streaks;
1995 - 2025	**SHALE** - medium gray, subfissile - blocky, slightly calcareous in part, trace pyrite disseminated throughout, trace **SILTSTONE** streaks;
2025 - 2055	**SHALE** - medium gray, subfissile - blocky, scattered calcareous streaks, trace pyrite disseminated, trace **SILTSTONE** streaks in small part;
2055 - 2080	**SHALE** - medium gray, subfissile - blocky, scattered calcareous streaks, trace pyrite disseminated, trace **SILTSTONE** streaks in small part;
2080 - 2105	**SHALE** - medium gray, subfissile - blocky, slightly calcareous streaks, trace pyrite, trace **SILTSTONE** streaks in small part;
2105 - 2130	**SHALE** - medium gray, subfissile - blocky, slightly calcareous streaks, trace pyrite, trace **SILTSTONE** streaks in small part;
2130 - 2155	**SHALE** - medium gray, subfissile - blocky, slightly calcareous streaks, trace pyrite, rare **SILTSTONE** streaks in small part;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2155 - 2185	**SHALE** - medium gray, subfissile - blocky, trace calcareous streaks in small part, trace pyrite;
2185 - 2215	**SHALE** - medium gray, subfissile - blocky, trace calcareous streaks in small part, trace pyrite;
2215 - 2245	**SHALE** - medium gray, subfissile - blocky, trace calcareous streaks in small part, trace pyrite;
2245 - 2275	**SHALE** - medium gray, subfissile - blocky, trace calcareous streaks in small part, trace pyrite;
2275 - 2305	**SHALE** - medium gray, subfissile - blocky, trace calcareous streaks in small part, trace pyrite;
2305 - 2320	**SHALE** - medium gray, becoming dark gray, subfissile - blocky, rare clear dolomite (micro fracture fill ?), trace calcareous streaks in small part, trace pyrite;
2320 - 2335	**SHALE** - medium gray - dark gray, subfissile - blocky, rare clear dolomite (micro fracture fill ?), trace calcareous streaks in small part, trace pyrite;
2335 - 2350	**SHALE** - medium gray - dark gray, subfissile - blocky, rare clear dolomite (micro fracture fill ?), trace calcareous streaks in small part, trace pyrite;
2350 - 2380	**SHALE** - medium gray - dark gray, subfissile - blocky, trace calcareous streaks in small part, trace pyrite;
2380 - 2400	**SHALE** - dark gray to medium gray, slightly brown in part, subfissile, slightly micromicaceous, trace pyrite, rare calcareous streaks in small part;
2400 - 2410	No sample - Blooey line problems;
2410 - 2430	**SHALE** - dark gray, subfissile, slightly micromicaceous, trace pyrite, rare calcareous streaks in small part;
2430 - 2435	**SHALE** - medium gray - dark gray, subfissile - blocky, trace calcareous streaks in small part, trace pyrite; **SHALE** - dark gray, subfissile, slightly micromicaceous, trace pyrite, rare calcareous streaks in small part;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2435 - 2445	**SHALE** - dark gray - black, brown in part, fissile - subfissile, slightly carbonaceous in part, scattered pyrite throughout, moderately calcareous;
2445 - 2455	**SHALE** - dark gray brown, fissile - subfissile, slightly carbonaceous in part, scattered pyrite throughout, slightly calcareous in part, becoming dolomitic in small part;
2455 - 2470	**SHALE** - medium gray - dark gray brown, subfissile - blocky, rare calcareous streaks, trace pyrite;
2470 - 2475	**SHALE** - medium gray - dark gray brown, subfissile - blocky, scattered calcareous and trace quartz veining, scattered calcareous fracture fill in part, trace calcareous streaks, trace pyrite;
2475 - 2490	**SHALE** - medium gray - dark gray brown, subfissile - blocky, scattered calcareous and trace quartz veining, scattered calcareous fracture fill in part, trace calcareous streaks, trace pyrite; **SHALE** - dark gray brown, subfissile, becoming black, fissile, slightly carbonaceous in part, trace pyrite throughout;
2490 - 2500	**SHALE** - black, fissile, slightly carbonaceous in part, scattered pyrite throughout;
Dev Muskwa	2498m Sample
2500 - 2505	**SHALE** - black, brown in part, fissile - subfissile, slightly calcareous, scattered pyrite throughout;
2505 - 2515	**SHALE** - black, brown in part, fissile - subfissile, moderately calcareous, scattered pyrite throughout;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2515 - 2520	**SHALE** - black, brown in part,, moderately calcareous streaks, grading to argillaceous **LIMESTONE** in part, scattered pyrite; **LIMESTONE** - light gray, brown, dark gray in part, mottled in part, microcrystalline to cryptocrystalline and some medium crystalline, fragmental in part with rare clear and translucent calcite fracture fill - euhedral crystals in part, no visual show, no visible porosity, trace slickensides in part, rare oolitic streaks, scattered argillaceous laminae, scattered dolomitic streaks, occasional silty;
Slave Point	2520m Sample
2520 - 2525	**SHALE** - black, brown in part, moderately calcareous streaks, grading to argillaceous **LIMESTONE** in part, scattered pyrite; **LIMESTONE** - dark gray, brown, light gray in part, mottled in part, microcrystalline to cryptocrystalline and some medium crystalline, scattered clear calcite fracture fill - euhedral crystals in part, no visual show, no visible porosity, trace slickensides in part, trace argillaceous laminae;
2525 - 2530	**LIMESTONE** - medium - dark gray, brown, light gray in part, mottled in part, microcrystalline to cryptocrystalline and some medium crystalline, scattered clear calcite fracture fill - euhedral crystals in part, no visual show, no visible porosity;
TD Mainhole section	2530m
2530 - 2640	No sample - No sample returns while drilling with N2;
Watt Mtn	2565m Logs
Sulphur Point	2573m Logs

