

NORTHLAND ENERGY



Precision Drilling

A Division of Precision Drilling Technology Services Group Inc.

N.E.B. COPY

**Petro-Canada Oil and Gas
PCI et al Tweed Lake M47C-UP
N 66 56' 47.11" W 125 54' 9.42"
Mount Clark**

Testing Operation Performed:	Tight Hole
Customer Representative(s) on Location:	Jim Messervey
Northland Energy Supervisor(s):	C. Komery, C. Moylan, R. Lotzer
Separator Unit Number:	FS-135
Test Start and End Dates:	04/03/08-04/03/11
Northland Energy Job Number:	4400761B

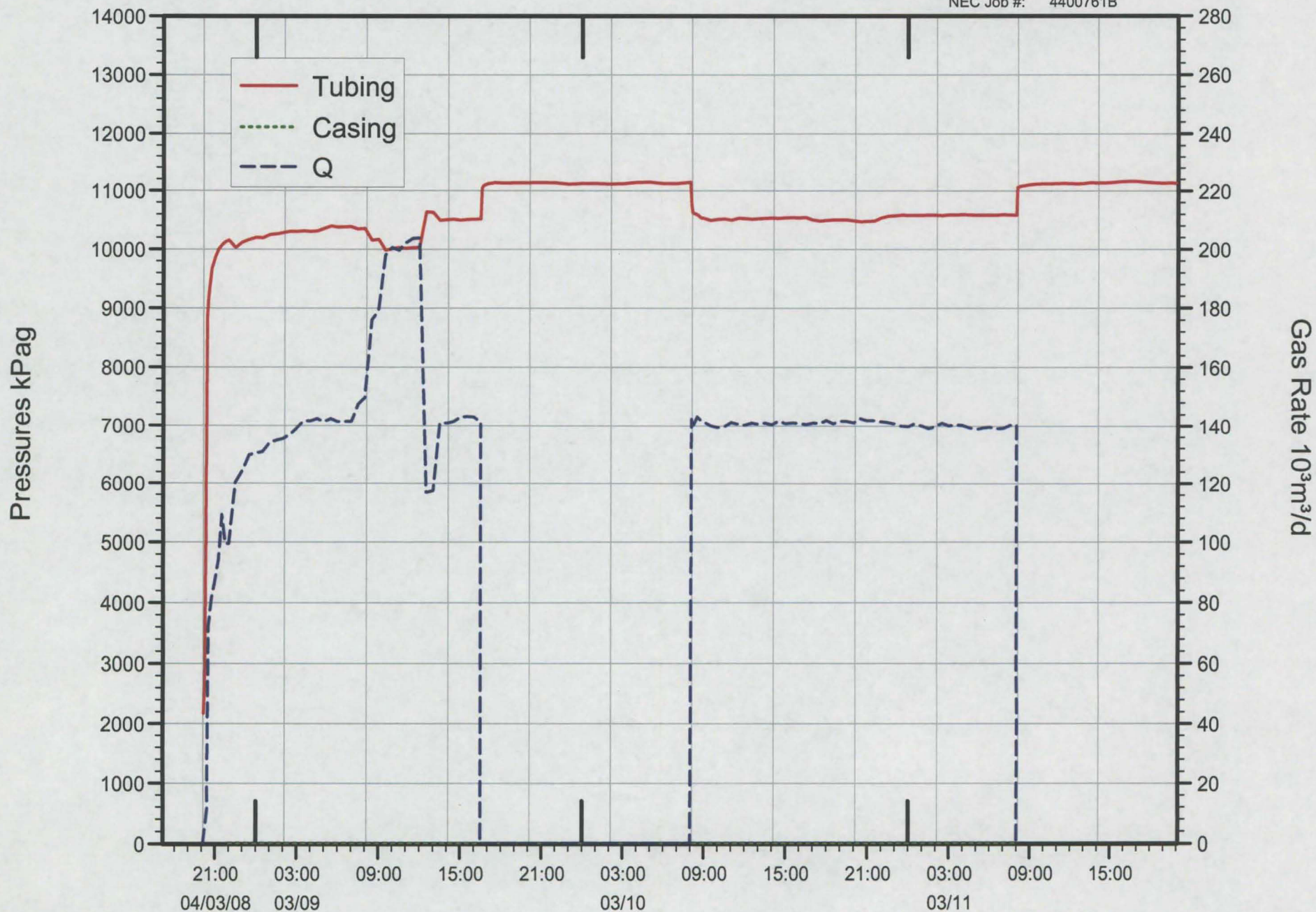
Northland Energy Representative:	Steve Beaudet
Report Prepared By:	J. Zhu
Date Prepared:	April 29, 2004



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Northland Energy
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Calgary, AB T2P 3Y7
Telephone: 403.716.4500
Facsimile: 403.716.4869
www.precisiondrilling.com

