

# NORTHLAND

Energy Corporation

Calgary: (403) 264-9700  
 Red Deer: (403) 346-8840  
 Grand Prairie: (403) 539-3411

## FIELD DATA

JOB: 3285B  
 CUSTOMER: Anderson Exploration Ltd.  
 WELL: COLUMBIA ET AL KOTANEELEE LSD: YTB-38  
 OPERATION: CLEAN UP ZONE: NAHANNI  
 CHOKE SIZE: ORIFICE PLATE SIZE: 101.60 mm

REP. BY: C. VREELING / R. WALDREBAS TO:  
 TEST OPERATOR(S): J. CARRIGNAN  
 METER RUN: 154.05 mm  
 OR:  
 TEST UNIT NO. FS-25

DIFF. RANGE: 0-100 kPa  
 CRITICAL FLOW PROVER

Time	Elapsed Time	Well Head Data			H.P. Sep Gas Metering						Cond/Oil Prod.			Water Production			pH	
		Tubing Pressure	Flow Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Q Vol.	Cum. Q Total	Cond/Oil Prod.	Cum. Cond/Oil Prod. Tot.	Cond. Sp Gr @ 60 F	Grind Out	Water Prod.	Cum. Water Prod. Tot.		Salinity
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	10 <sup>3</sup> m <sup>3</sup> /d	10 <sup>3</sup> m <sup>3</sup>	10 <sup>3</sup> m <sup>3</sup>	m <sup>3</sup>	m <sup>3</sup>	°API	%H <sub>2</sub> O	m <sup>3</sup>	m <sup>3</sup>	ppm	
98/07/25																		
09:45		RIG MOVING OFF HOLE / MONITOR PRESSURE BUILD-UPS																
09:55		BLEED OFF ANNULUS PRESSURE																
10:00		4300		0														
11:00	1.0	4600		50														
12:00	2.0	4875		100														
13:00	3.0	5200		150														
13:00		RIG MOVED OFF HOLE / STARTED TO RIG IN FLOWLINE TO WELLHEAD																
14:00	4.0	5500		200														
14:00		BLEED PRESSURE OFF ANNULUS																
14:30		CONDUCTED SAFETY MEETING																
14:50		PRESSURE TEST FLOWLINE TO MANIFOLD																
15:00	5.0	5900		125														
15:00		OPENED WELL ON 12.7 mm CHOKE																
15:03		INCREASED CHOKE TO 15.08 mm																
15:05	0.1	2000		225														
15:06		INCREASED CHOKE TO 19.05 mm																
15:07		LIQUID TO SURFACE																
15:10	0.2	250		1450														
15:15	0.2	350		3200														
15:30	0.5	1350		5400														
16:00	1.0	2100		7400										70.0	6.01	6.01		
16:00		30% OF GRIND OUT WAS INHIBITED DIESEL																
16:00		H <sub>2</sub> S = 0 ppm																
16:07		METER IN SERVICE ON 31.75 mm ORIFICE PLATE																
16:08		ADJUSTED BACK PRESSURE																
16:22		INCREASED BACK PRESSURE																

NAT	RD
EL	
SEP	







# NORTHLAND

Energy Corporation

Calgary: (403) 264-9700  
 Red Deer: (403) 346-8940  
 Grand Prairie: (403) 539-3411

## FIELD DATA

JOB: 3265B

REP. BY:

C. VREELING / R. WALDROBIAS TO:

FLARE

CUSTOMER: Anderson Exploration Ltd.

TEST OPERATOR(S): J. CARIGNAN

WELL: COLUMBIA ET AL KOTANEELEE LSD: YTB-39

METER RUN: 154.05 mm

DIFF. RANGE: 0-100 kPa

OPERATION: CLEAN UP ZONE: NAHANNI

OR:

CRITICAL FLOW PROVER

CHOKE SIZE: 19.05 mm ORIFICE PLATE SIZE: 88.90 mm

TEST UNIT NO. FS-23

Time	Elapsed Time	Well Head Data			H.P. Sep Gas Metering						Cond/Oil Prod.			Water Production				pH
		Tubing Pressure	Flow Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Q Vol.	Cum. Q Total	Cond/Oil Prod.	Cum. Cond/Oil Prod. Tot.	Cond. Sp Gr @ 60 F	Grind Out	Water Prod.	Cum. Water Prod. Tot.	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	10 <sup>3</sup> m <sup>3</sup> /d	10 <sup>3</sup> m <sup>3</sup>	10 <sup>3</sup> m <sup>3</sup>	m <sup>3</sup>	m <sup>3</sup>	°API	%H <sub>2</sub> O	m <sup>3</sup>	m <sup>3</sup>	ppm	
98/07/25																		
23:10	0.2	17400		0														
23:15	0.2	18000		0														
23:30	0.5	18500		0														
23:45	0.8	19000		0														
24:00	1.0	19400		0														
24:00	END OF BUILD-UPS / SHUT IN MASTERS AND SECURED WELL FOR THE NIGHT																	
<b>Day Summary</b>																		
Cum. Prod. Since: 10:00 98/07/25																		
Gas Production (13.0 Hrs) 70.28 10 <sup>3</sup> m <sup>3</sup>																		
Cumulative (13.0 Hrs) 70.28 10 <sup>3</sup> m <sup>3</sup>																		
Liquid Production (13.0 Hrs)																		
Cond/Oil 0.00 m <sup>3</sup> Water 121.55 m <sup>3</sup>																		
Liquid Production Cumulative (13.0 Hrs)																		
Cond/Oil 0.00 m <sup>3</sup> Water 121.55 m <sup>3</sup>																		



# NORTHLAND

Energy Corporation

Calgary: (403) 264-9700  
 Red Deer: (403) 346-8840  
 Grand Prairie: (403) 539-3411

## FIELD DATA

JOB: 32658 REP. BY: C. VREELING / R. WALDROBIAS TO: FLARE  
 CUSTOMER: Anderson Exploration Ltd. TEST OPERATOR(S): J. CARIGNAN  
 WELL: COLUMBIA ET AL KOTANEELEE LSD: YTB-38 METER RUN: 154.05 mm DIFF. RANGE: 0-100 kPa  
 OPERATION: CLEAN UP ZONE: NAHANNI OR: CRITICAL FLOW PROVER  
 CHOKE SIZE: 19.05 mm ORIFICE PLATE SIZE: 80.90 mm TEST UNIT NO. FS-23