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2640 - 2655	**LIMESTONE** - light gray, medium gray brown, occasionally mottled in part, microcrystalline and some medium crystalline, trace fracture porosity, scattered clear and white calcite fracture fill - trace euhedral crystals in part, no visual show, no visible porosity, scattered pyrite in part; **LIMESTONE** - light gray, medium gray brown, occasionally mottled in part, microcrystalline and some medium crystalline, scattered clear and white calcite fracture fill - trace euhedral crystals in part, no visual show, no visible porosity, scattered pyrite in part;
2655 - 2660	**LIMESTONE** - medium - dark gray brown, microcrystalline to cryptocrystalline and some medium crystalline, scattered clear calcite fracture fill - euhedral crystals in part, no visual show, no visible porosity, trace pyrite disseminated;
2660 - 2665	No sample - No sample returns while drilling with N2;
2665 - 2680	**LIMESTONE** - medium - dark gray brown, microcrystalline to cryptocrystalline and some medium crystalline, trace clear, translucent calcite fracture fill - euhedral crystals in part, no visual show, no visible porosity, trace pyrite disseminated;
2680 - 2695	No sample - No sample returns while drilling with N2;
Nahanni	2689m Sample
2695 - 2700	**LIMESTONE** - medium - dark gray brown, microcrystalline to cryptocrystalline, trace clear, translucent calcite fracture fill - euhedral crystals in part, no visual show, no visible porosity, trace pyrite disseminated;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2700 - 2720	**LIMESTONE** - medium - dark gray brown, microcrystalline to cryptocrystalline, trace clear, translucent calcite fracture fill - euhedral crystals in part, no visual show, no visible porosity, trace pyrite veining in part, rare dolomite fracture fill in small part, trace pyrite disseminated; **LIMESTONE** - medium - dark gray brown, microcrystalline to cryptocrystalline, trace fracture porosity in part, scattered white calcite fracture fill - euhedral crystals in part, rare dolomite fracture fill in part, no visual show, no visible porosity, scattered pyrite veining;
2720 - 2740	**LIMESTONE** - medium - dark gray brown, microcrystalline to cryptocrystalline, trace clear, translucent calcite fracture fill - euhedral crystals in part, no visual show, no visible porosity, trace pyrite veining in part, rare dolomite fracture fill in small part, trace pyrite disseminated; **LIMESTONE** - medium - dark gray brown, microcrystalline to cryptocrystalline, trace fracture porosity in part, scattered white calcite fracture fill - euhedral crystals in part, rare dolomite fracture fill in part, no visual show, no visible porosity, scattered pyrite veining;
2740 - 2745	**LIMESTONE** - medium - dark gray brown, occasionally light brown in part, microcrystalline to cryptocrystalline, trace white - translucent calcite fracture fill - euhedral crystals in part, no visual show, no visible porosity, rare dolomitic fracture fill in small part, trace pyrite veining;
2745 - 2765	**LIMESTONE** - medium - dark gray brown, occasionally light brown in part, microcrystalline to cryptocrystalline, trace white - translucent calcite fracture fill - euhedral crystals in part, no visual show, no visible porosity, rare dolomitic fracture fill in small part, trace pyrite veining;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2765 - 2770	**LIMESTONE** - medium - dark gray brown, light gray in part, microcrystalline to cryptocrystalline, scattered white calcite fracture fill - euhedral crystals in part, rare dolomite fracture fill in part, no visual show, no visible porosity, scattered pyrite veining in small part, trace dolomite streaks in part;
2770 - 2780	**LIMESTONE** - medium - dark gray brown, light gray in part, microcrystalline to cryptocrystalline, scattered white calcite fracture fill - euhedral crystals in part, rare dolomite fracture fill in part, no visual show, no visible porosity, scattered pyrite veining in small part, trace dolomite streaks in part; **DOLOMITE** - white, mottled light gray in part, medium crystalline to coarse crystalline and some microcrystalline, no visual show, no visible porosity, trace dolomite fracture fill, trace pyrobitumen ?, rare pyrite in small part;
2780 - 2790	**LIMESTONE** - medium - dark gray brown, light gray in part, microcrystalline to cryptocrystalline, scattered white calcite fracture fill - euhedral crystals in part, rare dolomite fracture fill in part, no visual show, no visible porosity, scattered pyrite veining in small part, trace dolomite streaks in part; **DOLOMITE** - white, mottled light gray in part, medium crystalline to coarse crystalline and some microcrystalline, trace fracture porosity, no visual show, no visible porosity, trace dolomite fracture fill, trace pyrobitumen ?, rare pyrite in small part;
Headless SS	2788m Sample

