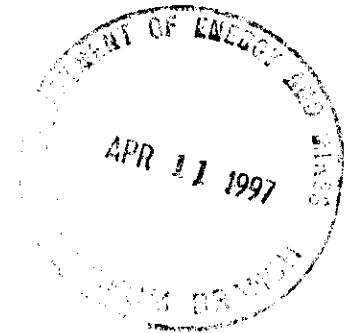


MOUNTCLIFF RESOURCES LTD.
360, 717 - 7TH AVENUE S.W.
CALGARY, ALBERTA
T2P 0Z3
403 - 264 - 3288

April 7, 1997

Manitoba Energy & Mines
Petroleum Branch
Suite 360
1395 Ellice Avenue
Winnipeg, MB
R3G 03G



Attention: John Fox

Re: North Virden Scallion Unit #2
Pressure Build-up Tests

Dear John,

Please find enclosed hard copies of the previously faxed information on the above subject.

Also, please forgive the tardiness in which this was done.

Sincerely,

A handwritten signature in black ink, appearing to read "Clifden A. Berg".

Clifden A. Berg
President
Mountcliff Resources Ltd.

CAB/cjm
Encl.

File - Field / Pool

North Virden
Scallion Unit #2

Pressure Surveys

MOUNTCLIFF RESOURCES LTD.
360, 717 - 7TH AVENUE S.W.
CALGARY, ALBERTA
T2P 0Z3

FAX COMMUNICATION

DATE: Jan 6 / 1997 FROM: C.A. BERG

COMPANY: To: MANITOBA ENERGY & MINES

ATTENTION: JOHN FOX

FAX#: 204-945-0586

NUMBER OF PAGES INCLUDING COVER PAGE: 23 (TWENTY-THREE)

PLEASE DELIVER THE FOLLOWING PAGES AS SOON AS POSSIBLE

IF ALL THE PAGES HAVE NOT BEEN RECEIVED OR UNCLEAR, PLEASE CONTACT US
AT:

TEL: (403) 264 - 3288 OR FAX: (403) 269 - 8366

COMMENTS: Enclosed are copies of pressure
build-up tests in N. Virden Scallion Unit #2
indicating pressure in the Scallion member in 1995
Reworks of the 5-32, 16-30 & 11-29 wells were
completed following these tests. There is no
indication of formation over pressuring from
the tests nor have our production operations
indicated any to date. (Hard copies to follow).

Clif Berg.

THANKYOU

June 15, 1995

Mountcliff Resources Ltd.
360, 717 - 7th Avenue S.W.
Calgary, Alberta
T2P 0Z3

Attention: Mr. Cliff Berg

Dear Cliff,

RE: North Virden Scallion Unit No.2
11-29-11-26 W1M Pressure Buildup Test

Please find attached the pressure buildup test analysis that Tundra Oil and Gas Ltd. has completed for well 11-29-11-26 at the request of the operator of the Unit. In summary the results are as follows:

* Estimated average static reservoir pressure (at infinite shut-in time) $P^* = 7147$ kPa. The current buildup data suggests that there may be some over pressuring at 11-29 from the injector at 12-29.

* Reservoir permeability to oil, $k_o = 9$ md

* Skin damage, $s = 6$

* Flow efficiency = 0.65 (productivity may be improved by up to 35% with an convertor/acid job)

The pressure buildup test data is summarized as follows:

- * Attachment No.1: Pressure Buildup Data
- * Attachment No.2: Log - Log Plot (Pressure and Derivative)
- * Attachment No.3: Log-Log (wellbore storage & radial flow)
- * Attachment No.4: Horner Type Curve Match

The three pressure buildup tests completed in the Unit at 11-29, 16-30, and 5-32-11-26 indicate that the upper cherty oil horizon is receiving good pressure support from the aquifer and pressure maintenance scheme. As a result, no further injection locations are required in the Unit at this time.

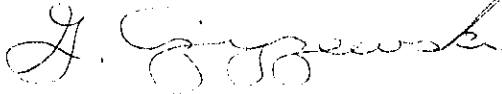
Should you have any questions, I can be reached at 204-934-5853.

Tundra

oil and gas ltd.

Yours truly

TUNDRA OIL AND GAS LTD.

A handwritten signature in cursive script, appearing to read 'G. Czyzewski', with a long, sweeping horizontal stroke extending to the right.

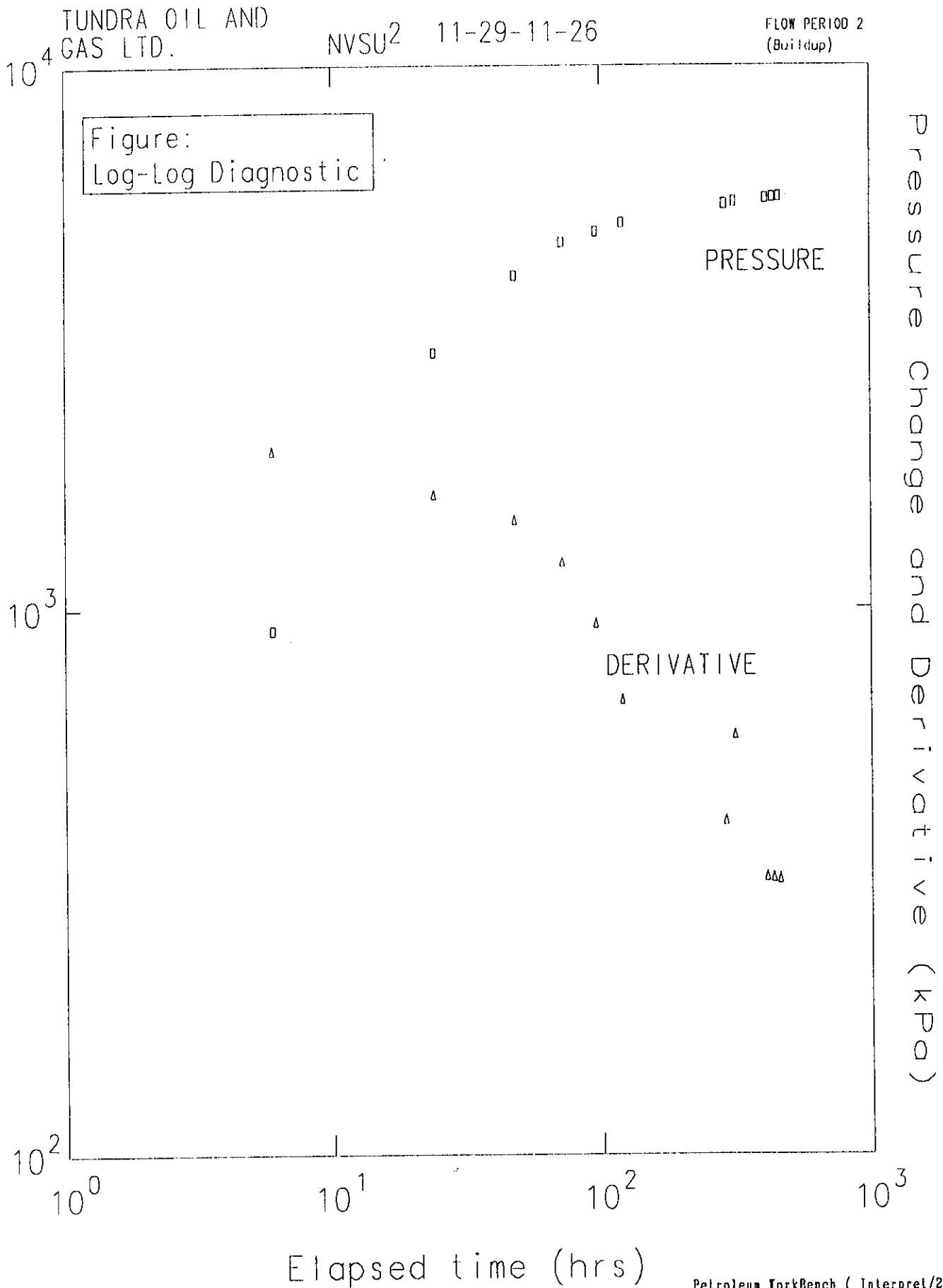
George Czyzewski, P.Eng.
Senior Reservoir Engineer

cc: R. Puchniak
D. Barchyn

ATTACHMENT NO.1

DATE	TIME	DELTA TIME (hours)	TIME (days)	(DELTA T + Tp) DELTA T	JOINTS TO FLUID	FLUID LEVEL (m)	FLUID PRESSURE (kPa)	CASING PRESSURE (kPa)	ADJ. CASING PRESSURE (kPa)	TOTAL PRESSURE (kPa)	TOTAL PRESSURE (psig)
Tp = {(7,108) / 1.6} * 24 = 106,620 hrs											
NORTH VIRDEN SCALLION UNIT NO.2											
WELL 11-29-11-26											
PRESSURE BUILDUP DATA											
HORNER PLOT											
May 20/95	9:00 AM	0	0.0	-	67	637	0	172	180	180	26
	3:00 PM	6	0.25	17,771	58	551	841	241	250	1091	158
May 21/95	9:00 AM	24	1.0	4,444	36.5	347	2740	414	424	3164	459
May 22/95	9:00 AM	48	2.0	2,222	25.5	242	3711	607	617	4328	628
May 23/95	9:00 AM	72	3.0	1,482	20	190	4197	745	755	4951	718
May 24/95	9:00 AM	96	4.0	1,112	17.5	166	4417	745	753	5171	750
May 25/95	9:00 AM	120	5.0	890	15.5	147	4594	758	766	5360	777
June 1/95	9:00 AM	288	12.0	371	13.5	128	4771	986	995	5765	836
June 2/95	9:00 AM	312	13.0	343	13	124	4815	993	1001	5816	844
June 6/95	9:00 AM	408	17.0	262	12.5	119	4859	1034	1042	5901	856
June 7/95	9:00 AM	432	18.0	248	12.33	117	4874	1041	1049	5923	859
June 8/95	9:00 AM	456	19.0	235	12.25	116	4881	1048	1056	5937	861