Petro-Canada Oil and Gas
N 66 56' 47.11" W 125 54' 9.42"
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Pool or Zone: Mount Clark
Field or Pool: Tweed Lake
Test Start: 8 Mar 2004
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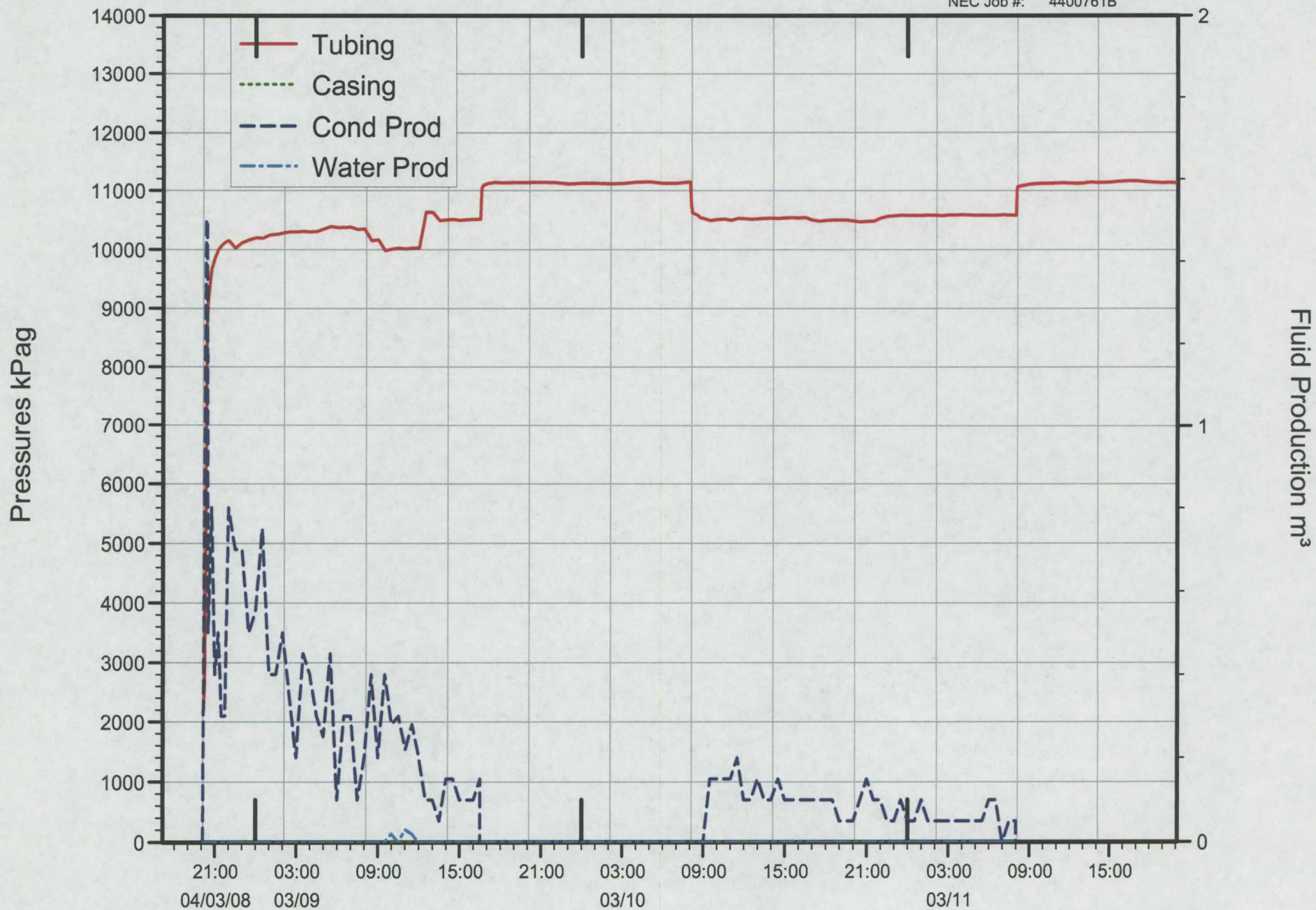




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Company: Petro-Canada Oil and Gas
Company Representative: Jim Messervey

Wellname: M47C-UP
UWI: N 66 56' 47.11" W 125 54' 9.42"

Pool or Zone: Mount Clark
Field or Area: Tweed Lake

Operation: Tight Hole

Test Supervisors: C. Komery, C. Moylan, R. Lotzer
NEC Job #: 4400761B

Northland Energy Corporation division: Northland Energy

Fluid1 Type: Cond/Oil
Tank Measurement: Incremental

Fluid2 Type: Water
Tank Measurement: Incremental

Flow Duration: 44.38 hours
Final Gas Production Rate: 140.40 10³m³/d
Cumulative Gas Produced: 262.30 10³m³
Cumulative Water Produced: 0.07 m³
Cumulative Condensate/Oil Produced: 23.13 m³
Initial Tubing Pressure: 1254.00 kPa
Final Tubing Pressure: 11138.00 kPa

Meter Type:	Meter Run
Tap Type:	Flange
Tap Location:	Down Stream
Test Unit:	FS-135
Upstream Meter Internal Diameter:	154.20 mm
H ₂	
He	0.0094
N ₂	0.2243
CO ₂	0.0003
H ₂ S	
C1	0.6774
C2	0.0605
C3	0.0171
iC4	0.0035
nC4	0.0040
iC5	0.0015
nC5	0.0008
C6	0.0007
C7	0.0005
C8	
C9	
C10	
O	
CO	
H ₂ O	
Specific Gravity:	0.707
pPc:	4288.70 kPa
pTc:	187.20 °K