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2790 - 2795	**LIMESTONE** - medium - dark gray brown, light gray in part, cryptocrystalline and some microcrystalline, scattered white dolomite fracture fill - euhedral crystals in part, no visual show, no visible porosity, trace pyrite disseminated in part, trace dolomitic streaks in part; **DOLOMITE** - white, semitransluent, medium crystalline to coarse crystalline and some microcrystalline, trace fracture porosity, no visual show, no visible porosity, trace dolomite fracture fill, trace pyrobitumen interstitial, rare pyrite in small part; **DOLOMITE** - light gray - medium gray, microcrystalline to fine crystalline and some cryptocrystalline, trace fracture porosity, no visual show, trace iron stain, no visible porosity, becoming slightly argillaceous in part, scattered dolomite fracture fill, scattered pyrite, disseminated, trace calcareous streaks, trace argillaceous laminae;
2795 - 2800	**LIMESTONE** - medium - dark gray brown, dark gray - black in part, cryptocrystalline and some microcrystalline, scattered white dolomite fracture fill - euhedral crystals in part, scattered iron stain, no visual show, no visible porosity, trace pyrite disseminated in part, trace dolomitic streaks in part; **DOLOMITE** - white, semitransluent, medium crystalline to coarse crystalline and some microcrystalline, trace fracture porosity, no visual show, no visible porosity, trace dolomite fracture fill, trace pyrobitumen interstitial, rare pyrite in small part; **DOLOMITE** - light gray - medium gray, microcrystalline to fine crystalline and some cryptocrystalline, trace fracture porosity, no visual show, trace iron stain, no visible porosity, becoming slightly argillaceous in part, scattered dolomite fracture fill, scattered pyrite, disseminated, trace calcareous streaks, trace argillaceous laminae;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2800 - 2805	**LIMESTONE** - medium - dark gray brown, dark gray - black in part, cryptocrystalline and some microcrystalline, scattered white calcite and dolomite fracture fill - euhedral crystals in part, scattered iron stain, no visual show, no visible porosity, trace pyrite disseminated in part, trace dolomitic streaks in part; **DOLOMITE** - light gray - medium gray, microcrystalline to fine crystalline and some cryptocrystalline, no visual show, trace iron stain, no visible porosity, becoming slightly argillaceous in part, scattered dolomite fracture fill, scattered pyrite, disseminated, trace calcareous streaks, trace argillaceous laminae;
2805 - 2810	**LIMESTONE** - medium - dark gray brown, cryptocrystalline and some microcrystalline, trace white calcite and dolomite fracture fill - euhedral crystals in part, scattered iron stain, no visual show, no visible porosity, trace pyrite disseminated in part, trace dolomitic streaks in part;
2810 - 2815	**LIMESTONE** - medium - dark gray brown, cryptocrystalline and some microcrystalline, trace white calcite and dolomite fracture fill - euhedral crystals in part, scattered iron stain, no visual show, no visible porosity, trace pyrite disseminated in part, trace dolomitic streaks in part; **DOLOMITE** - white, semitransluent, medium crystalline to coarse crystalline and some microcrystalline, trace fracture porosity, no visual show, no visible porosity, trace dolomite fracture fill, trace pyrobitumen interstitial, rare pyrite in small part; **DOLOMITE** - medium gray - light gray in part, microcrystalline to fine crystalline and some cryptocrystalline, no visual show, trace iron stain, no visible porosity, occasionally slightly argillaceous in part, scattered white dolomite fracture fill, scattered pyrite, disseminated, trace calcareous streaks;
Landry	2811m Sample