ATTACHMENT NO.2

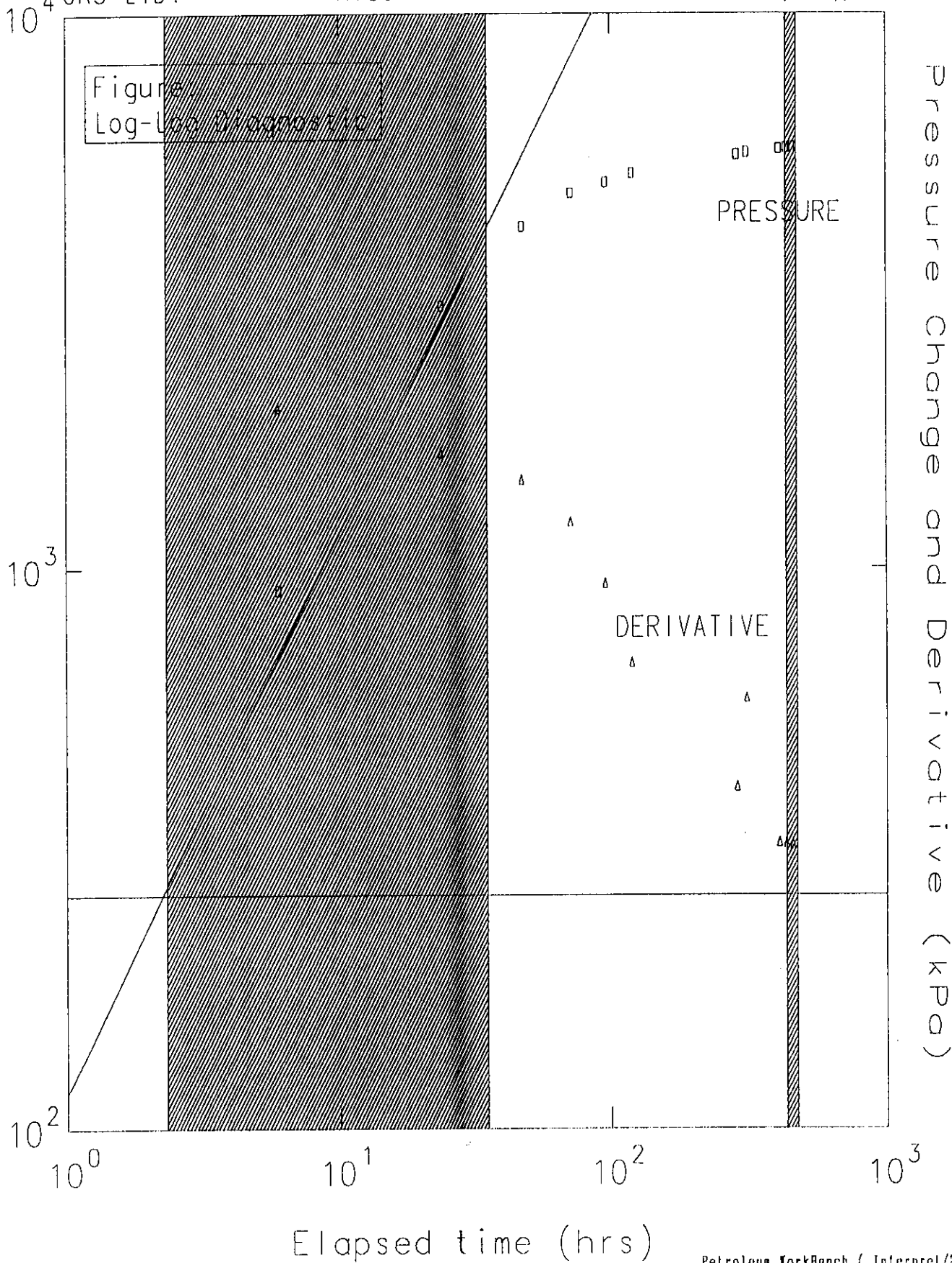


ATTACHMENT NO.3

TUNDRA OIL AND
GAS LTD.

NVSU2 11-29-11-26

FLOW PERIOD 2
(Buildup)

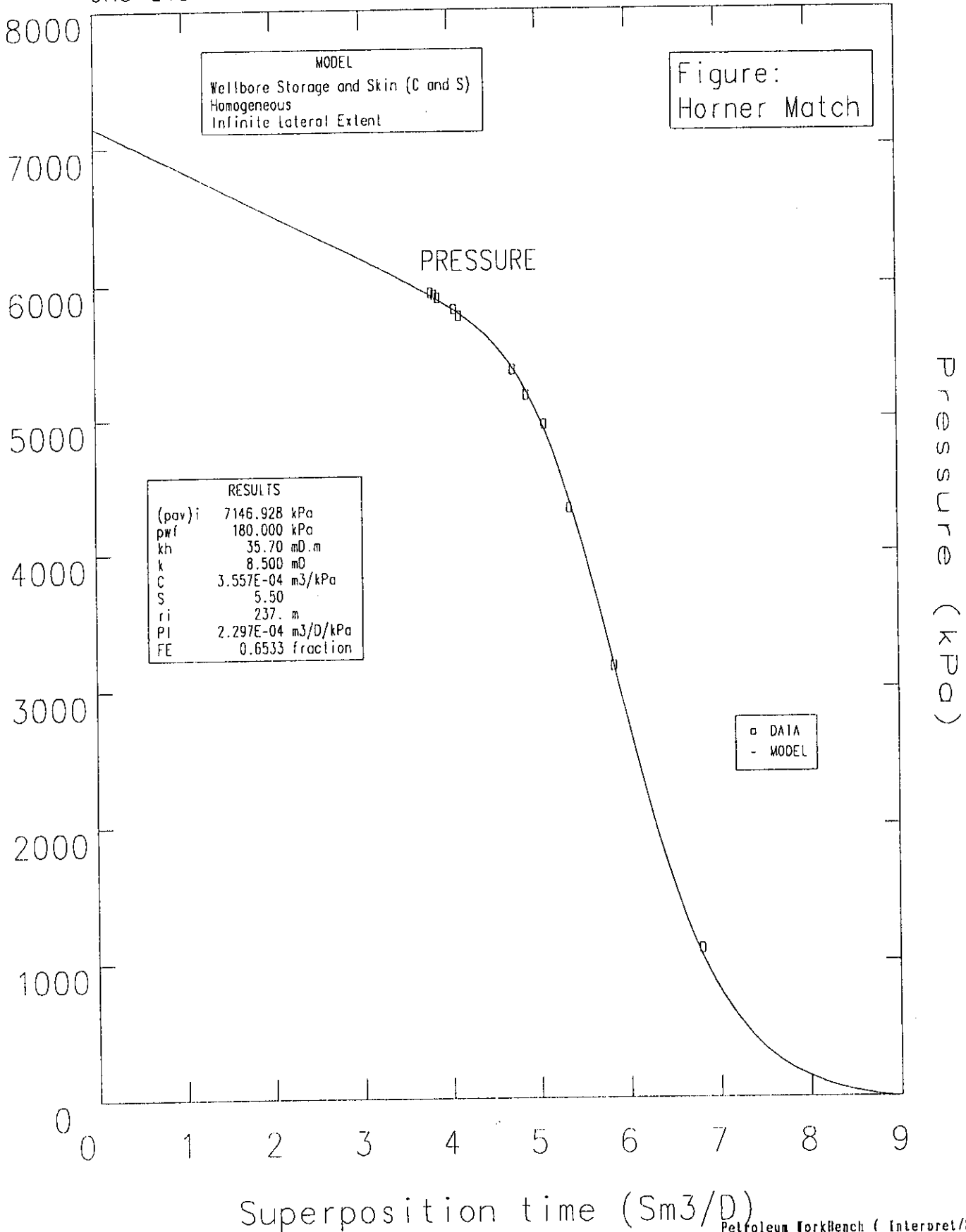


ATTACHMENT NO.4

TUNDRA OIL AND
GAS LTD.

NVSU² 11-29-11-26

FLOW PERIOD 2
(Buildup)



JAN 30 1995

January 25, 1995

Mountcliff Resources Ltd.
500, 805 - 8th Avenue S.W.
Calgary, Alberta
T2P1H7

Attention: **Mr. Cliff Berg**

Dear Cliff,

RE: North Virden Scallion Unit No.2
16-30-11-26 W1M Pressure Buildup Test

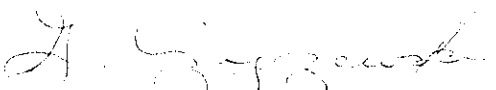
Please find attached the pressure buildup test analysis that Tundra Oil and Gas Ltd. has completed for the 16-30 well at the request of the operator (Mountcliff Resources Ltd.) of the unit.

Productivity improvement can be obtained at the 16-30 well by implementing a convertor/acid stimulation. An incremental oil rate of 4 BOPD is estimated with the aforementioned workover.

Tundra Oil and Gas Ltd. will invoice Mountcliff Resources Ltd. for the use of the echometer provided by Tundra to complete the pressure buildup test at 16-30.

I will be pleased to discuss with you the engineering analysis of the pressure buildup test at 16-30, and the followup stimulation program after your review of the attached documentation. I can be reached at 204-934-5853.

Yours truly,

TUNDRA OIL AND GAS LTD.