Time	Elapsed Time	Well Head Data			H.P. Sep Gas Metering						Cond/Oil Prod.			Water Production				pH
		Tubing Pressure	Flow Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Q Vol.	Cum. Q Total	Cond/Oil Prod.	Cum. Cond/Oil Prod. Tot.	Cond. Sp Gr @ 60 F	Grind Out	Water Prod.	Cum. Water Prod. Tot.	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	10 <sup>3</sup> m <sup>3</sup> /d	10 <sup>3</sup> m <sup>3</sup>	10 <sup>3</sup> m <sup>3</sup>	m <sup>3</sup>	m <sup>3</sup>	°API	%H <sub>2</sub> O	m <sup>3</sup>	m <sup>3</sup>	ppm	
98/07/25																		
98/07/26																		
00:01		SHUT DOWN FOR THE NIGHT																
07:00		ON LOCATION / NOWSCO PREPARING TO DO ACID FRAC																
11:15		CONDUCTED SAFETY MEETING																
11:45		STARTED ACID FRAC																
13:45		FRAC COMPLETE / STARTED TO RIG OUT NOWSCO																
14:00		RIGGED UP FLOWLINE TO WELLHEAD																
14:00		PREPARE TO FLOW BACK WELL ON CLEAN UP																
14:55	15.9	11000		1950														
15:00		TOTAL LIQUID TO RECOVER AFTER FRAC 1442 m <sup>3</sup>																
15:00		OPENED WELL ON 9.53 mm CHOKE																
15:01		LIQUID TO SURFACE																
15:05	0.1	8400		11100														
15:06		BLEED ANNULUS OFF TO 400BBL TANK / LEAVE ANNULUS OPEN TO TANK																
15:10	0.2	7500		0														
15:15	0.2	7000		0														
15:30	0.5	6000		0														
15:31		METER IN SERVICE ON 101.6 mm ORIFICE PLATE																
15:45	0.8	6000		0														
16:00	1.0	6450		0	214	0.25	34	19.42	0.81	71.09				100.0	13.15	134.70	29008	6.0
16:30	1.5	7020		0	221	0.25	33	19.67	0.41	71.50								
17:00	2.0	11800		0	221	2.99	33	67.72	1.41	72.91				100.0	8.03	142.73	29008	6.0
17:05		INCREASED CHOKE TO 10.32 mm																
17:15		INCREASED BACK PRESSURE																
17:30	2.5	9980		0	469	7.46	25	144.83	3.02	75.93								
18:00	3.0	4900		0	421	1.00	28	50.46	1.05	76.98				100.0	9.50	152.23	253820	4.0



# NORTHLAND

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Calgary: (403) 254-9700  
 Red Deer: (403) 346-8840  
 Grand Prairie: (403) 539-3411

## FIELD DATA

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JOB: 32658 REP. BY: C. VREELING / R. WALDROBAS TO: FLARE  
 CUSTOMER: Anderson Exploration Ltd. TEST OPERATOR(S): J. CARIGNAN / G. PARENT  
 WELL: COLUMBIA ET AL KOTANEELEE LSD: YTB-38 METER RUN: 154.05 mm DIFF. RANGE: 0-100 kPa  
 OPERATION: CLEAN UP ZONE: NAHANNI OR: CRITICAL FLOW PROVER  
 CHOKE SIZE: 10.32 mm ORIFICE PLATE SIZE: 101.50 mm TEST UNIT NO. FS-23

Time	Elapsed Time	Well Head Data			H.P. Sep Gas Metering						Cond/Oil Prod.			Water Production					
		Tubing Pressure	Flow Temp	Coaling Pressure	Static Pressure	Diff.	Temp.	Q	Q Vol.	Cum. Q Total	Cond/Oil Prod.	Cum. Cond/Oil Prod. Tot.	Cond. Sp Gr @ 60 F	Grind Out	Water Prod.	Cum. Water Prod. Tot.	Salinity	pH	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	10 <sup>3</sup> m <sup>3</sup> /d	10 <sup>3</sup> m <sup>3</sup>	10 <sup>3</sup> m <sup>3</sup>	m <sup>3</sup>	m <sup>3</sup>	°API	%H <sub>2</sub> O	m <sup>3</sup>	m <sup>3</sup>	ppm		
98/07/26																			
18:01		INCREASED CHOKE TO 13.49 mm																	
18:16		INCREASED CHOKE TO 15.08 mm																	
18:30	3.5	9800		0	483	9.95	40	165.13	3.44	80.42									
19:00	4.0	12600		0	496	17.42	45	219.41	4.57	84.99				100.0	20.00	172.23	217560	4.0	
19:30	4.5	14020	72	0	634	39.81	45	369.60	7.70	92.69									
19:31		INCREASED BACK PRESSURE																	
20:00	5.0	16000	72	0	1131	29.86	47	414.13	8.63	101.32				100.0	15.50	187.73	234000	4.0	
20:15		OPENED BYPASS TO DECREASE BACK PRESSURE																	
20:30	5.5	16500	72	0	855	49.77	46	471.67	9.83	111.15									
21:00	6.0	17340	72	0	1020	52.51	44	527.25	10.98	122.13				100.0	11.00	198.73	236000	4.0	
21:30	6.5	17600	72	0	1062	53.75	43	544.38	11.34	133.47									
22:00	7.0	17900	72	0	1103	53.75	42	555.12	11.56	145.04				100.0	9.50	208.23	244000	4.0	
22:30	7.5	18200	72	0	1151	54.75	42	571.63	11.91	156.95									
23:00	8.0	18480	72	0	1193	55.49	41	586.21	12.21	169.15				100.0	6.00	214.23	252000	4.0	
23:30	8.5	18500	72	0	1241	55.49	41	597.30	12.44	181.50									
23:31		DECREASED BACK PRESSURE																	
24:00	9.0	18500	72	0	1207	59.22	40	610.14	12.71	194.31				100.0	5.50	219.73	204000	4.0	
98/07/27																			
00:30	9.5	18650	72	0	1241	59.72	40	620.94	12.94	207.25									
00:31		DECREASED BACK PRESSURE																	
01:00	10.0	18650	72	0	1193	63.21	40	627.11	13.06	220.31				100.0	5.00	224.73	200000	4.0	
01:30	10.5	18650	72	0	1220	63.95	40	637.68	13.28	233.60									
02:00	11.0	18650	72	0	1241	64.20	40	644.03	13.42	247.02				100.0	5.00	229.73	194000	4.0	
02:01		DECREASED BACK PRESSURE																	
02:30	11.5	18740	72	0	1207	65.94	41	643.03	13.40	260.41									
03:00	12.0	18850	72	0	1207	67.69	41	651.56	13.57	273.99				100.0	4.50	234.23	190000	4.0	



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## FIELD DATA

JOB: 3265B REP. BY: C. VREELING / R. WALDROBIAS TO: FLARE  
 CUSTOMER: Anderson Exploration Ltd. TEST OPERATOR(S): J. CARIGNAN / G. PARENT  
 WELL: COLUMBIA ET AL KOTANEELEE LSD: YTB-38 METER RUN: 154.05 mm DIFF. RANGE: 0-100 kPa  
 OPERATION: CLEAN UP ZONE: NAHANNI OR: CRITICAL FLOW PROVER  
 CHOKE SIZE: 15.06 mm ORIFICE PLATE SIZE: 101.60 mm TEST UNIT NO. FS-23