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Time	Elapsed Time	Well Head Data			H.P. Sep Gas Metering				Cum. Q Total	Cond/Oil Prod.		Water Production			Tubing Draw Down	Casing Draw Down	pH	Sand	BSW	BHP
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q		Cond/Oil Prod.	Cum. Cond/Oil Prod. Tot.	Water Prod.	Cum. Water Prod. Tot.	Salinity						
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	10³m³/d	10³m³	m³	m³	m³	m³	ppm	%	%		%	%	kpa
04/03/08																				
07:45		Conduct safety meeting.																		
10:00		Conduct safety meeting.																		
10:30		Begin frac.																		
15:00		Frac complete.																		
15:00		Load to recover= 76.0m³.																		
15:15		Rig out frac gear and TSI. Rig up flowline to wellhead. Begin pumping methanol down capillary line.																		
16:00		1254													42.4					
16:30		2059													5.4					
17:00		2226													-2.3					
17:30		2404													-10.5					
18:00		2577													-18.4					
18:30		2757													-26.7					
19:00		2846													-30.8					
19:30		2936													-34.9					
19:30		Casing on vacuum.																		
19:50		Conduct safety meeting.																		
20:04		Open well to manifold and pressure test flowline.																		
20:07		Open well on 9.5250 mm choke.																		
20:07		Frac oil to surface.																		
20:10	0.0	2176								0.40	0.40	0.00	0.00		0.0					
20:15	0.1	2655								0.90	1.30	0.00	0.00		-22.0					
20:17		Meter in service on 63.5000 mm orifice plate.																		
20:20	0.2	5220								1.50	2.80	0.00	0.00		-139.9					
20:25		Gas to surface.																		
20:25	0.3	8831			110	1.0	-2	11.85	0.07	1.50	4.30	0.00	0.00		-305.8					
20:25		Trace of sand in sample.																		
20:30	0.4	9176	-10		150	30.0	-4	72.15	0.32	0.50	4.80	0.00	0.00		-321.7					
20:32		Increase back-pressure.																		
20:45	0.6	9679	-10		200	34.0	10	82.01	1.17	0.80	5.60	0.00	0.00		-344.8					
21:00	0.9	9870	-8		205	38.0	10	87.53	2.08	0.40	6.00	0.00	0.00		-353.6		10.0			



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		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q		Cond/Oil Prod.	Cum. Cond/Oil Prod. Tot.	Water Prod.	Cum. Water Prod. Tot.	Salinity						
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	10³m³/d	10³m³	m³	m³	m³	m³	ppm	%	%		%	%	kpa
04/03/08																				
21:13		Change orifice plate to 76.2000 mm.																		
21:15	1.1	10001	-5		230	19.0	8	94.10	3.06	0.50	6.50	0.00	0.00		-359.6					
21:30	1.4	10075	-8		250	24.0	8	109.10	4.20	0.30	6.80	0.00	0.00		-363.0			1.0		
21:32		Ship fluid to rig-tank.																		
21:42		Stop shipping.																		
21:45	1.6	10127	-4		250	20.0	8	99.45	5.23	0.30	7.10	0.00	0.00		-365.4					
22:00	1.9	10154	-7	0	250	20.0	8	99.45	6.27	0.80	7.90	0.00	0.00		-366.6					
22:00		Increase choke to 10.3200 mm.																		
22:30	2.4	10027	-7		324	24.0	6	120.44	8.78	0.70	8.60	0.00	0.00		-360.8			10.0		
23:00	2.9	10119	-7	0	331	25.0	4	124.43	11.37	0.70	9.30	0.00	0.00		-365.0					
23:30	3.4	10167	-7		369	25.0	4	129.77	14.08	0.50	9.80	0.00	0.00		-367.2			0.5		
24:00	3.9	10201	-7	0	373	25.0	4	130.32	16.79	0.55	10.35	0.00	0.00		-368.8			0.5		
Day Summary Cum. Prod. Since: 20:07 04/03/08 Gas Production (3.9 Hrs) 16.79 10³m³ Cumulative (3.9 Hrs) 16.79 10³m³ Liquid Production (3.9 Hrs) Cond/Oil 10.35 m³ Water 0.00 m³ Liquid Production Cumulative (3.9 Hrs) Cond/Oil 10.35 m³ Water 0.00 m³																				