George Czyzewski, P.Eng.
Senior Reservoir Engineer

cc: R. Puchniak
D. Barchyn
Working Interest Owners (addressee list attached)

INTERNAL MEMORANDUM

To: File

From: G. Czyzewski

Date: January 24, 1995

RE: North Virden Scallion Unit No.2
Analysis of 16-30-11-26 Pressure Buildup Test

Tundra Oil and Gas Ltd. has analyzed the pressure buildup data acquired by Mountcliff Resources at 16-30. The following conclusions are offered for your review and feedback:

HIGHLIGHTS 16-30 PRESSURE BUILDUP TEST

- * Estimated average static reservoir pressure $p^* = 6,000 \text{ kPa}$
870 psi
- * Reservoir permeability $k = 12 \text{ md}$
- * Skin damage $s = +7$
- * Flow efficiency $= 0.59$

RESERVOIR PRESSURE

Reservoir pressure was estimated by preparing Horner and Log-Log plots. A Log-Log plot (refer to Figure No.1) was first prepared to determine if the pressure transient had moved beyond the wellbore storage area. Figure No.1 illustrates that the wellbore storage area is depicted by the initial unit slope portion of the curve. The end of wellbore storage is characterized by the flattening of the pressure profile. Late time conditions, generally occur 1 to 1.5 cycles after the beginning of the flattening of the pressure profile. On this basis, a best fit of the last five data points from the Log-Log plot will provide an estimate of the average static reservoir pressure at 16-30 using the Horner plot. The Horner plot for 16-30 is illustrated on Figure No.2. An extrapolated average static reservoir pressure of 6,000 kPa is estimated at 16-30. The pressure buildup test indicates that 16-30 is near original reservoir pressure conditions of 6200 kPa. Table No.1 outlines the pressure buildup test data.

899 psi

870 psi

RESERVOIR PERMEABILITY

Formation permeability was estimated using the data from the semi-log plot illustrated in Figure No.2. The following equation was used in conjunction with the Horner Plot data to determine formation permeability (k):

$$k = (162.6 * q * B_{oi} * u_o) / m * h$$

where

k = formation permeability (md)

q = oil rate (BOPD)

B_{oi} = formation volume factor (R STB/STB)

u_o = oil viscosity (cp)

m = slope from Horner plot (psig/cycle)

h = net pay (feet)

$$k = (162.6 * 10 * 1.1 * 4) / 58 * 10$$

$$k = 12 \text{ md}$$

Table No.2 outlines the parameters that were used to calculate formation permeability.

SKIN FACTOR

The skin factor was calculated using the Horner equation for pressure loss due to skin. The equation to estimate skin effect is as follows:

$$s = 1.151 * \{ (p_{1hr} - p_{wf}) / m - \log(k/\phi * u_o * c_t * r_w^2) + 3.23 \}$$

where

s = skin factor (dimensionless)

p_{1hr} = pressure @ 1 hour from late time extrapolation (psig)

p_{wf} = bottomhole flowing pressure @ time of shut-in (psig)

m = slope from Horner Plot (psig/cycle)

k = formation permeability (md)

ϕ = formation porosity (fraction)

μ_o = oil viscosity (cp)

c_t = total system compressibility (1/psig)

r_w = radius wellbore (feet)

$$s = 1.151 * [(624 - 33) / 58 - \log(12 / 0.22 * 4 * 0.0000175 * 0.18^2) + 3.23]$$

$$s = + 7$$

The positive skin factor indicates that the formation is damaged at 16-30. The type of damage suspected is quite likely scale, which is reducing inflow. Table No.2 outlines the parameters that were used to calculate skin.

FLOW EFFICIENCY

An estimate of the flow efficiency was made, in order to determine the productivity improvement that can be gained with stimulation. The equations that were used to estimate productivity index and flow efficiency are outlined as follows:

a. Productivity Index (J)

$$J_{\text{actual}} = (q / p^* - p_{wf}), \text{ barrels/day-psi}$$

$$J_{\text{ideal}} = (q / (p^* - p_{wf} - \text{chge } p_{\text{skin}})), \text{ barrels/day-psi}$$

$$\text{chge } p_{\text{skin}} = m * 0.87 * s$$

$$\text{chge } p_{\text{skin}} = 58 * 0.87 * 7 = 353 \text{ psig}$$

$$J_{\text{actual}} = (10 / 899 - 33) = 0.01155 \text{ barrels/day-psi}$$

$$J_{\text{ideal}} = (10 / (899 - 33 - 353)) = 0.01949 \text{ barrels/day-psi}$$

b. Flow Efficiency

$$\begin{aligned} \text{Flow Efficiency} &= J_{\text{actual}} / J_{\text{ideal}} \\ &= 0.01155 / 0.01949 \\ &= 0.59 \end{aligned}$$

The flow efficiency calculation indicates that the skin effect has reduced the inflow by about 40%. As a result, stimulation of the 16-30 well has the potential of adding an additional 4 BOPD.

CONCLUSIONS

The following conclusions have been made from the pressure buildup test completed at 16-30.

1. The 16-30 well is estimated to have a current static reservoir pressure of 6000 kPa (based on the extrapolation of the Horner Plot to infinite shut-in time). Original static reservoir pressure is estimated at 6200 kPa. *870 psig*

7.12.29 → 2. Good pressure support at 16-30 is attributable to injection wells 10-30-11-26 and 4-32-11-26. This conclusion is based on a review of the historical pressure surveys at 16-30 prior to commencement of pressure maintenance (August, 1989), and pressure surveys after the start of waterflood operations. The edge water drive is considered to be providing partial reservoir pressure support at 16-30. *(899 psig) low from DST extrapol's Jan/90*

3. The 16-30 well quite likely has scale damage based on the positive skin factor of +7.

4. The 16-30 well should be considered for a convertor/acid stimulation to improve oil productivity. Stimulation of the 16-30 well will improve oil productivity by 4 BOPD.

5. The pressure buildup analysis at 16-30 supports the continuation of water injection into the Scallion cherty zone to maintain reservoir pressure, in order to maximize oil recovery.

6. The pressure buildup test planned at 5-32-11-26 should also be completed in order to assess the effectiveness of pressure maintenance in the SW1/4 of Section 32.

George

G. Czyzewski

[illegible]

TABLE NO.2														
NORTH VIRGEN SCALLION UNIT NO.2														
16-30-11-26 PRESSURE BUILDUP TEST														
DETERMINATION OF PERMEABILITY AND SKIN FACTOR														
PERMEABILITY														
CONSTANT	OIL RATE (STB/day)	Boi	R	STR/STB	u (cp)	m (psi/cycle)	h (feet)	k (md)						
162.6	10	1.1		4		58	10	12						
$k = (162.6 \cdot q \cdot Boi \cdot u) / m \cdot h$														
SKIN FACTOR														
CONSTANT	p hr (psi)	p wf (psi)	Chge p (psi)	m (psi/cycle)	Chge p / m (A)	k (md)	porosity (fraction)	u (cp)	ct (1/psi)	r w (feet)	k/phi * u * ct * r w (B)	Log(B) (C)	(A-C) (D)	e = skin 1.151 * (D + 3.23)
1.151	624	33	591	58	10.18965617	12	0.22	4	0.000017513	0.1875	22.766.667.26	7.36	2.83	7.0
$= 1.151 \cdot [\log(p_{hr} - p_{wf}) / m \cdot \log(k/\phi \cdot u \cdot ct \cdot r w) + 3.23]$														