Time	Elapsed Time	Well Head Data			H.P. Sep Gas Metering				Cond/Oil Prod.			Water Production				pH		
		Tubing Pressure	Flow Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Q Vol.	Cum. Q Total	Cond/Oil Prod.	Cum. Cond/Oil Prod. Tot.	Cond. Sp Gr @ 60 F	Grind Out	Water Prod.		Cum. Water Prod. Tot.	Salinity
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	10 <sup>3</sup> m <sup>3</sup> /d	10 <sup>3</sup> m <sup>3</sup>	10 <sup>3</sup> m <sup>3</sup>	m <sup>3</sup>	m <sup>3</sup>	°API	%H <sub>2</sub> O	m <sup>3</sup>	m <sup>3</sup>	ppm	
98/07/27																		
03:30	12.5	18950	72	0	1207	68.43	41	655.18	13.65	287.64								
04:00	13.0	19000	72	0	1207	68.68	41	656.38	13.67	301.31				100.0	3.50	237.73	186000	4.0
04:30	13.5	19000	72	0	1207	69.18	41	658.78	13.72	315.04								
05:00	14.0	19050	72	0	1207	69.68	42	660.02	13.75	328.79				100.0	4.00	241.73	182000	4.0
05:00		1321.82 m <sup>3</sup> OF LOAD FLUID LEFT TO RECOVER																
05:00		H <sub>2</sub> S TAKEN BY KITAGAWA = 1.6%																
<b>Day Summary</b>																		
Cum. Prod. Since: 10:00 98/07/25																		
Gas Production (14.0 Hrs) 258.50 10 <sup>3</sup> m <sup>3</sup>																		
Cumulative (27.0 Hrs) 328.79 10 <sup>3</sup> m <sup>3</sup>																		
Liquid Production (14.0 Hrs)																		
Cond/Oil 0.00 m <sup>3</sup> Water 120.18 m <sup>3</sup>																		
Liquid Production Cumulative (27.0 Hrs)																		
Cond/Oil 0.00 m <sup>3</sup> Water 241.73 m <sup>3</sup>																		







# NORTHLAND

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 Red Deer: (403) 346-9840  
 Grand Prairie: (403) 539-3411

## FIELD DATA

Energy Corporation

JOB: 3265B  
 CUSTOMER: Anderson Exploration Ltd.  
 WELL: COLUMBIA ET AL KOTANEELEE LSD: YTB-38  
 OPERATION: CLEAN UP ZONE: NAHANNI  
 CHOKE SIZE: 15.06 mm ORIFICE PLATE SIZE: 101.60 mm

REP. BY: C. VREELING / R. WALDROMAS TO:

FLARE

TEST OPERATOR(S): J. CARIGNAN / G. PARENT  
 METER RUN: 154.05 mm DIFF. RANGE: 0-100 kPa  
 OR: CRITICAL FLOW PROVER  
 TEST UNIT NO. FS-23

Time	Elapsed Time	Well Head Data			H.P. Sep Gas Metering						Cond/Oil Prod.			Water Production				pH
		Tubing Pressure	Flow Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Q Vol.	Cum. Q Total	Cond/Oil Prod.	Cum. Cond/Oil Prod. Tot.	Cond. Sp Gr @ 60 F	Grind Out	Water Prod.	Cum. Water Prod. Tot.	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	10 <sup>3</sup> m <sup>3</sup> /d	10 <sup>3</sup> m <sup>3</sup>	10 <sup>3</sup> m <sup>3</sup>	m <sup>3</sup>	m <sup>3</sup>	°API	%H <sub>2</sub> O	m <sup>3</sup>	m <sup>3</sup>	ppm	
<b>98/07/27</b>																		
18:00	27.0	19330	74	0	1248	73.89	47	684.86	14.27	694.62				100.0	2.00	280.53	129630	5.0
18:30	27.5	19330	74	0	1248	73.91	47	684.93	14.27	708.89								
19:00	28.0	19330	74	0	1241	73.91	47	683.14	14.23	723.12				100.0	2.50	283.03	127816	5.0
19:30	28.5	19360	74	0	1241	74.16	46	685.46	14.28	737.40								
20:00	29.0	19360	74	0	1241	73.91	46	684.31	14.26	751.66				100.0	2.50	285.53	126910	4.0
20:30	29.5	19360	74	0	1241	74.16	46	685.48	14.28	765.94								
21:00	30.0	19360	74	0	1234	74.65	46	685.99	14.29	780.23				100.0	2.00	287.53	126910	4.0
21:30	30.5	19365	73	0	1241	74.90	46	688.96	14.35	794.58								
22:00	31.0	19365	73	0	1227	75.15	46	686.49	14.30	808.89				100.0	2.00	289.53	126910	4.0
22:30	31.5	19365	73	0	1220	75.15	46	684.67	14.26	823.15								
23:00	32.0	19360	73	0	1220	75.15	46	684.67	14.26	837.41				100.0	1.50	291.03	123284	4.0
23:30	32.5	19350	73	0	1213	75.40	46	683.99	14.25	851.66								
24:00	33.0	19350	73	0	1213	75.40	46	683.99	14.25	865.91				100.0	2.00	293.03	119658	4.0
<b>98/07/28</b>																		
00:30	33.5	19350	73	0	1220	75.40	46	685.81	14.29	880.20								
01:00	34.0	19355	73	0	1220	75.40	46	685.81	14.29	894.49				100.0	2.20	295.23	119658	4.0
01:00	SHUT IN ANNULUS AND RECORD PRESSURES																	
01:30	34.5	19355	73	300	1227	75.40	46	687.63	14.33	908.81								
02:00	35.0	19350	73	500	1227	75.40	46	687.63	14.33	923.14				100.0	2.00	297.23	119658	4.0
02:30	35.5	19350	73	500	1227	75.40	46	687.63	14.33	937.47								
03:00	36.0	19350	73	500	1227	75.40	47	686.46	14.30	951.77				100.0	1.90	299.13	119658	4.0
03:30	36.5	19350	73	600	1227	75.40	47	686.46	14.30	966.07								
04:00	37.0	19330	74	700	1220	75.40	47	684.64	14.26	980.33				100.0	1.90	301.03	119658	4.0
04:30	37.5	19330	74	700	1220	75.40	47	684.64	14.26	994.60								
05:00	38.0	19330	74	850	1220	75.40	47	684.64	14.26	1008.86				100.0	2.00	303.03	119658	4.0
05:00	1260.72 m <sup>3</sup> OF LOAD FLUID LEFT TO RECOVER																	



# NORTHLAND

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## FIELD DATA

JOB: 3285B  
 CUSTOMER: Anderson Exploration Ltd.  
 WELL: COLUMBIA ET AL KOTANEELEE  
 OPERATION: CLEAN UP  
 CHOKE SIZE: 15.08 mm

REP. BY: C. VREELING / R. WALDROBIAS TO:

FLARE

TEST OPERATOR(S): J. CARIGNAN / G. PARENT  
 METER RUN: 154.05 mm  
 OR: 154.05 mm  
 TEST UNIT NO.: FS-23  
 DIFF. RANGE: 0-100 kPa  
 CRITICAL FLOW PROVER

Time	Elapsed Time	Well Head Data				H.P. Sep Gas Metering					Cond/Oil Prod.			Water Production				pH															
		Tubing Pressure	Flow Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Q Vol.	Cum. Q Total	Cond/Oil Prod.	Cum. Cond/Oil Prod. Tot.	Cond. Sp Gr @ 60 F	Grind Out	Water Prod.	Cum. Water Prod. Tot.	Salinity																
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	10³m³/d	10³m³	10³m³	m³	m³	°API	%H₂O	m³	m³	ppm																
98/07/28	05:00	H₂S TAKEN BY KITAGAWA = .9%																															
<table border="1"> <thead> <tr> <th colspan="2">Day Summary</th> </tr> </thead> <tbody> <tr> <td>Cum. Prod. Since:</td> <td>10:00 98/07/25</td> </tr> <tr> <td>Gas Production (24.0 Hrs)</td> <td>680.07 10³m³</td> </tr> <tr> <td>Cumulative (51.0 Hrs)</td> <td>1008.86 10³m³</td> </tr> <tr> <td>Liquid Production (24.0 Hrs)</td> <td></td> </tr> <tr> <td>Cond/Oil</td> <td>0.00 m³ Water 61.30 m³</td> </tr> <tr> <td>Liquid Production Cumulative (51.0 Hrs)</td> <td></td> </tr> <tr> <td>Cond/Oil</td> <td>0.00 m³ Water 303.03 m³</td> </tr> </tbody> </table>																		Day Summary		Cum. Prod. Since:	10:00 98/07/25	Gas Production (24.0 Hrs)	680.07 10³m³	Cumulative (51.0 Hrs)	1008.86 10³m³	Liquid Production (24.0 Hrs)		Cond/Oil	0.00 m³ Water 61.30 m³	Liquid Production Cumulative (51.0 Hrs)		Cond/Oil	0.00 m³ Water 303.03 m³
Day Summary																																	
Cum. Prod. Since:	10:00 98/07/25																																
Gas Production (24.0 Hrs)	680.07 10³m³																																
Cumulative (51.0 Hrs)	1008.86 10³m³																																
Liquid Production (24.0 Hrs)																																	
Cond/Oil	0.00 m³ Water 61.30 m³																																
Liquid Production Cumulative (51.0 Hrs)																																	
Cond/Oil	0.00 m³ Water 303.03 m³																																







# NORTHLAND

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## FIELD DATA

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JOB: 3265B REP. BY: C. VREELING / R. WALDRON AS TO: FLARE  
 CUSTOMER: Anderson Exploration Ltd. TEST OPERATOR(S): J. CARIGNAN / G. PARENT  
 WELL: COLUMBIA ET AL KOTANEELEE LSD: YTB-38 METER RUN: 154.05 mm DIFF. RANGE: 0-100 kPa  
 OPERATION: CLEAN UP ZONE: NAHANNI OR: CRITICAL FLOW PROVER  
 CHOKE SIZE: 15.08 mm ORIFICE PLATE SIZE: 101.60 mm TEST UNIT NO. FS-23

Time	Elapsed Time	Well Head Data			H.P. Sep Gas Metering						Cond/Oil Prod.			Water Production				
		Tubing Pressure	Flow Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Q Vol.	Cum. Q Total	Cond/Oil Prod.	Cum. Cond/Oil Prod. Tot.	Cond. Sp Gr @ 60 F	Grind Out	Water Prod.	Cum. Water Prod. Tot.	Salinity	pH
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	10 <sup>3</sup> m <sup>3</sup> /d	10 <sup>3</sup> m <sup>3</sup>	10 <sup>3</sup> m <sup>3</sup>	m <sup>3</sup>	m <sup>3</sup>	°API	%H <sub>2</sub> O	m <sup>3</sup>	m <sup>3</sup>	ppm	
98/07/28																		
17:00	50.0	19260	74	0	1179	77.63	48	682.48	14.22	1349.80				100.0	1.25	323.28	104248	5.0
17:30	50.5	19260	74	0	1179	77.63	48	682.48	14.22	1364.02								
18:00	51.0	19260	74	0	1179	77.63	48	682.48	14.22	1378.24				100.0	1.75	325.03	104248	5.0
18:30	51.5	19260	74	0	1186	77.89	48	685.50	14.28	1392.52								
19:00	52.0	19250	74	0	1179	77.64	48	682.52	14.22	1406.74				100.0	1.60	326.63	103341	5.0
19:30	52.5	19250	74	0	1179	77.64	48	682.52	14.22	1420.96								
20:00	53.0	19245	74	0	1172	77.64	48	680.65	14.18	1435.14				100.0	1.40	328.03	103341	5.0
20:30	53.5	19230	74	0	1172	77.64	48	680.65	14.18	1449.32								
21:00	54.0	19220	74	0	1158	78.39	48	680.17	14.17	1463.49				100.0	1.60	329.63	157731	7.0
21:30	54.5	19220	74	0	1172	78.14	48	682.85	14.23	1477.71								
22:00	55.0	19220	74	0	1172	77.64	48	680.65	14.18	1491.89				100.0	1.60	331.23	155918	7.0
22:30	55.5	19220	74	0	1172	77.64	49	679.50	14.16	1506.05								
23:00	56.0	19220	74	0	1172	77.89	49	680.60	14.18	1520.23				100.0	1.60	332.83	155918	7.0
23:00		H <sub>2</sub> S = 1.5%																
23:30	56.5	19220	74	0	1172	77.89	49	680.60	14.18	1534.41								
24:00	57.0	19220	74	0	1131	79.63	48	677.94	14.12	1548.53				100.0	1.30	334.13		
24:00		SHUT IN CASING AND RECORD PRESSURES																
98/07/29																		
00:30	57.5	19210	74	0	1145	78.14	48	675.29	14.07	1562.60								
01:00	58.0	19210	74	0	1145	78.63	48	677.46	14.11	1576.71				100.0	1.50	335.63	226625	5.0
01:30	58.5	19210	74	200	1158	78.63	48	681.26	14.19	1590.91								
02:00	59.0	19200	74	300	1158	77.64	48	676.89	14.10	1605.01				100.0	1.40	337.03	226625	5.0
02:30	59.5	19200	74	300	1165	77.39	49	676.52	14.09	1619.10								
03:00	60.0	19200	74	400	1172	77.39	49	678.39	14.13	1633.24				100.0	1.60	338.63	219173	5.0
03:30	60.5	19200	74	400	1172	77.64	49	679.50	14.16	1647.39								
04:00	61.0	19200	74	500	1172	77.39	49	678.39	14.13	1661.52				100.0	1.50	340.13	248381	5.0



# NORTHLAND

Energy Corporation

Calgary: (403) 264-9700  
 Red Deer: (403) 346-8840  
 Grand Prairie: (403) 539-3411