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2815 - 2820	**LIMESTONE** - medium - dark gray brown, cryptocrystalline and some microcrystalline, trace white calcite and dolomite fracture fill - euhedral crystals in part, scattered iron stain, no visual show, no visible porosity, trace pyrite disseminated in part, trace dolomitic streaks in part; **DOLOMITE** - light gray, medium gray in part, cryptocrystalline to fine crystalline and some microcrystalline, no visual show, trace iron stain, no visible porosity, scattered white dolomite fracture fill, scattered pyrite, disseminated, trace calcareous streaks;
2820 - 2825	**DOLOMITE** - light gray, medium gray in part, cryptocrystalline to fine crystalline and some microcrystalline, no visual show, trace iron stain, no visible porosity, common white dolomite fracture fill, scattered pyrite, disseminated, trace calcareous streaks; **DOLOMITE** - white, semitranslucent, medium crystalline to coarse crystalline and some microcrystalline, trace fracture porosity, no visual show, no visible porosity, trace dolomite fracture fill, trace pyrobitumen interstitial, rare pyrite in small part; **LIMESTONE** - medium - dark gray brown, cryptocrystalline and some microcrystalline, trace white calcite and dolomite fracture fill - euhedral crystals in part, scattered iron stain, no visual show, no visible porosity, trace pyrite disseminated in part, trace dolomitic streaks in part;
2825 - 2830	**DOLOMITE** - light gray, microcrystalline to fine crystalline and some cryptocrystalline, no visual show, common iron stain, no visible porosity, common white dolomite fracture fill, scattered pyrite in part, disseminated;
2830 - 2835	**DOLOMITE** - light gray, white, microcrystalline to fine crystalline, no visual show, abundant iron stain, no visible porosity, scattered white dolomite fracture fill, trace white calcite fracture fill in part, rare calcareous streaks; **DOLOMITE** - white, semitransluent, medium crystalline to coarse crystalline and some microcrystalline, trace fracture porosity, no visual show, common iron stain, no visible porosity, trace dolomite fracture fill;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2835 - 2840	**DOLOMITE** - light gray, white, microcrystalline to fine crystalline, no visual show, abundant iron stain, no visible porosity, scattered white dolomite fracture fill, trace white calcite fracture fill in part, rare calcareous streaks; **SHALE** - dark gray, black in part, blocky, slightly calcareous, slightly dolomitic, trace pyrite;
2840 - 2845	**DOLOMITE** - light gray, white, microcrystalline to fine crystalline, no visual show, abundant iron stain, no visible porosity, scattered white dolomite fracture fill, trace white calcite fracture fill in part, rare calcareous streaks;
2845 - 2847	**DOLOMITE** - light gray, white, microcrystalline to fine crystalline, no visual show, abundant iron stain, no visible porosity, scattered white dolomite fracture fill, trace white calcite fracture fill in part, rare calcareous streaks; **LIMESTONE** - light gray, cryptocrystalline and some microcrystalline, no visual show, no visible porosity, trace pyrite disseminated in part, trace dolomitic in small part;
2847 - 2860	**DOLOMITE** - light gray, white, occasionally medium gray in part, microcrystalline to fine crystalline and some cryptocrystalline, no visual show, abundant iron stain, scattered thinly interbedded **LIMESTONE**, no visible porosity, scattered white dolomite fracture fill, trace white calcite fracture fill in part; **DOLOMITE** - white, semitranslucent, medium crystalline to coarse crystalline and some microcrystalline, trace fracture porosity, no visual show, common iron stain, no visible porosity, trace dolomite fracture fill; **LIMESTONE** - medium gray - dark gray in part, cryptocrystalline, no visual show, no visible porosity, trace pyrite disseminated in part, trace dolomitic streaks;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2860 - 2865	**DOLOMITE** - light gray, white, occasionally medium gray in part, microcrystalline, no visual show, abundant iron stain, scattered thinly interbedded **LIMESTONE**, no visible porosity, trace white dolomite fracture fill in part, slightly calcareous streaks in part; **DOLOMITE** - white, semitransluent, medium crystalline to coarse crystalline and some microcrystalline, trace fracture porosity, no visual show, common iron stain, no visible porosity, trace dolomite fracture fill; **LIMESTONE** - medium gray - dark gray in part, occasionally light gray in part, cryptocrystalline and some microcrystalline, no visual show, no visible porosity, trace pyrite disseminated in part, trace dolomitic streaks;
Arnica 2865 - 2875	2865m Sample **DOLOMITE** - light gray, white, occasionally medium gray in part, microcrystalline and some cryptocrystalline, no visual show, abundant iron stain, scattered thinly interbedded **LIMESTONE**, no visible porosity, trace white dolomite fracture fill in part, slightly calcareous streaks in part; **DOLOMITE** - white, semitransluent, medium crystalline to coarse crystalline and some microcrystalline, trace fracture porosity, no visual show, common iron stain, no visible porosity, fracture fill in part; **LIMESTONE** - medium gray - dark gray in part, occasionally light gray in part, cryptocrystalline and some microcrystalline, no visual show, no visible porosity, trace pyrite disseminated in part, trace dolomitic streaks;
2875 - 2885	**DOLOMITE** - light gray, white, occasionally medium gray in part, microcrystalline and some cryptocrystalline, no visual show, abundant iron stain, scattered thinly interbedded **LIMESTONE**, no visible porosity, trace white dolomite fracture fill in part, slightly calcareous streaks in part; **DOLOMITE** - dark gray, black in part, microcrystalline to cryptocrystalline, no visual show, no visible porosity, trace white dolomite fracture fill in part, rare calcareous streaks;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2885 - 2895	**DOLOMITE** - light gray, white, occasionally medium gray in part, microcrystalline and some cryptocrystalline, no visual show, abundant iron stain, no visible porosity, trace white dolomite fracture fill in part, trace calcareous streaks in part; **DOLOMITE** - dark gray, black in part, microcrystalline to cryptocrystalline, no visual show, no visible porosity, trace white dolomite fracture fill in part, rare calcareous streaks;
2895 - 2905	**DOLOMITE** - gray, brown, occasionally medium gray in part, microcrystalline and some cryptocrystalline, no visual show, abundant iron stain, no visible porosity, trace white dolomite fracture fill in part;
2905 - 2920	**DOLOMITE** - gray, brown, occasionally medium gray in part, microcrystalline and some cryptocrystalline, no visual show, common iron stain, no visible porosity, rare white dolomite fracture fill in part, trace pyrite disseminated;
2920 - 2925	**DOLOMITE** - light gray, brown, occasionally medium gray in part, microcrystalline and some cryptocrystalline, no visual show, scattered iron stain, scattered stylolite, no visible porosity, rare white dolomite fracture fill in part, trace pyrite disseminated; **DOLOMITE** - dark gray, black in part, microcrystalline to cryptocrystalline, no visual show, no visible porosity;