FIGURE NO.1

LOG - LOG PLOT 16-30-11-26

SHUT-IN PERIOD = 22 days

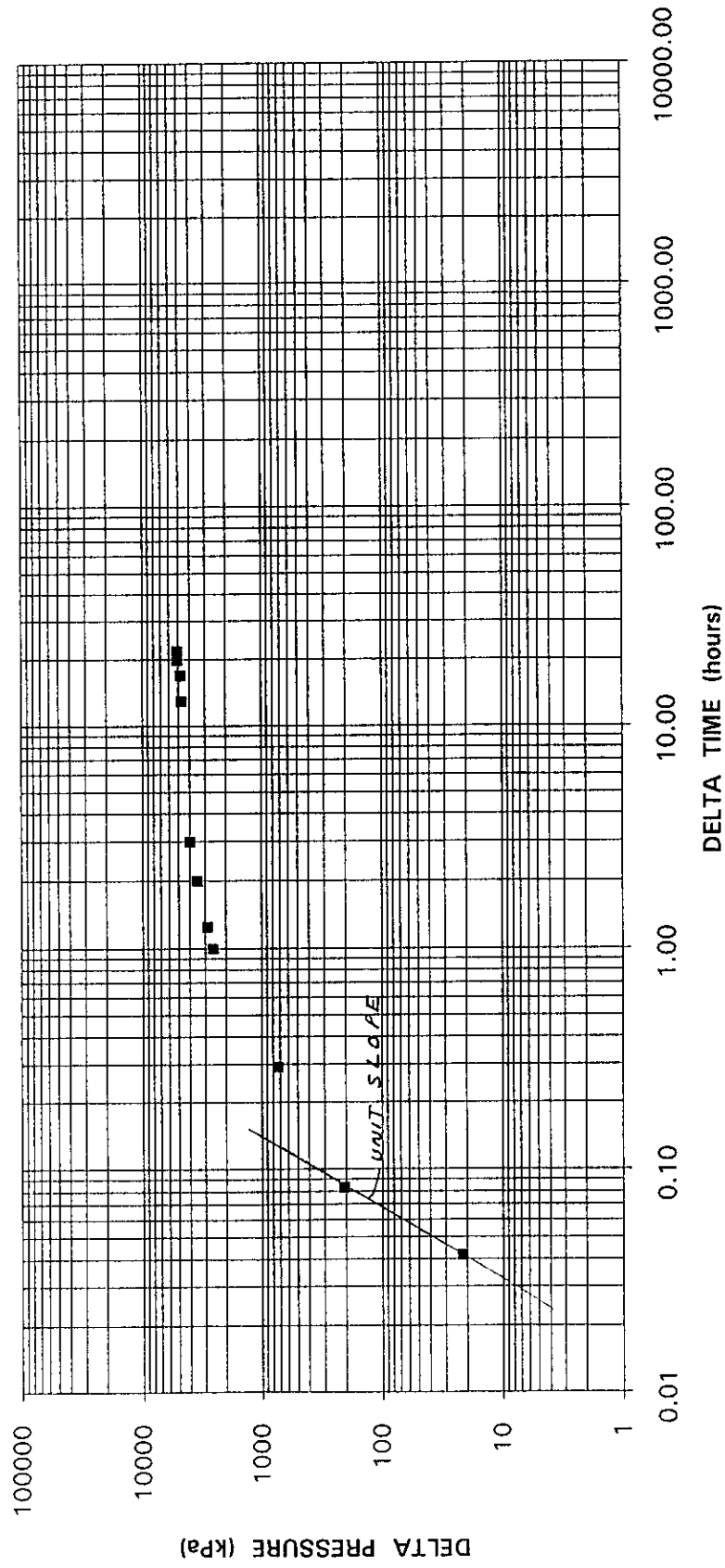


FIGURE NO.2

PRESSURE BUILDUP WELL 16-30-11-26 HORNER PLOT

SHUT-IN PERIOD = 22 days

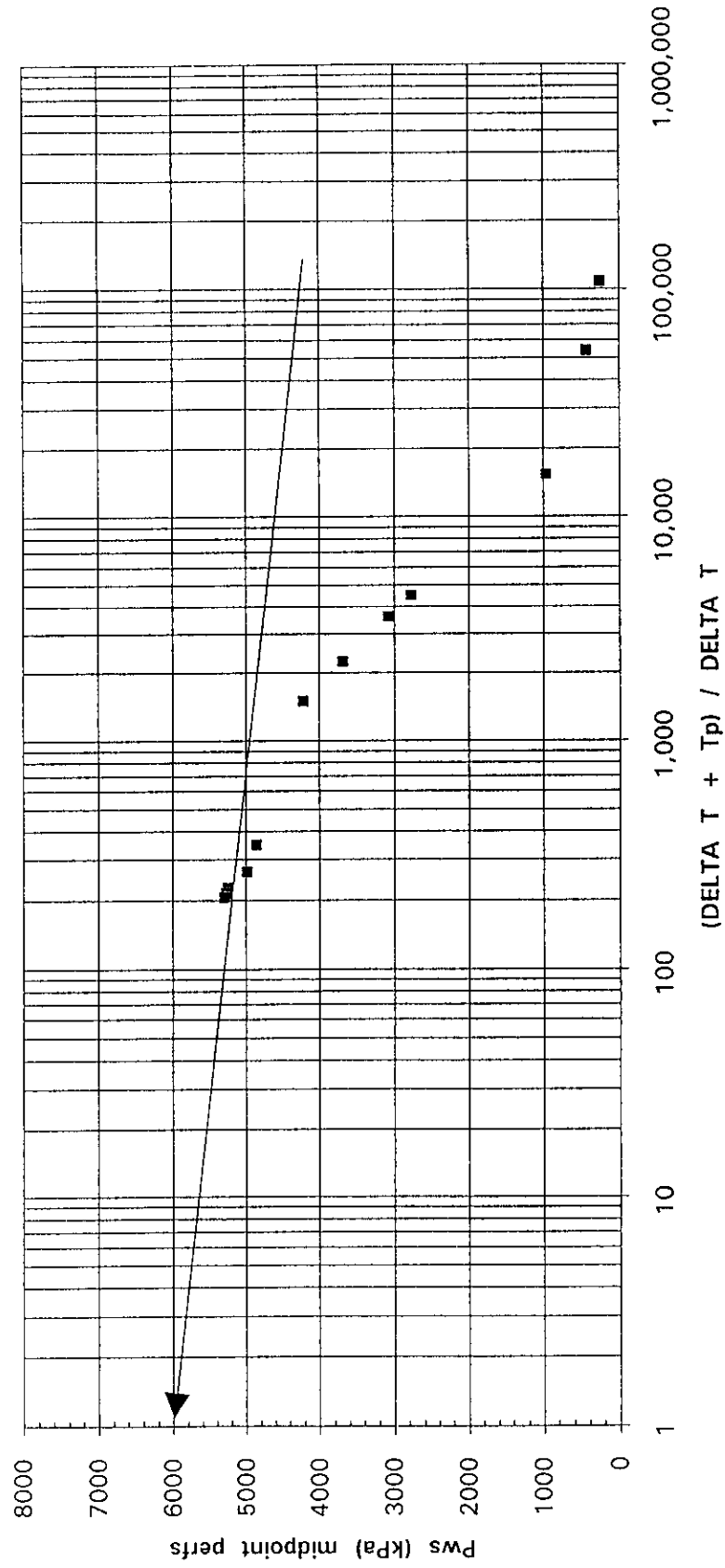
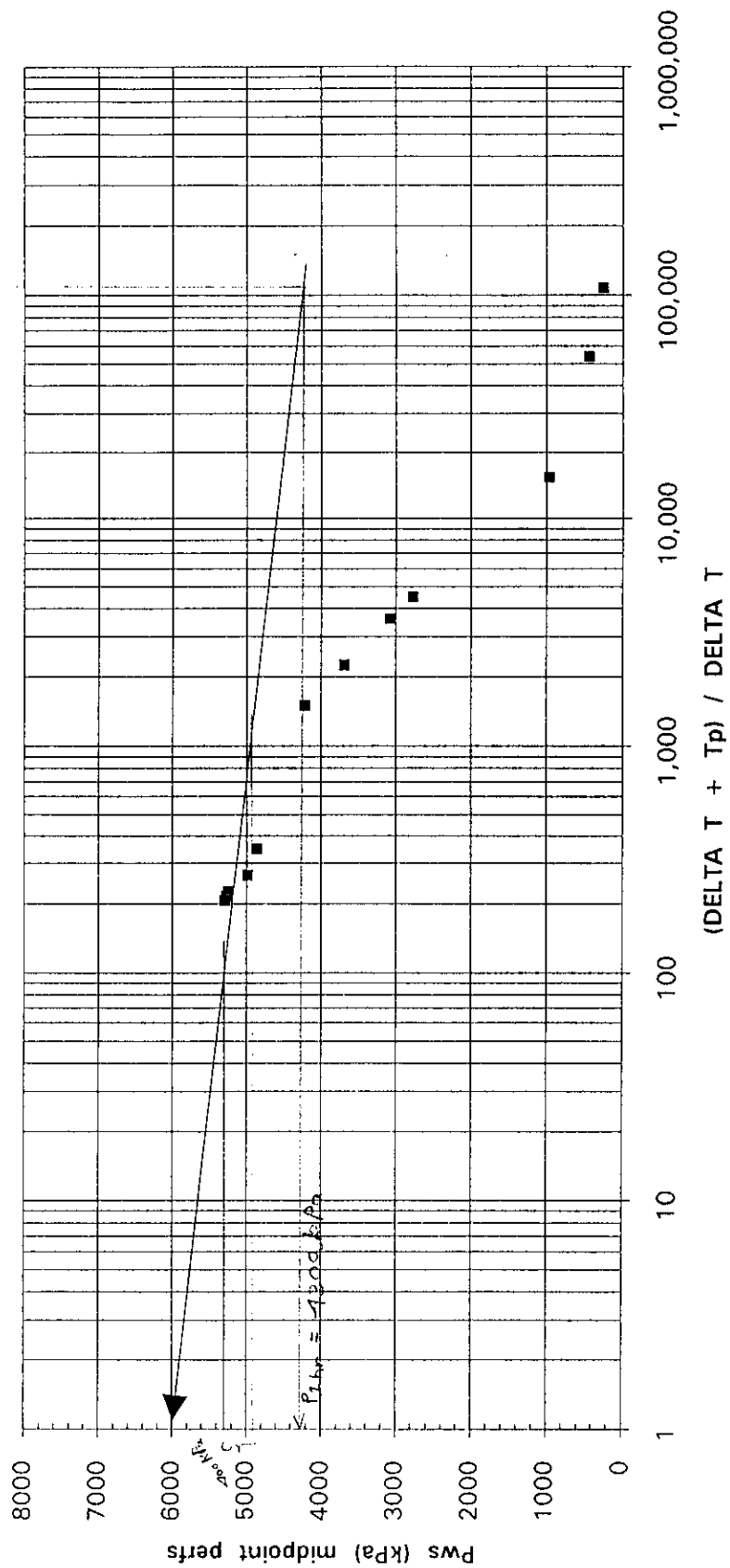


FIGURE NO.2

PRESSURE BUILDUP WELL 16-30-11-26 HORNER PLOT

SHUT-IN PERIOD = 22 days



$$m = 400 \text{ kPa} / \text{cycle} = 58 \text{ psi} / \text{cycle}$$

July 6, 1995

Mountcliff Resources Ltd.
360, 717 - 7th Avenue S.W.
Calgary, Alberta
T2P 0Z3

Attention: **Mr. Cliff Berg**

Dear Cliff,

RE: **North Virden Scallion Unit No.2**
5-32-11-26 W1M Pressure Buildup Test

Please find attached the pressure buildup test analysis that Tundra Oil and Gas Ltd. has completed for well 5-32 at the request of the operator of the Unit. In summary the results are as follows:

- * Estimated average static pressure $P^* = 6,400$ kPa (at infinite shut-in time).
- * Reservoir permeability to oil, $k_o = 10$ md
- * Skin damage, $s = 12$
- * Flow efficiency = 0.46 (productivity may be improved by up to 54% with an convertor/acid job)


The pressure survey data is attached and summarized as follows:

- * **Attachment No.1:** Pressure Buildup Data
- * **Attachment No.2:** Log-Log Plot
- * **Attachment No.3:** Horner Plot
- * **Attachment No.4:** Calculation of permeability and skin
- * **Attachment No.5:** Calculation of Flow efficiency

Should you have any questions, I can be reached at 204-934-5853.

Yours truly,

TUNDRA OIL AND GAS LTD.