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		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q		Cond/Oil Prod.	Cum. Cond/Oil Prod. Tot.	Water Prod.	Cum. Water Prod. Tot.	Salinity						
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	10³m³/d	10³m³	m³	m³	m³	m³	ppm	%	%		%	%	kpa
04/03/08 04/03/09																				
00:30	4.4	10192	-5		377	25.0	4	130.87	19.52	0.75	11.10	0.00	0.00		-368.4					
01:00	4.9	10246	-5	0	389	25.5	4	133.84	22.31	0.40	11.50	0.00	0.00		-370.9		0.3			
01:30	5.4	10259	-5		392	25.6	3	134.77	25.11	0.40	11.90	0.00	0.00		-371.5					
02:00	5.9	10283	-5	0	394	25.7	3	135.31	27.93	0.50	12.40	0.00	0.00		-372.6		0.3			
02:30	6.4	10302	-5		400	25.9	3	136.66	30.78	0.35	12.75	0.00	0.00		-373.4					
02:40		Ship fluid to rig-tank.																		
02:44		Stop shipping.																		
03:00	6.9	10304	-5	0	400	26.1	-4	139.03	33.68	0.20	12.95	0.00	0.00		-373.5		0.4			
03:00		Line heater down temporarily.																		
03:30	7.4	10313	-5		403	26.3	-10	141.63	36.63	0.45	13.40	0.00	0.00		-373.9					
04:00	7.9	10302	-5	0	403	26.3	-10	141.63	39.58	0.40	13.80	0.00	0.00		-373.4		0.1			
04:30	8.4	10311	-5		401	26.5	-12	142.46	42.55	0.30	14.10	0.00	0.00		-373.9					
05:00	8.9	10354	-5	0	401	26.5	-8	141.34	45.49	0.25	14.35	0.00	0.00		-375.8		0.2			
05:30	9.4	10398	-4		419	26.5	-3	142.47	48.46	0.45	14.80	0.00	0.00		-377.8					
06:00	9.9	10375	-3	0	415	26.5	-1	141.38	51.40	0.10	14.90	0.00	0.00		-376.8		0.2			
06:30	10.4	10380	-6		410	26.9	0	141.49	54.35	0.30	15.20	0.00	0.00		-377.0					
07:00	10.9	10384	-5	0	408	27.0	0	141.48	57.30	0.30	15.50	0.00	0.00		-377.2		0.2			
07:00		Increase choke to 11.1100 mm.																		
07:30	11.4	10348	-4		424	28.4	0	147.42	60.37	0.10	15.60	0.00	0.00		-375.6					
08:00	11.9	10353	-5	0	437	28.6	0	149.77	63.49	0.20	15.80	0.00	0.00		-375.8		0.2	5.0		
08:15		Increase choke to 11.9100 mm.																		
08:30	12.4	10154	-5		532	33.5	0	176.05	67.16	0.40	16.20	0.00	0.00		-366.6					
08:40		Change orifice plate to 88.9000 mm.																		
09:00	12.9	10169	-5	0	540	17.5	-1	179.33	70.89	0.20	16.40	0.00	0.00		-367.3					
09:01		Increase choke to 12.7000 mm.																		
09:10		Change to grove back-pressure valve.																		
09:30	13.4	9982	-3		776	15.6	0	198.03	75.02	0.40	16.80	0.00	0.00		-358.7					
10:00	13.9	10010	-3		771	16.1	0	200.61	79.20	0.28	17.08	0.02	0.02	230000	-360.0		6.0	5.0		
10:30	14.4	10027	-3		770	16.1	2	199.71	83.36	0.30	17.38	0.00	0.02		-360.8					



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hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	10³m³/d	10³m³	m³	m³	m³	m³	ppm	%	%		%	%	kpa
04/03/09																				
11:00	14.9	10015	-3	0	769	16.4	0	202.24	87.57	0.22	17.60	0.03	0.05	248000	-360.2		6.0		10.0	
11:30	15.4	10027	-2	3	771	16.6	0	203.71	91.82	0.28	17.88	0.02	0.07		-360.8			5.0		
12:00	15.9	10032	-2	3	772	16.6	0	203.83	96.06	0.20	18.08	0.00	0.07		-361.0					
12:01		Decrease choke to 9.5300 mm.																		
12:10		Change orifice plate to 69.8500 mm.																		
12:30	16.4	10638	-12		724	17.0	9	116.74	98.50	0.10	18.18	0.00	0.07		-388.9					
12:30		No fluid at sample port. Moved flowline thermometer.																		
13:00	16.9	10633	-5	3	736	17.0	10	117.37	100.94	0.10	18.28	0.00	0.07		-388.6					
13:15		Increase choke to 10.3200 mm.																		
13:30	17.4	10495	-3		755	23.7	8	140.87	103.88	0.05	18.33	0.00	0.07		-382.3					
14:00	17.9	10507	-3		759	23.6	8	140.90	106.81	0.15	18.48	0.00	0.07		-382.9			0.0		
14:30		Circ in / out, is lineheater temp. up and downstream.																		
14:30	18.4	10513	-3		758	23.9	9	141.45	109.76	0.15	18.63	0.00	0.07		-383.1					
15:00	18.9	10500	-3		758	24.0	4	143.10	112.74	0.10	18.73	0.00	0.07		-382.5					
15:30	19.4	10508	-3		750	24.1	2	143.27	115.72	0.10	18.83	0.00	0.07		-382.9			0.0		
16:00	19.9	10512	-4	0	758	24.0	4	143.10	118.70	0.10	18.93	0.00	0.07		-383.1			0.0		
16:30	20.4	10517	-4		753	23.8	7	141.26	121.65	0.15	19.08	0.00	0.07		-383.3			0.0		
16:30		Shut in well and monitor tubing pressure.																		
16:35	0.1	11047													-407.7					
16:40	0.2	11082													-409.3					
16:45	0.2	11098													-410.0					
17:00	0.5	11122													-411.1					
17:15	0.8	11128													-411.4					
17:30	1.0	11139													-411.9					
17:45		Conduct safety meeting.																		
18:00	1.5	11134													-411.7					
18:00		Rig up wireline.																		
19:20		Wireline running in hole with Spartek recorder.																		
20:10		Wireline tagged sand at 1311 mKB and will remain at bottom with Spartek recorder.																		
21:00		Continue to monitor tubing pressure.																		