## FIELD DATA

JOB: 32658  
 CUSTOMER: Anderson Exploration Ltd.  
 WELL: COLUMBIA ET AL KOTANEELEE LSD: YTB-38  
 OPERATION: CLEAN UP ZONE: NAHANNI  
 CHOKE SIZE: 15.06 mm ORIFICE PLATE SIZE: 101.60 mm

REP. BY: C. VREELING / R. WALDHOBAS TO: FLARE  
 TEST OPERATOR(S): J. CARRIGNAN / G. PARENT  
 METER RUN: 154.05 mm DIFF. RANGE: 0-100 kPa  
 OR: CRITICAL FLOW PROVER  
 TEST UNIT NO. FS-23

Time	Elapsed Time	Well Head Data			H.P. Sep Gas Metering						Cond/Oil Prod.			Water Production				pH
		Tubing Pressure	Flow Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Q Vol.	Cum. Q Total	Cond/Oil Prod.	Cum. Cond/Oil Prod. Tot.	Cond. Sp Gr @ 60 F	Grind Out	Water Prod.	Cum. Water Prod. Tot.	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	10³m³/d	10³m³	10³m³	m³	m³	°API	%H₂O	m³	m³	ppm	
98/07/29																		
04:30	61.5	19200	74	500	1172	77.39	49	678.39	14.13	1675.66								
05:00	62.0	19200	74	500	1172	77.14	49	677.29	14.11	1689.77				100.0	1.50	341.63	246568	5.0
05:00		1221.92 m³ OF LOAD FLUID LEFT TO RECOVER																
<b>Day Summary</b>																		
Cum. Prod. Since: 10:00 98/07/25																		
Gas Production (24.0 Hrs) 680.91 10³m³																		
Cumulative (75.0 Hrs) 1689.77 10³m³																		
Liquid Production (24.0 Hrs)																		
Cond/Oil 0.00 m³ Water 38.60 m³																		
Liquid Production Cumulative (75.0 Hrs)																		
Cond/Oil 0.00 m³ Water 341.63 m³																		



# NORTHLAND

Energy Corporation

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 Grand Prairie: (403) 539-3411

## FIELD DATA

JOB: 3285B

REP. BY:

C. VREELING / R. WALDROBIAS TO:

FLARE

CUSTOMER: Anderson Exploration Ltd.

TEST OPERATOR(S): J. CARIGNAN / G. PARENT

WELL: COLUMBIA ET AL KOTANEELEE LSD: YTB-38

METER RUN: 154.05 mm

DIFF. RANGE: 0-100 kPa

OPERATION: CLEAN UP ZONE: NAHANAW

OR:

CRITICAL FLOW PROVER

CHOKE SIZE: 15.00 mm ORIFICE PLATE SIZE: 101.90 mm

TEST UNIT NO. FS-23

Time	Elapsed Time	Well Head Data			H.P. Sep Gas Metering						Cond/Oil Prod.			Water Production				
		Tubing Pressure	Flow Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Q Vol.	Cum. Q Total	Cond/Oil Prod.	Cum. Cond/Oil Prod. Tot.	Cond. Sp Gr @ 60 F	Grind Out	Water Prod.	Cum. Water Prod. Tot.	Salinity	pH
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	10 <sup>3</sup> m <sup>3</sup> /d	10 <sup>3</sup> m <sup>3</sup>	10 <sup>3</sup> m <sup>3</sup>	m <sup>3</sup>	m <sup>3</sup>	°API	%H <sub>2</sub> O	m <sup>3</sup>	m <sup>3</sup>	ppm	
98/07/29																		
05:30	62.5	19200	74	500	1179	77.14	50	678.00	14.12	1703.89								
06:00	63.0	19200	74	500	1179	76.88	50	676.84	14.10	1717.99				100.0	1.40	343.03	163170	5.0
06:30	63.5	19200	74	600	1179	77.13	50	677.96	14.12	1732.12								
07:00	64.0	19200	74	600	1179	77.13	50	677.96	14.12	1746.24				100.0	1.50	344.53	103341	5.0
07:30	64.5	19200	74	600	1179	77.13	50	677.96	14.12	1760.37								
08:00	65.0	19200	74	700	1186	76.38	50	676.49	14.09	1774.46				100.0	1.50	346.03	97902	5.0
08:30	65.5	19200	74	700	1186	76.38	50	676.49	14.09	1788.55								
09:00	66.0	19190	74	700	1179	76.63	50	675.73	14.08	1802.63				100.0	1.25	347.28	94276	5.0
09:00	TWO WELLHEAD LIQUID SAMPLES TAKEN AND SENT TO RED DEER WITH DEVONIAN SAFETY																	
09:00	BLEED DOWN ANNULUS AND LEAVE OPEN																	
09:30	66.5	19190	74	0	1186	77.13	50	679.84	14.16	1816.79								
10:00	67.0	19190	74	0	1186	77.13	50	679.04	14.16	1830.96				100.0	1.50	348.78	91557	5.0
10:00	H <sub>2</sub> S = 1.2%																	
10:30	67.5	19190	74	0	1179	77.38	50	679.07	14.15	1845.10								
10:30	LEE TOOL ON LOCATION / PREPARE TO RUN IN HOLE FOR SPINNER LOG																	
11:00	68.0	19180	74	0	1179	77.38	50	679.07	14.15	1859.25				100.0	1.50	350.28	91557	5.0
11:30	68.5	19170	74	0	1179	77.63	50	680.17	14.17	1873.42								
12:00	69.0	19170	74	0	1179	77.63	50	680.17	14.17	1887.59				100.0	1.50	351.78	89744	5.0
12:00	SHUT IN AT WING VALVE / METER OUT OF SERVICE / RECORDED BUILD-UPS																	
12:02	0.0	21150		0														
12:05	0.1	21500		0														
12:10	0.2	21520		0														
12:15	0.2	21540		0														
12:30	0.5	21580		0														
12:30	END OF BUILD-UPS / SHUT IN TO RIG ON LEE TOOL																	
14:20	CONDUCTED SAFETY MEETING																	







# NORTHLAND

Energy Corporation

Calgary: (403) 264-9700  
 Red Deer: (403) 346-8040  
 Grand Prairie: (403) 539-3411

## FIELD DATA

JOB: 3265B  
 CUSTOMER: Anderson Exploration Ltd.  
 WELL: COLUMBIA ET AL KOTANEELEE LSD: YTB-38  
 OPERATION: CLEAN UP  
 CHOKE SIZE: 15.06 mm

REP. BY: C. VREELING / R. WALDROMAS TO:  
 TEST OPERATOR(S): J. CARIGNAN / G. PARENT  
 METER RUN: 154.05 m³  
 OR:  
 TEST UNIT NO. FS-23