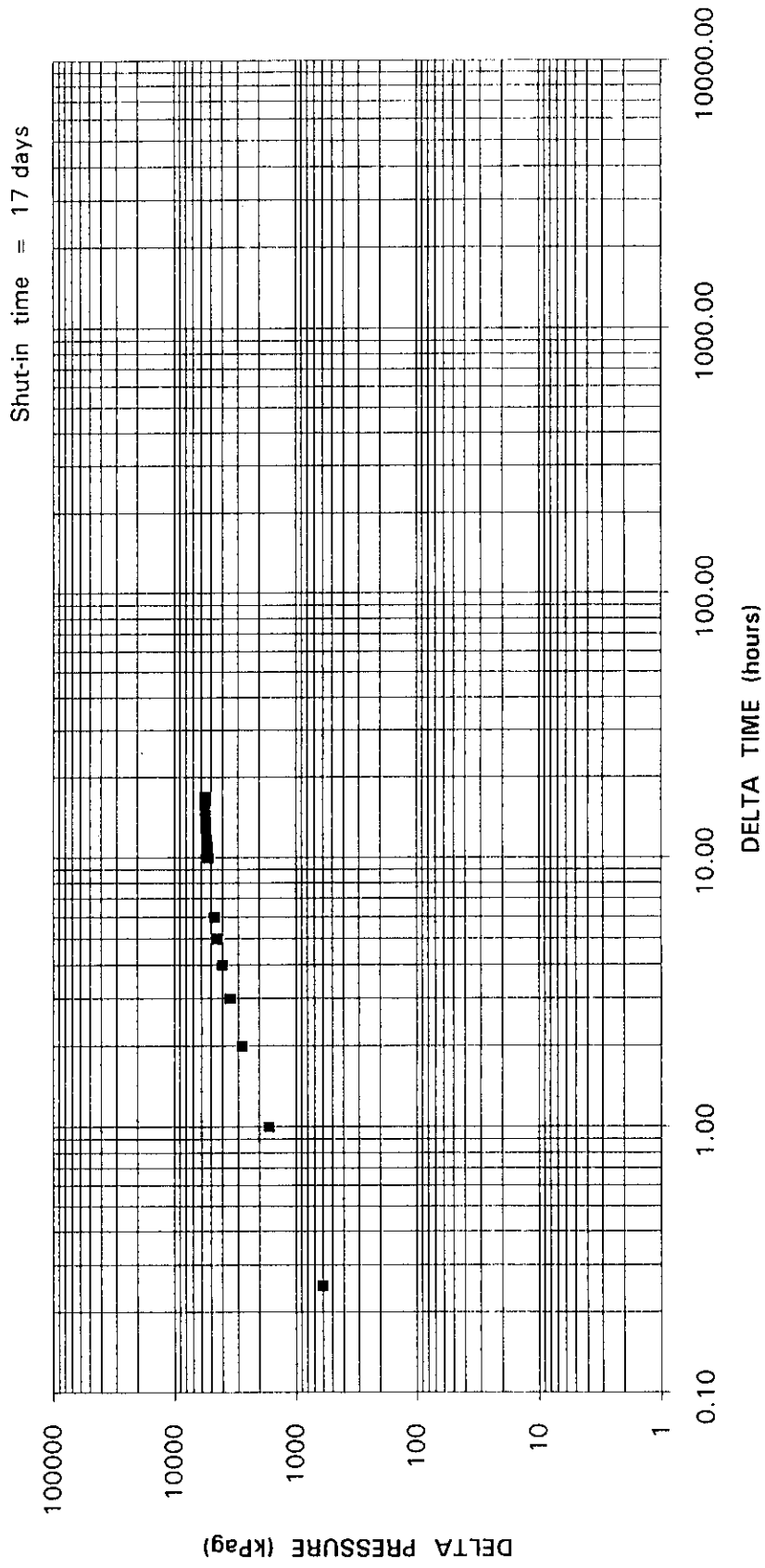

George Czyzewski, P.Eng.
Senior Reservoir Engineer

ATTACHMENT NO.1

[illegible]

ATTACHMENT NO.2

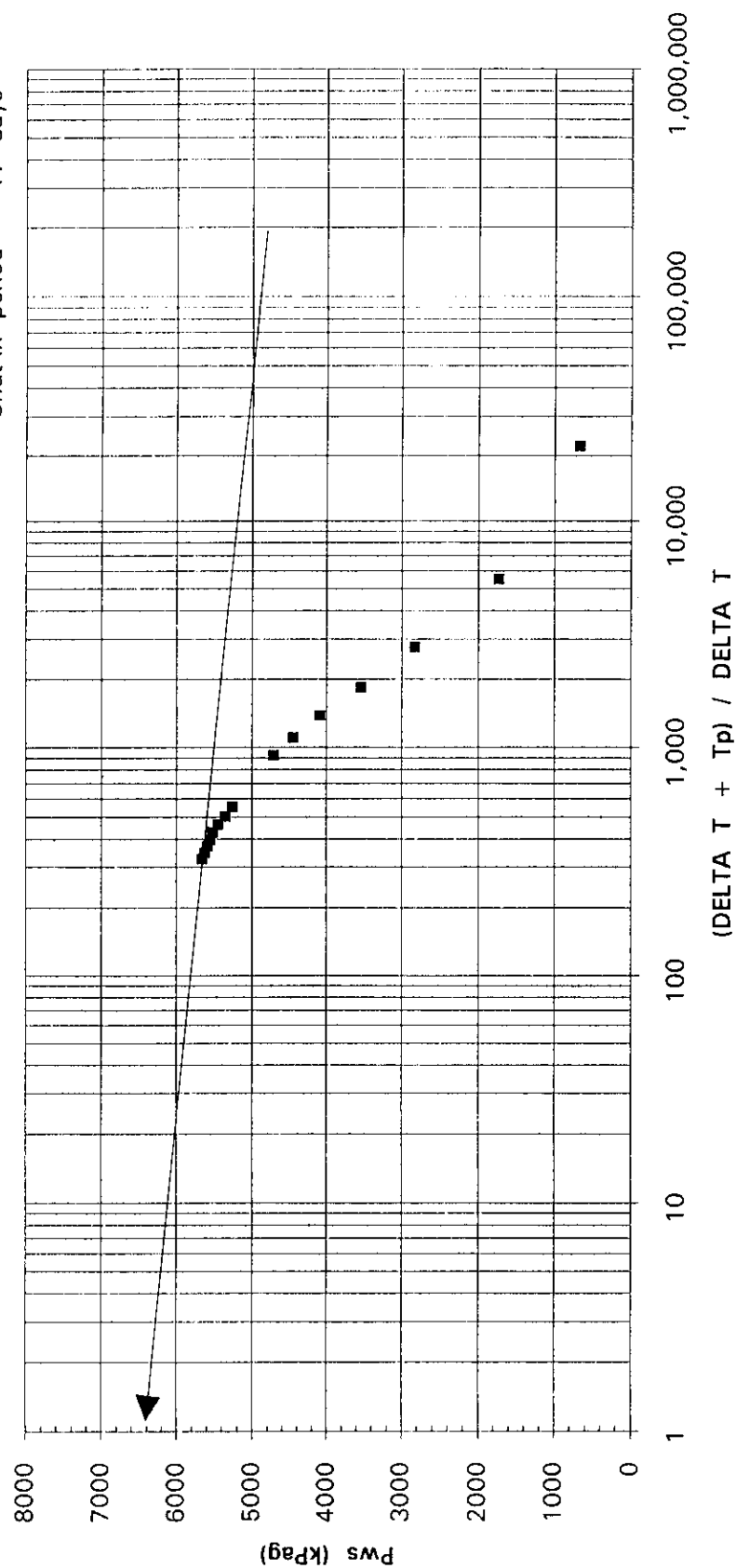
LOG - LOG PLOT WELL 5-32-11-26 PRESSURE BUILDUP PLOT



ATTACHMENT NO.3

HORNER PLOT PRESSURE BUILDUP TEST WELL 5-32-11-26

Shut-in period = 17 days





COVER PAGE

DATE: February 4, 1997

PAGE 1 OF 12
(Including cover page)TO: Mountcliff Resources
ATTN: Cliff

FAX (403) 267-8366

FROM: Brad

FAX (204) 934-5820

Here's a good conveyance document for Morris. It's up on our system, so if you provide the necessary details we can send you original documents for execution.

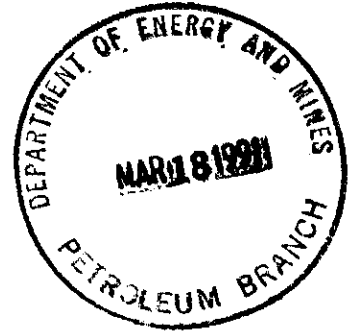
B

PLEASE NOTE: If you do not receive all pages, please contact Kim at (204) 934-5850.

saskoïl

March 13, 1991

Manitoba Energy and Mines
555 - 330 Graham Avenue
Winnipeg, Manitoba
R3C 4E3



ATTENTION: Mr. John N. Fox
Chief Petroleum Engineer

Dear Sir:

RE: NORTH VIRDEN SCALLION UNIT NO. 2
LSD 16-30-11-26 WPM - PRODUCER
FLUID LEVEL PRESSURE BUILD-UP SURVEY
LSD 4-32-11-26 WPM - INJECTOR
DOWNHOLE RECORDERS PRESSURE FALL-OFF SURVEY

Enclosed, please find the results of pressure surveys conducted at the subject wells in late January, 1991. The 16-30 well was surveyed in August 1989 along with 11-29-11-26 WPM; however, for the 1991 survey, it was suggested by Unit owners that the 4-32 injector well be surveyed instead of 11-29 in order to evaluate 4-32 for skin damage considering its present low injectivity potential. Analysis indicated an average reservoir pressure of 6,462 kPaA and 4,267 kPaA at 16-30 and 4-32, respectively. The August 1989 survey at 16-30 yielded a reservoir pressure of 5,984 kPaA (ie. a difference of 478 kPa or 69 psi).

If you have any questions concerning these reports, please contact Mr. Don Gallant at (306)-781-8522.

Yours truly,
SASKATCHEWAN OIL AND GAS CORPORATION

A handwritten signature in dark ink, appearing to read "R.R. Gladysz".