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hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	10³m³/d	10³m³	m³	m³	m³	m³	ppm	%	%		%	%	kpa
04/03/09																				
21:00	4.5	11140													-411.9					
22:00	5.5	11138													-411.9					
23:00	6.5	11114													-410.8					
24:00	7.5	11125													-411.3					
Day Summary Cum. Prod. Since: 20:07 04/03/08 Gas Production (16.5 Hrs) 104.86 10³m³ Cumulative (20.4 Hrs) 121.65 10³m³ Liquid Production (16.5 Hrs) Cond/Oil 8.73 m³ Water 0.07 m³ Liquid Production Cumulative (20.4 Hrs) Cond/Oil 19.08 m³ Water 0.07 m³																				



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hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	10³m³/d	10³m³	m³	m³	m³	m³	ppm	%	%		%	%	kpa
04/03/09																				
04/03/10																				
01:00	8.5	11124													-411.2					
02:00	9.5	11119													-411.0					
03:00	10.5	11122													-411.1					
04:00	11.5	11143													-412.1					
05:00	12.5	11147													-412.3					
06:00	13.5	11125													-411.3					
07:00	14.5	11126													-411.3					
07:30		Start pumping methanol down capillary line.																		
08:00	15.5	11149													-412.4					
08:00		Open well on 10.3200 mm choke.																		
08:00		Meter in service on 69.8500 mm orifice plate.																		
08:05	0.1	10762	-12		756	24.2	8	142.44	122.14	0.00	19.08	0.00	0.07		-394.6					
08:10	0.2	10630	-10		748	23.5	9	139.42	122.63	0.00	19.08	0.00	0.07		-388.5					
08:15	0.2	10618	-6		755	23.7	9	140.60	123.11	0.00	19.08	0.00	0.07		-388.0					
08:15		Bottom hole pressure = 12790kPa.																		
08:30	0.5	10594	-6		780	24.0	10	143.30	124.61	0.00	19.08	0.00	0.07		-386.9					
08:45	0.8	10546	-6		774	23.8	11	141.94	126.09	0.00	19.08	0.00	0.07		-384.7					
08:45		Mist of frac fluid at sample port.																		
09:00	1.0	10532	-5		789	23.3	12	141.38	127.56	0.00	19.08	0.00	0.07		-384.0					
09:30	1.5	10499	-7		784	23.0	12	140.06	130.48	0.15	19.23	0.00	0.07		-382.5				0.4	
10:00	2.0	10513	-7		799	22.5	13	139.44	133.38	0.15	19.38	0.00	0.07		-383.1				0.4	
10:30	2.5	10521	-7		791	22.8	13	139.74	136.29	0.15	19.53	0.00	0.07		-383.5				0.4	
11:00	3.0	10504	-6		803	22.9	12	141.26	139.24	0.15	19.68	0.00	0.07		-382.7				0.4	
11:30	3.5	10533	-3		806	22.8	14	140.66	142.17	0.20	19.88	0.00	0.07		-384.1				0.2	
12:00	4.0	10529	-3		798	22.8	13	140.29	145.09	0.10	19.98	0.00	0.07		-383.9				0.2	
12:30	4.5	10518	-2		808	22.8	13	141.08	148.03	0.10	20.08	0.00	0.07		-383.4				0.2	
13:00	5.0	10526	-2		803	22.7	12	140.64	150.96	0.15	20.23	0.00	0.07		-383.7				0.2	
13:30	5.5	10532	-2		808	22.7	12	141.03	153.90	0.10	20.33	0.00	0.07		-384.0				0.1	
14:00	6.0	10535	-4		801	22.7	12	140.48	156.82	0.10	20.43	0.00	0.07		-384.1				0.4	



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Petro-Canada Oil and Gas
N 66 56' 47.11" W 125 54' 9.42"

Operation: Tight Hole
Pool or Zone: Mount Clark
Field or Area: Tweed Lake
Test Start: 8 Mar 2004
Test End: 11 Mar 2004
NEC Job #: 4400761B

Time	Elapsed Time	Well Head Data			H.P. Sep Gas Metering				Cum. Q Total	Cond/Oil Prod.		Water Production			Tubing Draw Down	Casing Draw Down	pH	Sand	BSW	BHP
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q		Cond/Oil Prod.	Cum. Cond/Oil Prod. Tot.	Water Prod.	Cum. Water Prod. Tot.	Salinity						
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	10³m³/d	10³m³	m³	m³	m³	m³	ppm	%	%		%	%	kpa
04/03/10																				
14:30	6.5	10531	-2		810	22.8	11	141.77	159.78	0.15	20.58	0.00	0.07		-384.0				0.4	
15:00	7.0	10543	-2		805	22.8	13	140.85	162.71	0.10	20.68	0.00	0.07		-384.5				0.1	
15:30	7.5	10544	-2		808	22.8	13	141.08	165.65	0.10	20.78	0.00	0.07		-384.6				0.1	
16:00	8.0	10542	-1		806	22.8	13	140.92	168.59	0.10	20.88	0.00	0.07		-384.5				0.0	
16:30	8.5	10549	-1		801	22.8	13	140.53	171.51	0.10	20.98	0.00	0.07		-384.8				0.0	
17:00	9.0	10506	-1		805	22.8	12	141.11	174.45	0.10	21.08	0.00	0.07		-382.8				0.0	
17:30	9.5	10486	-2		799	22.8	11	140.90	177.39	0.10	21.18	0.00	0.07		-381.9				0.0	
18:00	10.0	10498	-3	0	806	22.9	10	142.03	180.35	0.10	21.28	0.00	0.07		-382.4				0.0	
18:30	10.5	10506	-3		795	22.8	10	140.84	183.28	0.10	21.38	0.00	0.07		-382.8				0.0	
19:00	11.0	10505	-3		805	22.9	11	141.68	186.23	0.05	21.43	0.00	0.07		-382.8				0.0	
19:05		Ship fluid to 400 bbl. tank.																		
19:08		Stop shipping.																		
19:30	11.5	10507	-3		801	23.0	11	141.68	189.18	0.05	21.48	0.00	0.07		-382.9				0.0	
20:00	12.0	10492	-4	0	795	22.9	10	141.15	192.13	0.05	21.53	0.00	0.07		-382.2				0.0	
20:00		Line-heater was down temporarily.																		
20:30	12.5	10473	-4		771	22.6	-6	142.66	195.10	0.10	21.63	0.00	0.07		-381.3				0.0	
21:00	13.0	10482	-4		762	22.6	-6	141.91	198.05	0.15	21.78	0.00	0.07		-381.7				0.0	
21:30	13.5	10486	-4		768	22.9	-1	141.94	201.01	0.10	21.88	0.00	0.07		-381.9				0.0	
22:00	14.0	10542	-3	0	773	22.9	2	141.53	203.96	0.10	21.98	0.00	0.07		-384.5				0.1	
22:30	14.5	10568	-3		780	22.9	5	141.28	206.90	0.05	22.03	0.00	0.07		-385.7				0.2	
23:00	15.0	10577	-3		787	22.9	9	140.78	209.84	0.05	22.08	0.00	0.07		-386.1				0.1	
23:30	15.5	10588	-2		791	22.8	12	140.00	212.75	0.10	22.18	0.00	0.07		-386.6				0.1	
24:00	16.0	10584	-2	0	793	22.7	12	139.85	215.67	0.05	22.23	0.00	0.07		-386.4				0.0	
24:00		Approximately 80 litres of methanol has been injected since opening the well at 08:00. (16 hours of flow).																		