FLARE  
 DIFF. RANGE: 0-100 kPa  
 CRITICAL FLOW PROVER

Time	Elapsed Time	Well Head Data			H.P. Sep Gas Metering					Cond/Oil Prod.			Water Production			pH																					
		Tubing Pressure	Flow Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Q Vol	Cum. Q Total	Cond/Oil Prod.	Cum. Cond/Oil Prod. Tot.	Cond. Sp Gr @ 60 F	Grind Out	Water Prod.		Cum. Water Prod. Tot.	Salinity																			
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	10³m³/d	10³m³	10³m³	m³	m³	°API	%H₂O	m³	m³	ppm																				
98/07/29																																					
<table border="1"> <thead> <tr> <th colspan="2">Day Summary</th> </tr> </thead> <tbody> <tr> <td>Cum. Prod. Since:</td> <td>10:00 98/07/25</td> </tr> <tr> <td>Gas Production (8.4 Hrs)</td> <td>236.83 10³m³</td> </tr> <tr> <td>Cumulative (83.4 Hrs)</td> <td>1926.60 10³m³</td> </tr> <tr> <td>Liquid Production (8.4 Hrs)</td> <td></td> </tr> <tr> <td>Cond/Oil</td> <td>0.00 m³</td> </tr> <tr> <td>Water</td> <td>10.90 m³</td> </tr> <tr> <td>Liquid Production Cumulative (83.4 Hrs)</td> <td></td> </tr> <tr> <td>Cond/Oil</td> <td>0.00 m³</td> </tr> <tr> <td>Water</td> <td>352.53 m³</td> </tr> </tbody> </table>																		Day Summary		Cum. Prod. Since:	10:00 98/07/25	Gas Production (8.4 Hrs)	236.83 10³m³	Cumulative (83.4 Hrs)	1926.60 10³m³	Liquid Production (8.4 Hrs)		Cond/Oil	0.00 m³	Water	10.90 m³	Liquid Production Cumulative (83.4 Hrs)		Cond/Oil	0.00 m³	Water	352.53 m³
Day Summary																																					
Cum. Prod. Since:	10:00 98/07/25																																				
Gas Production (8.4 Hrs)	236.83 10³m³																																				
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Liquid Production Cumulative (83.4 Hrs)																																					
Cond/Oil	0.00 m³																																				
Water	352.53 m³																																				



# NORTHLAND

Energy Corporation

Calgary: (403) 264-9700  
 Red Deer: (403) 346-9940  
 Grand Prairie: (403) 539-3411

## PRODUCTION SUMMARY

PAGE 1 OF 1

JOB: 32858  
 CUSTOMER: Anderson Exploration Ltd.  
 WELL: COLUMBIA ET AL KOTANEELEE  
 OPERATION: CLEAN UP

LSD: YTB-38  
 ZONE: NAHANNI

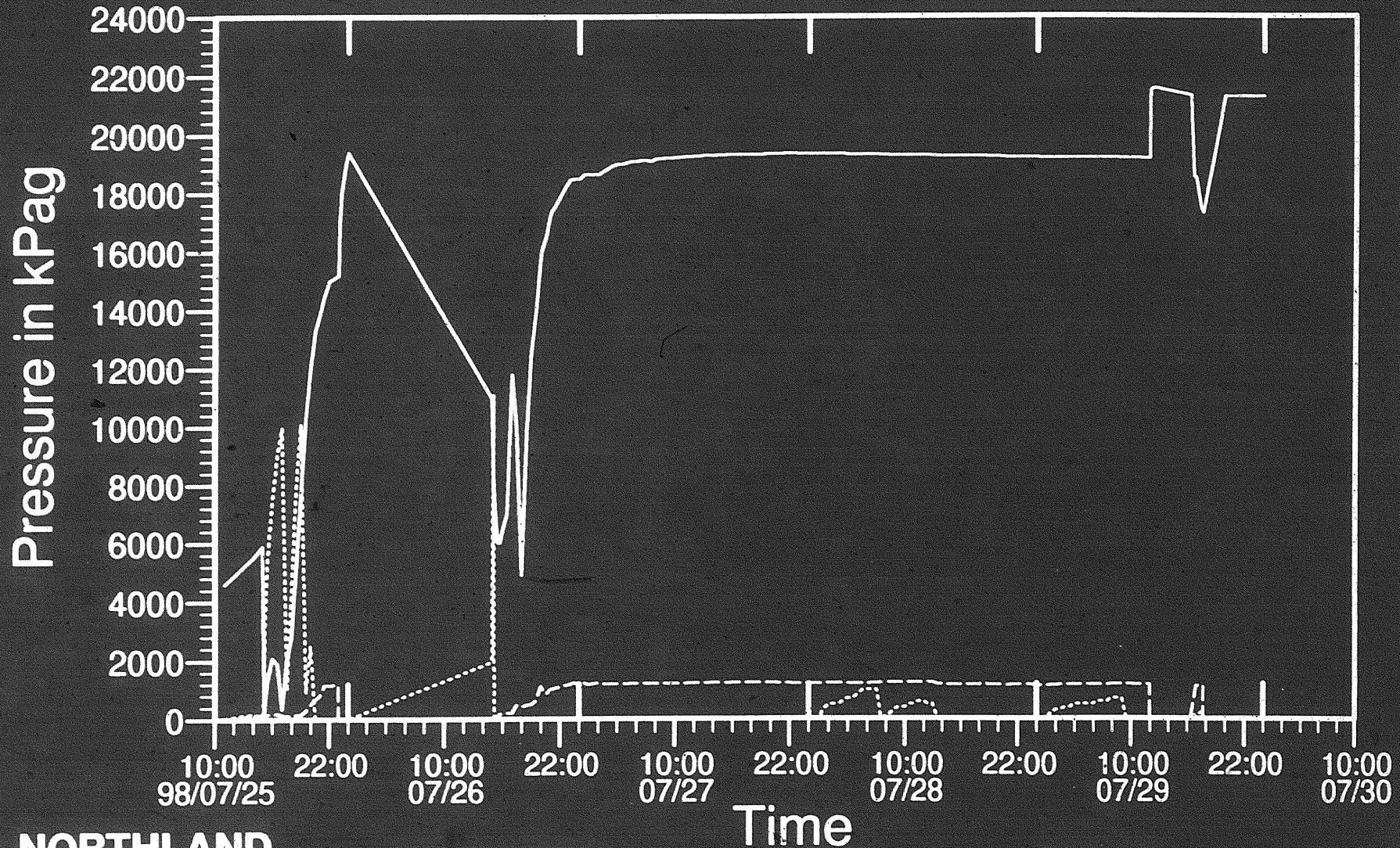
Date	Time	Flow Time	Well Head Data			Choke or Orif.	Gas		Cond/Oil Prod.				Water	
			Tubing Pressure	Flow Temp	Casing Pressure		Q	Cum. Q Total	Hourly Cond/Oil Prod.	Cum. Cond/Oil Prod. Tot.	Cond. Sp Gr @ 60 F	Grind Out	Hourly Water Prod.	Cum. Water Prod. Tot.
yy/mm/dd	hh:mm	Hours	kPag	°C	kPag	mm	10 <sup>3</sup> m <sup>3</sup> /d	10 <sup>3</sup> m <sup>3</sup>	m <sup>3</sup> /hr	m <sup>3</sup>	°API	%H <sub>2</sub> O	m <sup>3</sup> /hr	m <sup>3</sup>
98/07/25	24:00	1.0	19400		0	19.05		70.28		0.00				121.55
98/07/27	05:00	14.0	19050	72	0	15.08	660.02	328.79		0.00		100.0	4.00	241.73
98/07/28	05:00	38.0	19330	74	850	15.08	684.64	1008.86		0.00		100.0	2.00	303.03
98/07/29	05:00	62.0	19200	74	500	15.08	677.29	1689.77		0.00		100.0	1.50	341.63
98/07/29	17:45	1.4	17300		300	15.08	678.43	1926.60		0.00			0.55	352.53