R.R. Gladysz, P.Eng.
Production Superintendent - South

DFG/rr
encl.

cc: J. Sliva
K. Kaleli
Unit Owners

Saskoïl Tower
1945 Hamilton Street
P.O. Box 1550
Regina, Saskatchewan

S4P 3C4 (306) 781-8200

PRESSURE FALLOFF TEST
ICG ET AL SCALLION
4-32-11-26 W3M
LODGEPOLE A- CHERTY
JANUARY 17- FEBRUARY 1, 1991

PREPARED BY: John Sliva
Formation Evaluation
February 21, 1991
JS8853

I. INTRODUCTION

A pressure falloff test was performed in the Lodgepole A-Cherty formation at ICG et al Scallion 4-32-11-26 W1M in January, 1991. On January 17, 1991, tandem recorders were run downhole and injection stopped. On February 1, 1991, the recorders were recovered, a static gradient performed and the test concluded. The results of this test are as follows:

Summary of Results

Average Reservoir Pressure (P_R)	4,267 KPa (absolute) @ MPP
Flow Capacity (Kh) _w	8.44 md.m
Permeability (K_w)	1.21 md
Skin factor (S)	+0.1

II. DISCUSSION:

All pressures are referenced to the bottom recorder (#50700). The pressure correction from RRD to MPP was performed utilizing the static gradient at the end of the flow test. All pressures have been converted to absolute values by assuming a barometric pressure of 90.0 KPa.

A log-log diagnostic plot of the fall off data suggests the late time data was in radial flow. A reasonable typecurve match was found utilizing the Bourdet et al-Storage and Skin with Derivative. This match finds the A.S.L. at 20 hours. As such, an analysis utilizing semi-log techniques is possible. The results of the Horner analysis find a Kh and skin that match the results found in the typecurve analysis reasonably well. This further confirms that the right model was chosen.