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Petro-Canada Oil and Gas
N 66 56' 47.11" W 125 54' 9.42"
Operation: Tight Hole
Pool or Zone: Mount Clark
Field or Area: Tweed Lake
Test Start: 8 Mar 2004
Test End: 11 Mar 2004
NEC Job #: 4400761B

Time	Elapsed Time	Well Head Data			H.P. Sep Gas Metering				Cum. Q Total	Cond/Oil Prod.		Water Production			Tubing Draw Down	Casing Draw Down	pH	Sand	BSW	BHP
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q		Cond/Oil Prod.	Cum. Cond/Oil Prod. Tot.	Water Prod.	Cum. Water Prod. Tot.	Salinity						
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	10³m³/d	10³m³	m³	m³	m³	m³	ppm	%	%		%	%	kpa
04/03/10																				
Day Summary Cum. Prod. Since: 20:07 04/03/08 Gas Production (16.0 Hrs) 94.02 10³m³ Cumulative (36.4 Hrs) 215.67 10³m³ Liquid Production (16.0 Hrs) Cond/Oil 3.15 m³ Water 0.00 m³ Liquid Production Cumulative (36.4 Hrs) Cond/Oil 22.23 m³ Water 0.07 m³																				



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Time	Elapsed Time	Well Head Data			H.P. Sep Gas Metering				Cum. Q Total	Cond/Oil Prod.		Water Production			Tubing Draw Down	Casing Draw Down	pH	Sand	BSW	BHP
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q		Cond/Oil Prod.	Cum. Cond/Oil Prod. Tot.	Water Prod.	Cum. Water Prod. Tot.	Salinity						
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	10³m³/d	10³m³	m³	m³	m³	m³	ppm	%	%		%	%	kpa
04/03/10																				
04/03/11																				
00:30	16.5	10585	-2		795	22.9	11	140.89	218.60	0.05	22.28	0.00	0.07		-386.4				0.0	
01:00	17.0	10585	-3		796	22.6	11	140.04	221.52	0.10	22.38	0.00	0.07		-386.4				0.1	
01:30	17.5	10589	-3		792	22.5	12	139.15	224.42	0.05	22.43	0.00	0.07		-386.6				0.2	
02:00	18.0	10587	-3	0	797	22.6	12	139.85	227.33	0.05	22.48	0.00	0.07		-386.5				0.1	
02:30	18.5	10580	-3		797	23.0	12	141.10	230.27	0.05	22.53	0.00	0.07		-386.2				0.1	
03:00	19.0	10592	-3		797	22.7	12	140.16	233.19	0.05	22.58	0.00	0.07		-386.8				0.1	
03:30	19.5	10591	-2		797	22.7	11	140.43	236.12	0.05	22.63	0.00	0.07		-386.7				0.1	
04:00	20.0	10594	-2	0	807	22.5	12	140.33	239.04	0.05	22.68	0.00	0.07		-386.9				0.1	
04:30	20.5	10593	-3		796	22.5	12	139.46	241.95	0.05	22.73	0.00	0.07		-386.8				0.1	
05:00	21.0	10590	-3		791	22.5	13	138.81	244.84	0.05	22.78	0.00	0.07		-386.7				0.1	
05:30	21.5	10587	-4		787	22.7	12	139.37	247.74	0.05	22.83	0.00	0.07		-386.5				0.1	
06:00	22.0	10589	-4	0	791	22.7	12	139.69	250.65	0.10	22.93	0.00	0.07		-386.6				0.1	
06:30	22.5	10588	-3		788	22.6	12	139.14	253.55	0.10	23.03	0.00	0.07		-386.6				0.1	
07:00	23.0	10596	-3		785	22.7	12	139.21	256.45	0.00	23.03	0.00	0.07		-386.9				0.0	
07:30	23.5	10591	-2		795	22.8	12	140.32	259.37	0.05	23.08	0.00	0.07		-386.7				0.0	
08:00	24.0	10588	-2	0	796	22.8	12	140.40	262.30	0.05	23.13	0.00	0.07		-386.6				0.0	
08:00		Shut in well. Meter out of service.																		
08:05	0.1	11060													-408.3					
08:10	0.2	11071													-408.8					
08:15	0.2	11078													-409.1					
08:30	0.5	11091													-409.7					
08:45	0.8	11100													-410.1					
09:00	1.0	11108													-410.5					
09:30	1.5	11122													-411.1					
10:00	2.0	11126													-411.3					
10:30	2.5	11124													-411.2					
11:00	3.0	11131													-411.5					
11:30	3.5	11132													-411.6					
12:00	4.0	11129													-411.4					