# Tubing, Casing, and Separator Pressure

CLEAN UP LSD: YTB-38  
COLUMBIA ET AL KOTANEELEE

Job: 3265B  
Zone: NAHANNI



**NORTHLAND**

Energy Corporation  
Calgary: (403) 264-9700  
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Grand Prairie: (403) 538-3411

— Tubing

..... Casing

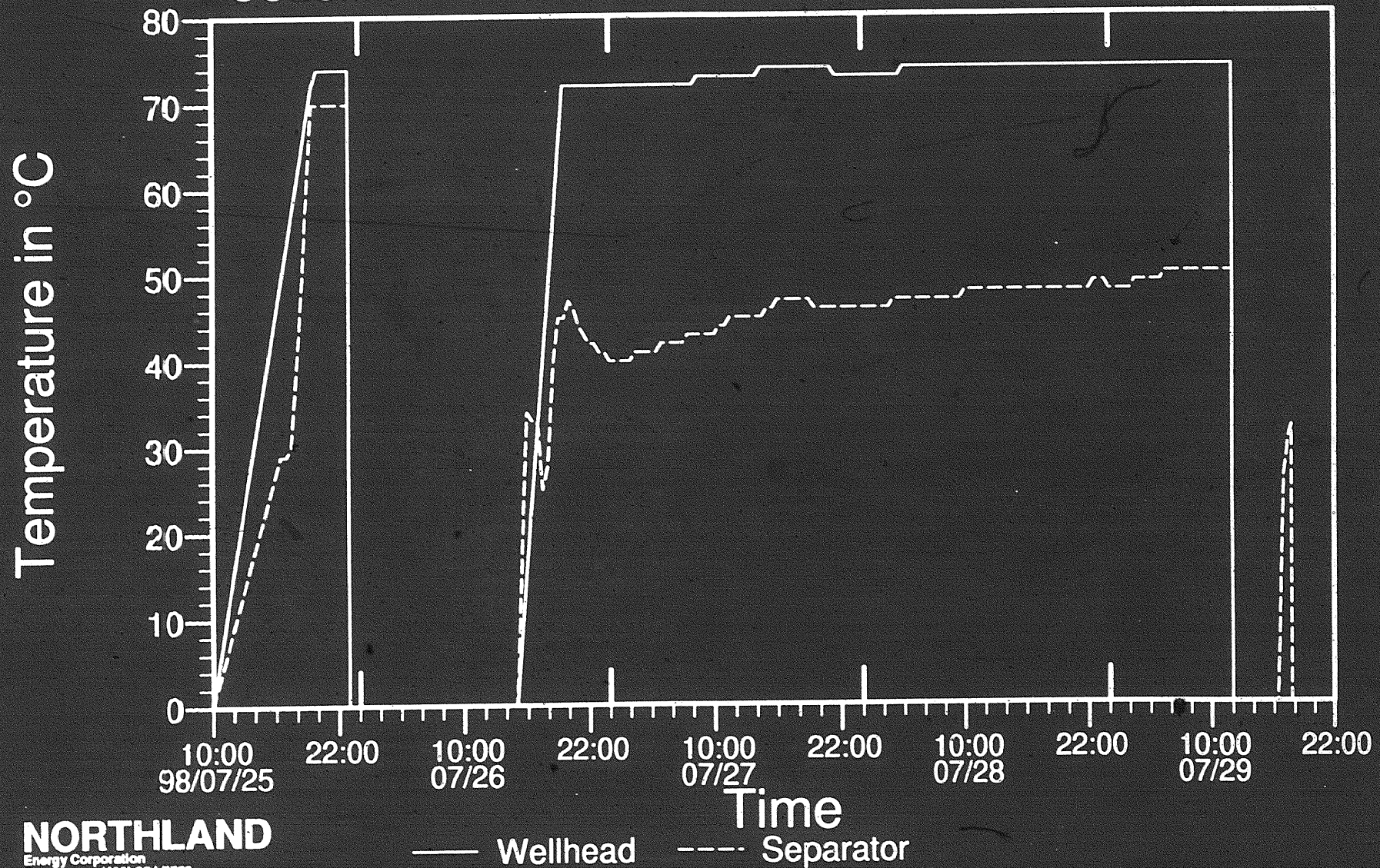
---- Separator



# Wellhead and Separator Temperature

CLEAN UP LSD: YTB-38  
COLUMBIA ET AL KOTANEELEE

Job: 3265B  
Zone: NAHANNI



**NORTHLAND**

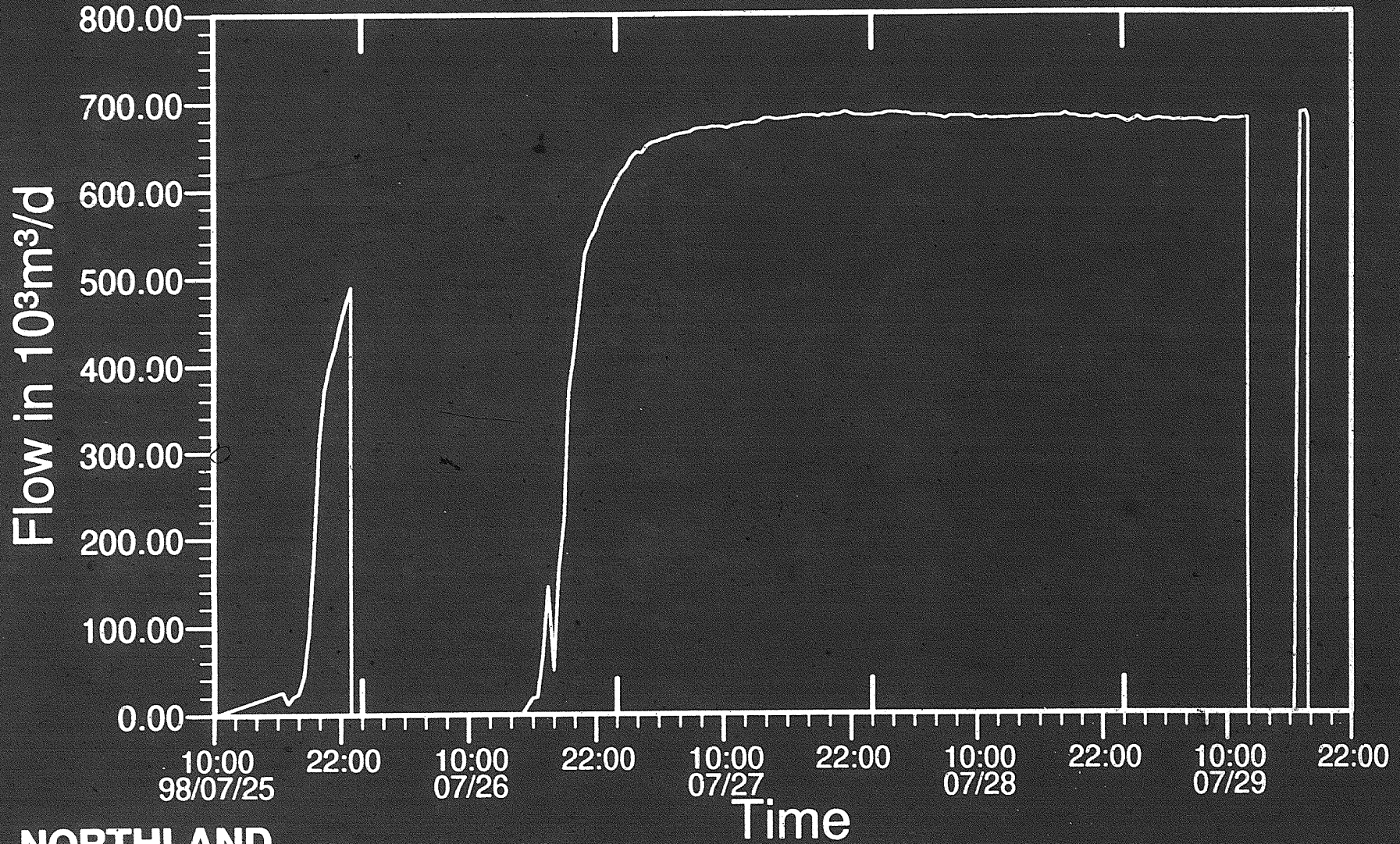
Energy Corporation  