TYPE CURVE PRESSURE FALLOFF PLOT

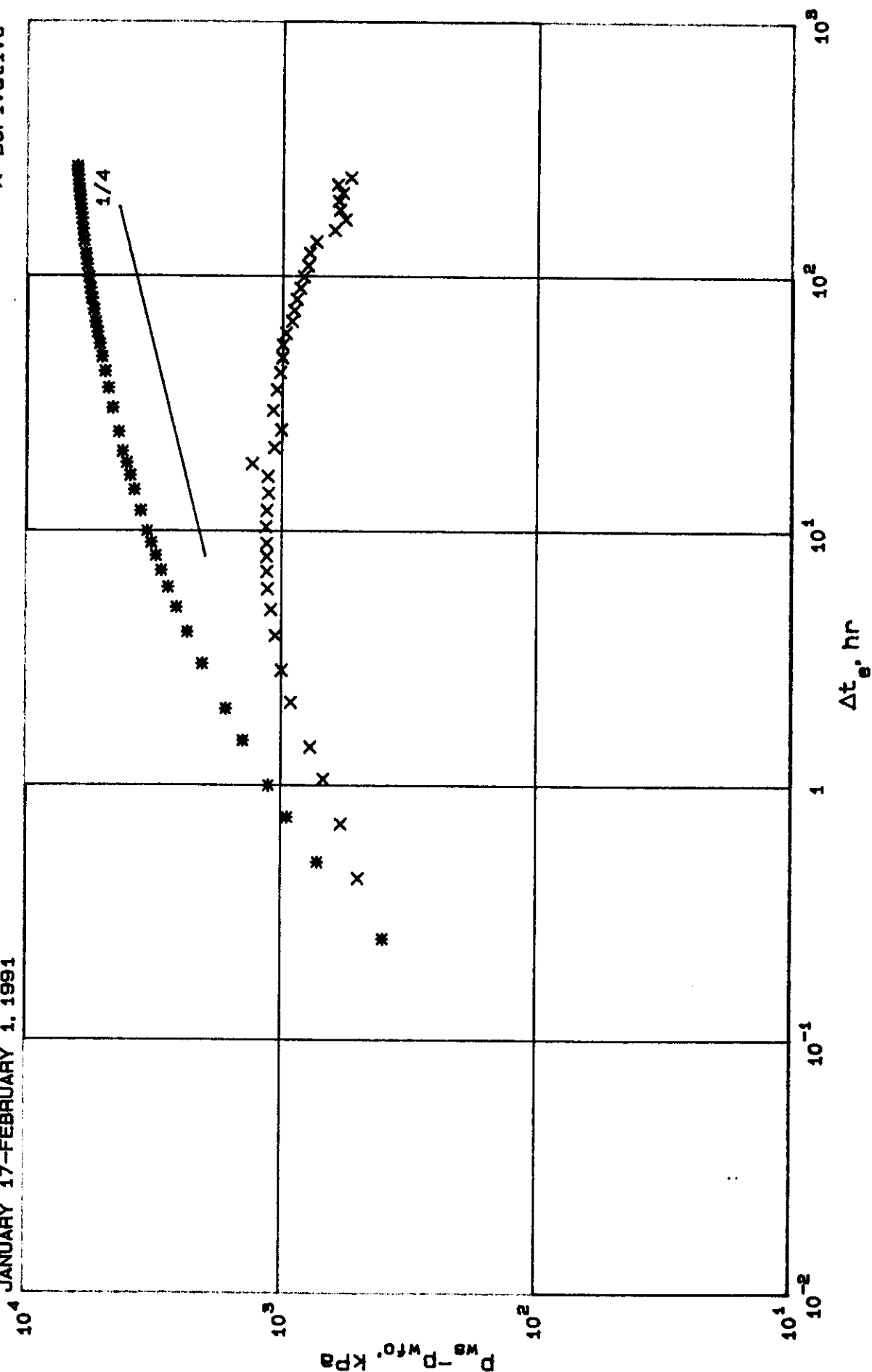
ICGR ET AL SCALLION

4-32-11-26W1M

LODGEPOLE A-CHERTY

JANUARY 17-FEBRUARY 1, 1991

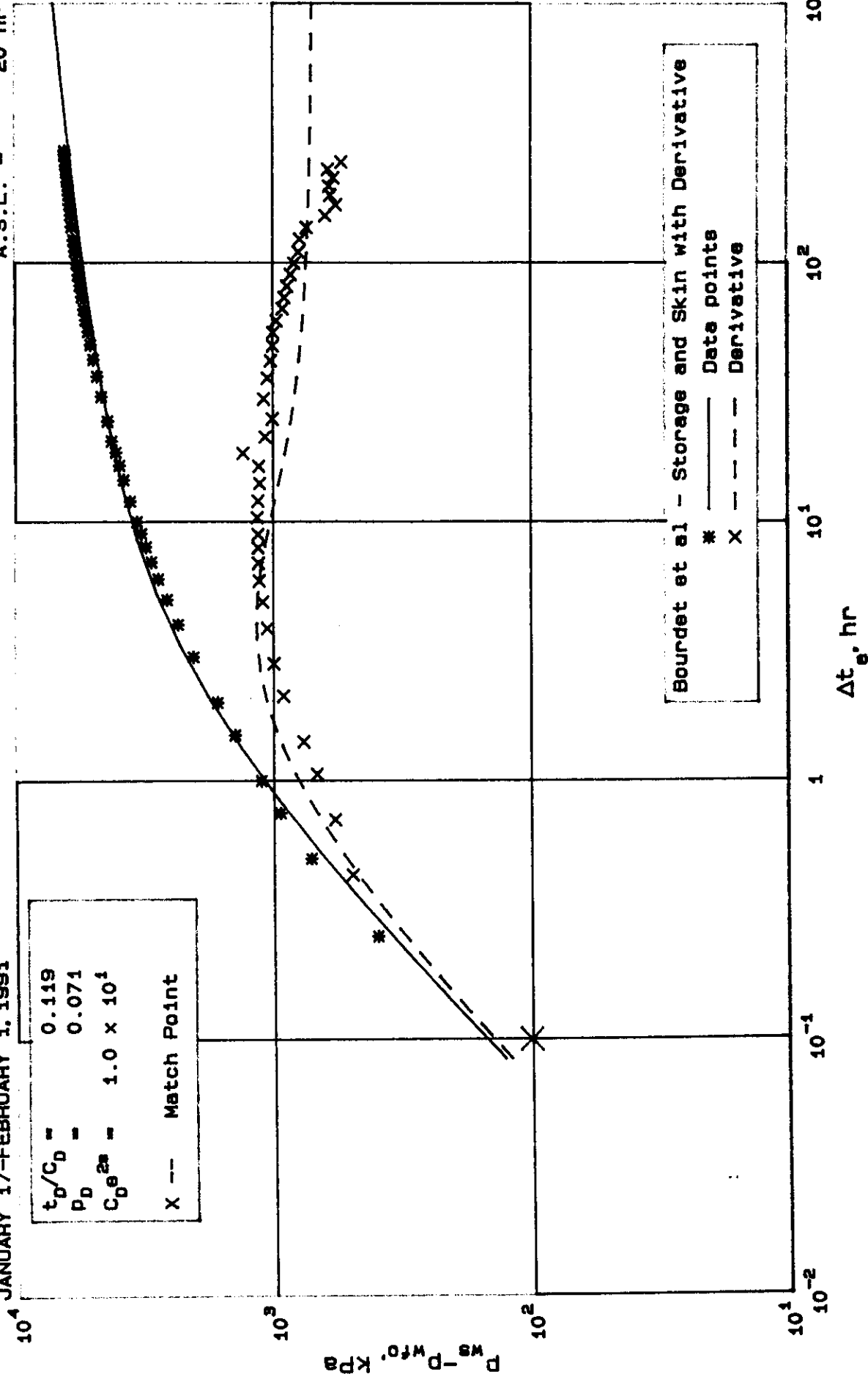
* Data points
X Derivative



TYPE CURVE PRESSURE FALLOFF PLOT

ICSR ET AL SCALLION
4-32-11-26W1M
LODGEPOLE A-CHERTY
JANUARY 17-FEBRUARY 1, 1991

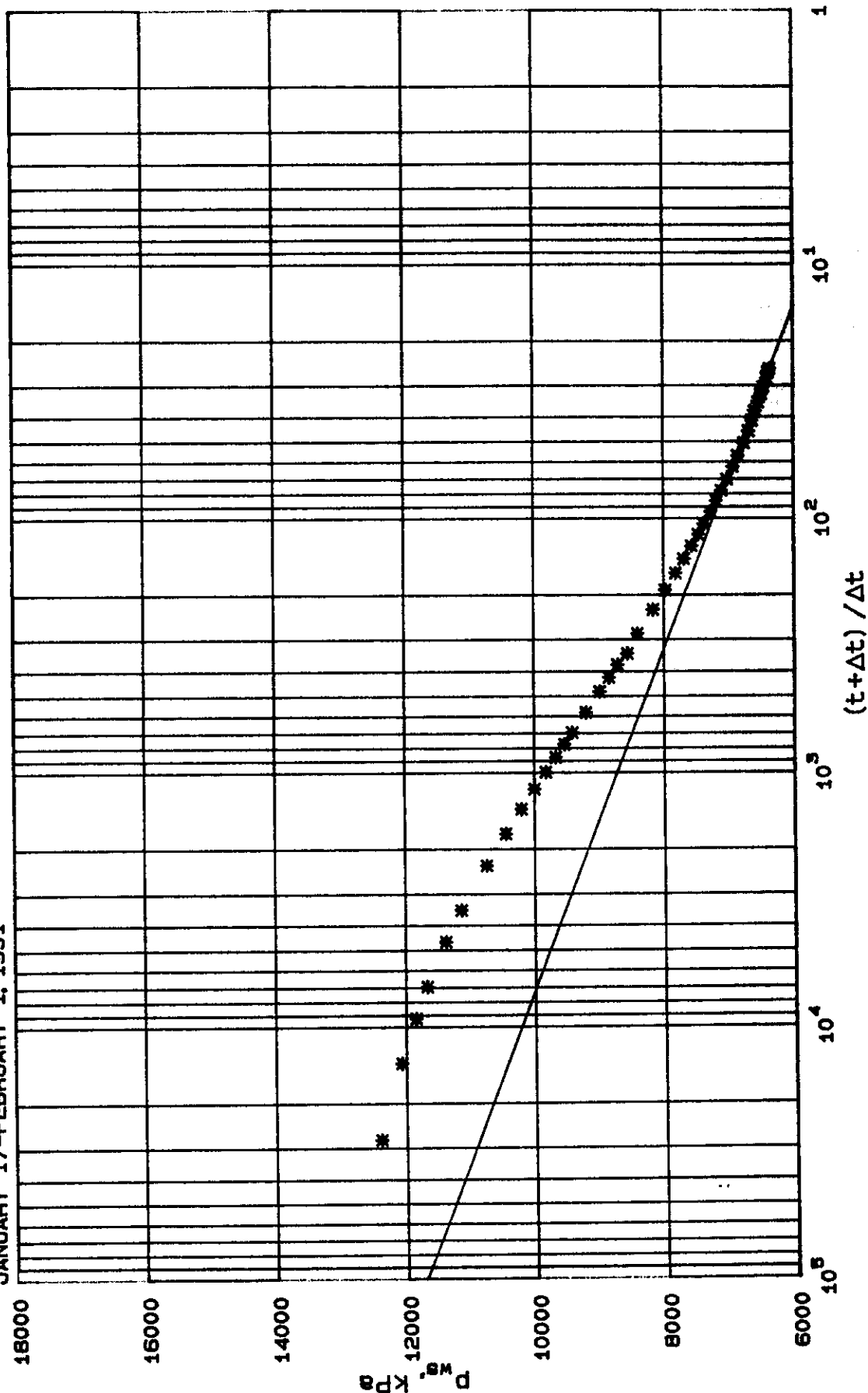
$[kh/\mu]_i = 9.21 \text{ mD.m/mPa.s}$
 $C_D = 23$
 $s = -0.4$
A.S.L. = 20 hr



HORNER PRESSURE FALLOFF PLOT

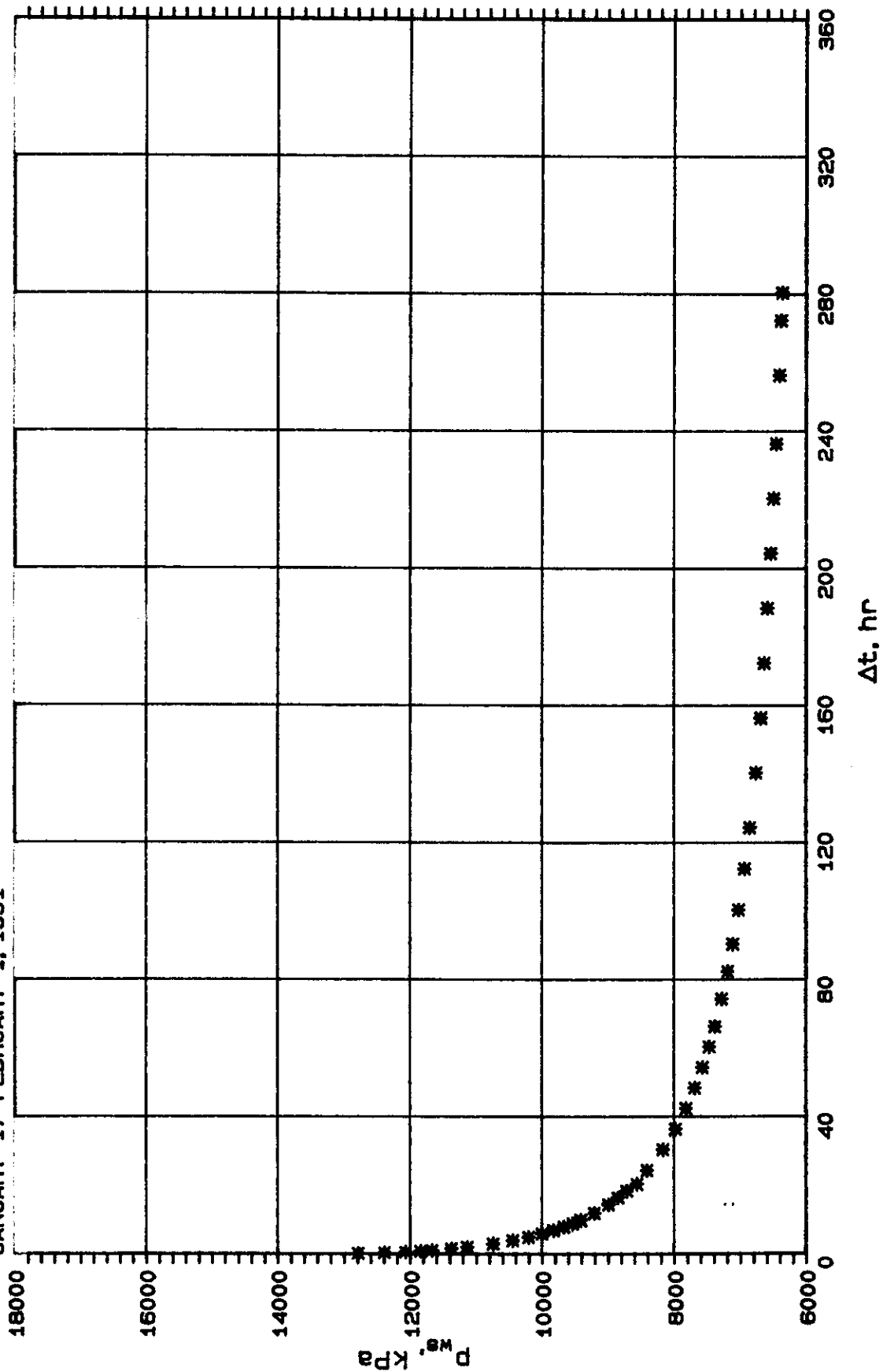
ICGR ET AL SCALLION
4-32-11-26W1M
LODGEPOLE A-CHERTY
JANUARY 17-FEBRUARY 1, 1991

$m = 1489 \text{ kPa}$
 $p^* = 4267 \text{ kPa}$
 $[kh/\mu]_t = 9.96 \text{ mD.m/mPa.s}$
 $s = 0.1$



PRESSURE VS TIME - FALLOFF

ICGR ET AL SCALLION
 4-32-11-26W1M
 LODGEPOLE A-CHE Y
 JANUARY 17-FEBRUARY 1, 1991



PRESSURE FALLOFF DATA
IN TERMS OF PRESSURE

2081 ET AL GOALLION
4-22-11-26W1M

LODGEPOLE A-CHERTY
JANUARY 17-FEBRUARY 1, 1991

Shut-in time hr	Horner time	Equiv time hr	Super time	Super Equiv time hr	Gauge Press RRD kPa	pws MPP kPa	del p kPa
0.00	----	----	----	----	12564	12790	----
0.25	27883.50	0.25	----	----	12168	12394	396
0.50	13942.30	0.50	----	----	11847	12073	717
0.75	9295.17	0.75	----	----	11620	11846	944
1.00	6971.62	1.00	----	----	11445	11671	1119
1.25	4848.09	1.25	----	----	11221	11577	1413
1.50	3455.31	1.50	----	----	10912	11338	1652
2.00	2324.54	2.00	----	----	10519	10745	2045
4.00	1745.65	4.00	----	----	10220	10446	2344
5.00	1395.13	5.00	----	----	9930	10206	2584
6.00	1162.77	6.00	----	----	9774	10000	2790
7.00	996.80	7.00	----	----	9599	9825	2965
8.00	872.33	8.00	----	----	9446	9672	3118
9.00	775.51	9.00	----	----	9312	9538	3252
10.00	698.06	10.00	----	----	9191	9417	3373
12.00	581.89	12.00	----	----	8951	9207	3583
14.00	481.75	14.00	----	----	8767	8993	3797
16.00	423.46	16.00	----	----	8623	8840	3941
18.00	377.79	18.00	----	----	8491	8717	4073
20.00	341.03	20.00	----	----	8339	8565	4225
24.00	265.32	24.00	----	----	8134	8410	4380
30.00	209.55	30.00	----	----	7943	8159	4621
36.00	161.95	36.00	----	----	7754	7980	4810
42.00	125.31	42.00	----	----	7597	7823	4967
48.00	94.72	48.00	----	----	7466	7692	5098
54.00	72.90	54.00	----	----	7350	7576	5214
60.00	58.22	60.00	----	----	7247	7473	5317
66.00	48.82	66.00	----	----	7150	7385	5405
72.00	41.57	72.00	----	----	7058	7287	5501
78.00	35.49	78.00	----	----	6967	7193	5597
84.00	30.02	84.00	----	----	6883	7113	5675
90.00	25.23	90.00	----	----	6801	7027	5763
96.00	21.06	96.00	----	----	6712	6938	5852
102.00	17.39	102.00	----	----	6634	6860	5950
108.00	14.13	108.00	----	----	6541	6767	6023
114.00	11.21	114.00	----	----	6453	6685	6095
120.00	8.41	120.00	----	----	6411	6642	6148
126.00	6.79	126.00	----	----	6366	6592	6198
132.00	5.09	132.00	----	----	6317	6543	6247
138.00	3.81	138.00	----	----	6274	6500	6290
144.00	3.07	144.00	----	----	6235	6461	6329