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Petro-Canada Oil and Gas
N 66 56' 47.11" W 125 54' 9.42"

Operation: Tight Hole
Pool or Zone: Mount Clark
Field or Area: Tweed Lake
Test Start: 8 Mar 2004
Test End: 11 Mar 2004
NEC Job #: 4400761B

Time	Elapsed Time	Well Head Data			H.P. Sep Gas Metering				Cum. Q Total	Cond/Oil Prod.		Water Production			Tubing Draw Down	Casing Draw Down	pH	Sand	BSW	BHP
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q		Cond/Oil Prod.	Cum. Cond/Oil Prod. Tot.	Water Prod.	Cum. Water Prod. Tot.	Salinity						
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	10³m³/d	10³m³	m³	m³	m³	m³	ppm	%	%		%	%	kpa
04/03/11																				
12:30	4.5	11125													-411.3					
13:00	5.0	11129													-411.4					
13:30	5.5	11144													-412.1					
14:00	6.0	11142													-412.0					
14:30	6.5	11141													-412.0					
15:00	7.0	11146													-412.2					
15:30	7.5	11155													-412.6					
16:00	8.0	11166													-413.1					
16:30	8.5	11167													-413.2					
17:00	9.0	11168													-413.2					
17:30	9.5	11155													-412.6					
18:00	10.0	11147													-412.3					
18:30	10.5	11142													-412.0					
19:00	11.0	11138													-411.9					
19:30	11.5	11140													-411.9					
20:00	12.0	11138													-411.9					
20:00		Opened well for start of test #2, start new file.																		
Day Summary Cum. Prod. Since: 20:07 04/03/08 Gas Production (8.0 Hrs)46.63 10³m³ Cumulative (44.4 Hrs)262.30 10³m³ Liquid Production (8.0 Hrs) Cond/Oil0.90 m³ Water0.00 m³ Liquid Production Cumulative (44.4 Hrs) Cond/Oil23.13 m³ Water0.07 m³																				



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Test Start: 8 Mar 2004
Test End: 11 Mar 2004
NEC Job #: 4400761B

Time	Description
hh:mm	
04/03/08	
07:45	Conduct safety meeting.
10:00	Conduct safety meeting.
10:30	Begin frac.
15:00	Frac complete.
15:00	Load to recover= 76.0m3.
15:15	Rig out frac gear and TSI. Rig up flowline to wellhead. Begin pumping methanol down capillary line.
19:30	Casing on vacuum.
19:50	Conduct safety meeting.
20:04	Open well to manifold and pressure test flowline.
20:07	Open well on 9.5250 mm choke.
20:07	Frac oil to surface.
20:17	Meter in service on 63.5000 mm orifice plate.
20:25	Gas to surface.
20:25	Trace of sand in sample.
20:32	Increase back-pressure.
21:13	Change orifice plate to 76.2000 mm.
21:32	Ship fluid to rig-tank.
21:42	Stop shipping.
22:00	Increase choke to 10.3200 mm.
04/03/09	
02:40	Ship fluid to rig-tank.
02:44	Stop shipping.
03:00	Line heater down temporarily.
07:00	Increase choke to 11.1100 mm.
08:15	Increase choke to 11.9100 mm.
08:40	Change orifice plate to 88.9000 mm.
09:01	Increase choke to 12.7000 mm.
09:10	Change to grove back-pressure valve.
12:01	Decrease choke to 9.5300 mm.
12:10	Change orifice plate to 69.8500 mm.



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Pool or Zone: Mount Clark
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Test Start: 8 Mar 2004
Test End: 11 Mar 2004
NEC Job #: 4400761B

Time	Description
hh:mm	
04/03/09	
12:30	No fluid at sample port. Moved flowline thermometer.
13:15	Increase choke to 10.3200 mm.
14:30	Circ in / out, is lineheater temp. up and downstream.
16:30	Shut in well and monitor tubing pressure.
17:45	Conduct safety meeting.
18:00	Rig up wireline.
19:20	Wireline running in hole with Spartek recorder.
20:10	Wireline tagged sand at 1311 mKB and will remain at bottom with Spartek recorder.
21:00	Continue to monitor tubing pressure.
04/03/10	
07:30	Start pumping methanol down capillary line.
08:00	Open well on 10.3200 mm choke.
08:00	Meter in service on 69.8500 mm orifice plate.
08:15	Bottom hole pressure = 12790kPa.
08:45	Mist of frac fluid at sample port.
19:05	Ship fluid to 400 bbl. tank.
19:08	Stop shipping.
20:00	Line-heater was down temporarily.
24:00	Approximately 80 litres of methanol has been injected since opening the well at 08:00. (16 hours of flow).
04/03/11	
08:00	Shut in well. Meter out of service.
20:00	Opened well for start of test #2, start new file.