Calgary: (403) 264-8700  
Red Deer: (403) 346-0810  
Grand Prairie: (403) 538-3411



# Flow Rate

CLEAN UP LSD: YTB-38  
COLUMBIA ET AL KOTANEELEE

Job: 3265B  
Zone: NAHANNI



**NORTHLAND**

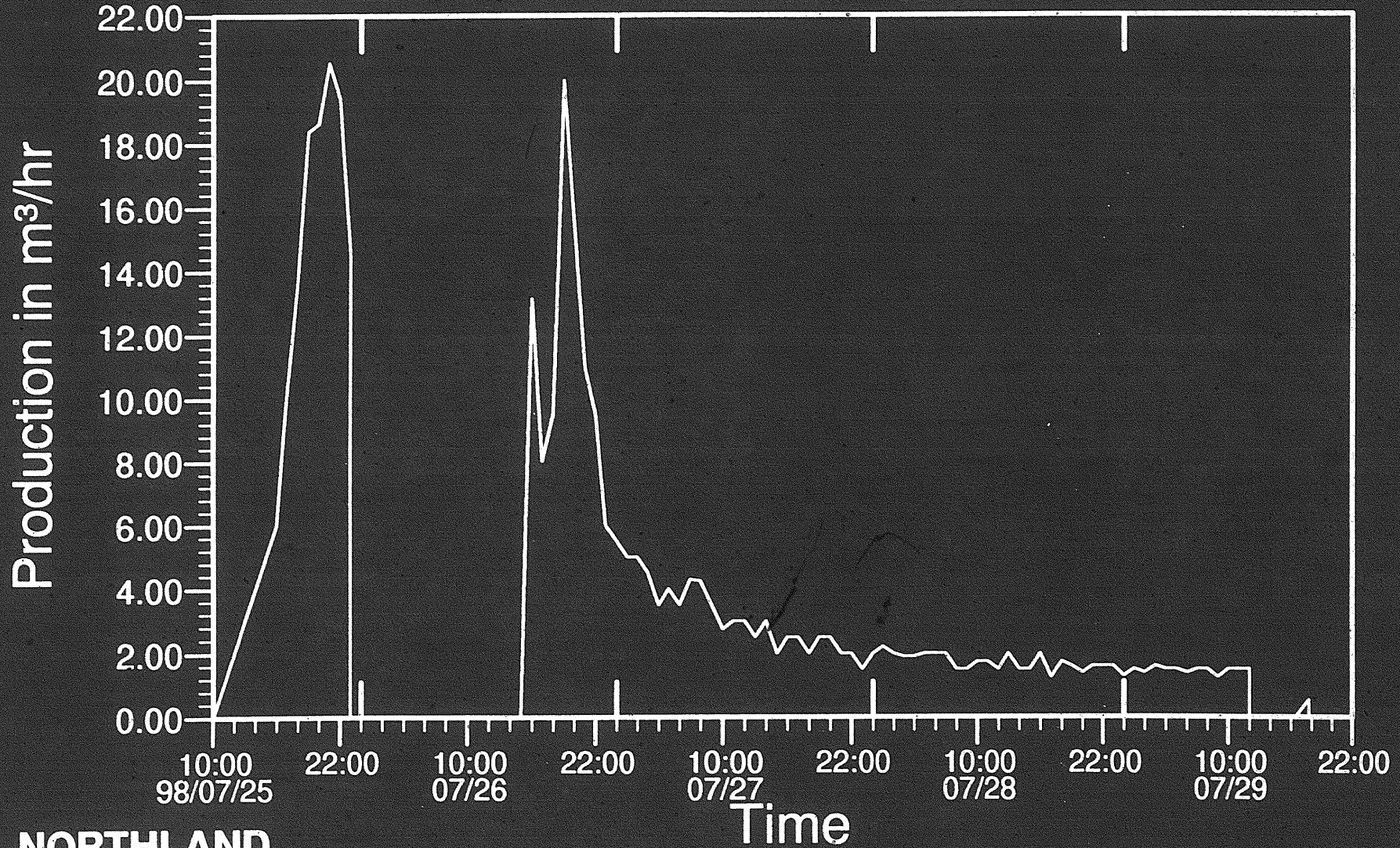
Energy Corporation  
Calgary: (403) 264-8700  
Red Deer: (403) 346-8840  
Grand Prairie: (403) 539-3411



# Hourly Water Rate

CLEAN UP LSD: YTB-38  
COLUMBIA ET AL KOTANEELEE

Job: 3265B  
Zone: NAHANNI



**NORTHLAND**

Energy Corporation  
Calgary: (403) 264-8700  
Red Deer: (403) 346-8840  
Grand Prairie: (403) 539-3411