TD DRILLER 2925m @1800Hrs 98-02-14

HYDROCARBON SHOW SUMMARY

FORMATION	INTERVAL	REMARKS
Sulphur Pt	2578	No samples - probable frac 20' flare for 3min
Sulphur Pt	2595	No samples - probable frac 3.1mmcf/d
"	2595-2635	avg 1.7mmcf/d
Sulphur Pt/ Nahanni	2636	28.65mmcf/d decr to 19mmcf/d decr to 8.5mmcf/d 2501/min 70,000 ppm
Nahanni	2640-2740	14mmcf/d decr steadily 10mmcf/d 1501/min 120,000ppm
Headless	2740-2768	10mmcf/d decr to 9mmcf/d 2501/min 98,000 ppm
Landry	2768-2812	9mmcf/d decr to 8mmcf/d
	2813	8mmcf/d incr to 10.5mmcf/d 1701/min 110,000 ppm
	2825	10mmcf/d 2001/min 130,000ppm
Arnica	2838-2847	12mmcf/d decr to 8mmcf/d 300 1/min 142,000ppm
	2847-2925	steady 8.5mmcf/d 300 - 600 1/min 130,000ppm

C L Consultants
Limited

SAMPLE LOG

FILE: 98N-2036

COMPANY:	PARAMOUNT RESOURCES LTD.		
WELL:	PARAMOUNT ET AL ARROWHEAD		
LOCATION:	N65		
FIELD:	Undefined		
PROVINCE:	NWT		
GEOLOGIST:	D G Ferguson		
SPUD DATE:	Jan 14, 1998	DATA FROM:	55 m
FINISH DATE:	Feb 14, 1998		
ELEVATION K.B.:	574.6 m	T.D. DRILLER:	2925 m