NORTHLAND ENERGY CORPORATION- NORTHLAND-NORWARD
ENERGY SERVICES

- ENTEST



Precision Drilling Corporation

Sample Control Information

Job #: 440076

Client: Petro Canada Oil And Gas

Client Work Order/AFE: B783031

Client Representatives and Contact Numbers

Jim Messervey 1-600-700-7884

Samples Required: ☐ Yes ☒ No

Samples Taken By:

Comments: Core Lab Rep. On Location Taking All Samples. TIGHT HOLE.

Unique Well Identifier:

Wellname:

Field or Area:

Pool or Zone:

Elevation: KB m GRD m

Tested Interval or Perforations: Highest mKB Lowest mKB

Pressurized Samples

Sample Point	Fluid Type Sampled	Container #	Sample Date (yyyy-mm-dd)	Sample Time (hh:mm)	Pressure (KPag)	Temp (°C)	H ₂ S %

Atmospheric Samples

Sample Point	Fluid Type Sampled	Number of Containers	Sample Date (yyyy-mm-dd)	Sample Time (hh:mm)	H ₂ S %	pH	Salinity (ppm)

H₂S determined in the field by:☐ Tutweiler☐ Other:

Lab Delivered to for Analysis:

City:

Samples Delivered By:

Print Name

Signature

Date (yyyy-mm-dd)

Received By (Lab Rep):

Print Name

Signature

Date (yyyy-mm-dd)

NORTHLAND ENERGY CORPORATION

- NORTHLAND-NORWARD
ENERGY SERVICES

- ENTEST



Precision Drilling Corporation

EUB Test Information

Job Number: 4400761

Job Supervisor: C. Moylan

- All sections must be completed for every well.
- Explain fully in the space provided at the bottom of the form why any information is missing.
- Shaded items should be known by the company representative all others by the job supervisor.
- Company Representative must sign below acknowledging that all information is complete and correct

Company: Petro Canada Oil And Gas		Company Representative: Jennifer Taylor	
Wellname: PCI Et Al Tweed Lake M-47		Phone: 403-296-3537	
Unique Well ID: N 66 56' 47.11" W 125 54' 9.42"			
Pool or Zone: Mount Clarke			
Field or Area: Tweed Lake		Well License: Na	

Well Fluid Status at Test Date (Code): 02					Well Type:	
01 - Crude Oil	05 - Undesignated	09 - Solvent	13 - CO ₂	17 - Crude Bitumen	☒ Vertical	
02 - Gas	06 - Water	10 - Steam	14 - Polymer	20 - Acid Gas	☐ Deviated	
03 - Oil	07 - Brine	11 - Air	15 - Nitrogen		☐ Horizontal	
04 - Gas/Water	08 - Waste	12 - Synthetic Crude	16 - LPG		☐ Multi-Lateral	

Well Status Mode at Test Date (Code): 10			Well Status Type at Test Date (Code): 00		
00 - No Selection	05 - Capped	10 - Flowing	00 - No Selection	04 - Disposal	08 - Farm
01 - Suspended	06 - Potential	11 - Pumping	01 - Reprodurcer	05 - Observation	09 - Industrial
02 - Abandoned	07 - Standing	12 - Gas Lift	02 - Storage	06 - Training	10 - Cyclical
03 - Abandoned Zone	08 - Junked & Abnd.	14 - Abnd & Whipstock	03 - Injection	07 - Experimental	11 - Source
04 - Abandoned/ re-entry	09 - Closed (by EUB)				12 - SW Steam Assisted

Whipstock Depth KB (TVD): _____ m Tubing Landed at Depth KB (TVD): 1 201.90 m Production Casing ID: 157.07 mm Production Tubing OD: 73.00 mm Production Tubing ID: 62.00 mm Packer Setting Depth KB (TVD): 1 196.00 m Test Interval Top mKB (Log): 1222.5 highest Test Interval Top mKB (TVD): 1 222.50 highest		Open Hole Completion: ☐ Yes ☐ No If Yes: Casing Landed at Depth KB (TVD): _____ m Casing Liner Indicator: ☐ Yes ☐ No Hole Diameter: _____ mm Producing Through: ☒ Tubing ☐ Annular ☐ Casing Test Interval Base mKB (Log): 1233.5 lowest Test Interval Base mKB (TVD): 1 233.50 lowest	
--	--	---	--

Start Date of Test (yyyy-mm-dd): 2004-03-14		Test Type: 3 point	
Start Time of Test (HH:mm): 10:00		Surface Temp: _____ °C	Reservoir Temp: 12.0 °C
Flow Duration: 97.52 hours		Initial Tubing Pressure: 0.00 kPag	Formation Temp: _____ °C
Initial Casing Pressure: 0.00 kPag		Final Tubing Pressure: 11 122.00 kPag	

Description of Gas Production: ☐ Casing ☒ Tubing ☐ Both Method of Test Production: ☐ Pipeline ☐ Vent ☒ Flare		Gas Produced in Cleanup and Test: 635.820 10 ³ m ³ /d KB: 435.22 m GRD: 429.10 m	
---	--	--	--

Missing Information: ☒ Not supplied by Company Representative ☐ Other (specify): _____	
---	--

Company Representative – print name

Company Representative - signature