Flow-in time hr	Turner time	Equiv time hr	Super time	Super Equiv time hr	Gauge Press RRD kPa	Flow MFP kPa	del p kPa
283.50	28.18	247.40	---	---	6185	6411	6379
172.50	26.58	262.25	---	---	6162	6388	6402
261.50	25.85	269.65	---	---	6144	6370	6420

WATER PRESSURE Falloff ANALYSIS - HORNER

LODGE ET AL SCALLION
4-32-11-26W1M

LODGEPOLE A-CHERTY
JANUARY 17-FEBRUARY 1,1991

INJECTION AND TIMES

Cumulative Injection = 2033.1 m³
Actual Flow Time = --- hr
Horner Flow Time = 6970.63 hr
Final Flow Rate qo = 0.0 m³/d
Final Flow Rate qg = 0.000 10 m³/d
Final Flow Rate qw = 7.0 m³/d

RESERVOIR PARAMETERS

Wellbore Radius rw = 0.100 m Reservoir Temp TR = 300 K
Net Pay n = 7.0 m Water Saturation Sw = 0.450
Total Porosity phit = 0.170 Oil Saturation So = 0.000

FLUID PROPERTIES

Compress. cg = 0.00018278 1/kPa Viscosity uw = 0.848 mPa.s
Compress. co = 0.00005527 1/kPa Vol. Fac. Bg = 0.0141082
Compress. cw = 0.00000046 1/kPa Vol. Fac. Bo = 1.094
Compress. cf = 0.00000057 1/kPa Vol. Fac. Bw = 0.999
Compress. ct = 0.00010130 1/kPa Sol. Gas Rsw = 0.0 m³/m³

PRESSURES

Horner Extrap. pK = 4257 kPa
Initial Reservoir pi = --- kPa
Final Flowing pwfo = 12790 kPa
1 Hour Shut-in pws1 = 9990 kPa
Average Test pav = 6370 kPa

WATER PRESSURE FALLOFF ANALYSIS - HORNER

COGR ET AL 6CALLION
4-32-11-25KIM

LODESPOLE A-CHERTY
JANUARY 17-FEBRUARY 1, 1991

SEMILOG STRAIGHT LINE RESULTS

Slope	m	=	1489 kPa
Transmissivity	kh/uit	=	9.96 mD.m/mPa.s
	kh/u1w	=	9.96 mD.m/mPa.s
Mobility	kh/uit	=	1.42 mD/mPa.s
	kh/u1w	=	1.42 mD/mPa.s
Flow Capacity	kh/v	=	8.44 mD.m
Permeability	kw	=	1.21 mD
Skin Factor	s	=	0.1
Pressure Drop Due to Skin		=	87 kPa
Flow Efficiency	FE	=	0.99
Damage Ratio	DR	=	1.0.
Injectivity Index	II	=	0.00082127 m ³ /d/kPa
Radius of Inv.	r _{inv}	=	--- m

STABILIZED RATE PREDICTIONS

Drainage Area	A	=	65 ha
Shape/Well Configuration		=	R1A
Time to Stabilization	t _s	=	317721 hr
q ₁	6.0 m ³ /d	II = 0.00089533 m ³ /d/kPa	FE = 0.1
t ₁	6.0 m ³ /d	PI = 0.00070447 m ³ /d/kPa	FE = 0.0
q ₂	12.0 m ³ /d	PI = 0.00148973 m ³ /d/kPa	FE = -4.0

MOOSE MOUNTAIN
WELL SERVICES LTD.

COMPANY: SASK OIL	WELL NAME: NORTH VIRDAN UNIT# 2
ADDRESS: REGINA SASKATCHEWAN	LOCATION: 4-32-11-26-WPM
FIELD-POOL: SCALLION	WELL STATUS:
TYPE OF TEST: INJECTION	DATE OF TEST: 91JAN17
PERF/DH INTERVAL: 631 - 640	PRODUCING THROUGH: 60.3TUBE@ 647
ELEVATIONS: (GL) 483.20 (KB) 486.90	MF PROD. INTER: 631.8 GL
POOL DATUM:	DATUM DEPTH: (CF)

SHUT IN: 1615 1/20/91	RUN DEPTH TEMP: (C)
DWG PRESS: (KPA)	ON/OFF BTM: 1245 1/17 - 1035 2/1

	TOP RECORDER	BOTTOM RECORDER
ELEMENT SERIAL NO:	50701	50700
RUN DEPTH: (MCF)	617.2	619
RUN DEPTH PRESS: (KPA)	6185	6208
GRADIENT-RUN DEPTH: (KPA/M)	10.428	10.643
PRESSURE AT MMF: (KPA)	6337	6344
DATUM DEPTH PRESS: (KPA)		

REMARKS: TOP RECORDER SHOWS FRICTION FOR 150HRS - USE BOTTOM DATA.

CHART READINGS AND CALCULATIONS

Company: BASK OIL

Location: 4-32-11-26-WPM

Element No. 50701

Range (KPa): 20685

IHW: 57284

360 hr Clock #: 13597

Run Depth: 617.2

Calib. Equation: 410.9

6.38

Calib. Date: 90OCT24

Date	Time	Cumulative	Deflection	P-PC	Pressure
91JAN17	1245	0.00	24.540	-0.1	10090
			ON BOTTOM - APPROX.		
91JAN17	1345	1.00	0.000	-6.4	0
91JAN17	1445	2.00	0.000	-6.4	0
91JAN17	1545	3.00	0.000	-6.4	0
91JAN17	1615	3.50	23.180	+0.4	9531
			START INJECTION		
91JAN17	1645	4.00	30.050	-2.0	12352
91JAN17	1715	4.50	30.110	-2.1	12377
91JAN17	1745	5.00	30.180	-2.1	12405
91JAN17	1815	5.50	30.280	-2.1	12446
91JAN17	1845	6.00	30.240	-2.1	12430
91JAN17	1945	7.00	30.390	-2.1	12492
91JAN17	2045	8.00	30.490	-2.1	12533
91JAN17	2145	9.00	30.520	-2.2	12545
91JAN17	2245	10.00	30.185	-2.1	12407
91JAN17	2315	10.50	30.175	-2.1	12403
91JAN17	2345	11.00	30.175	-2.1	12403
91JAN18	0045	12.00	30.260	-2.1	12438
91JAN18	0145	13.00	30.333	-2.1	12468
91JAN18	0245	14.00	30.380	-2.1	12487
91JAN18	0345	15.00	30.400	-2.1	12496
91JAN18	0445	16.00	30.345	-2.1	12473
91JAN18	0545	17.00	30.440	-2.1	12512
91JAN18	0645	18.00	30.490	-2.1	12533
91JAN18	0745	19.00	30.450	-2.1	12516
91JAN18	0845	20.00	30.430	-2.1	12508
91JAN18	0945	21.00	30.360	-2.1	12479
91JAN18	1045	22.00	30.390	-2.1	12492
91JAN18	1145	23.00	30.390	-2.1	12492
91JAN18	1245	24.00	30.430	-2.1	12508
91JAN18	1445	26.00	30.500	-2.2	12537
91JAN18	1715	28.50	30.610	-2.2	12582
91JAN18	1845	30.00	30.540	-2.2	12553
91JAN18	2045	32.00	30.600	-2.2	12578
91JAN18	2115	32.50	30.600	-2.2	12578
91JAN18	2245	34.00	30.350	-2.1	12475
91JAN19	0045	36.00	30.375	-2.1	12485
91JAN19	0245	38.00	30.405	-2.1	12498
91JAN19	0445	40.00	30.510	-2.2	12541

CHART READINGS AND CALCULATIONS

Company: SASK OIL

Location: 4-32-11-26-WPM

Element No. 50701

Range (kPa): 20685

IHM: 57284

360 hr Clock #: 13597

Run Depth: 617.2

Calib. Equation: 410.9

6.38

Calib. Date: 90OCT24

Date	Time	Cumulative	Deflection	P-PC	Pressure
91JAN19	0645	42.00	30.545	-2.2	12555
91JAN19	0845	44.00	30.580	-2.2	12570
91JAN19	0915	44.50	30.580	-2.2	12570
91JAN19	0930	44.75	30.585	-2.2	12572
91JAN19	1000	45.25	30.940	-2.2	12717
91JAN19	1030	45.75	30.585	-2.2	12572
91JAN19	1100	46.25	30.940	-2.2	12717
91JAN19	1130	46.75	30.700	-2.2	12619
91JAN19	1157	47.20	30.940	-2.2	12717
91JAN19	1232	47.78	30.650	-2.2	12598
91JAN19	1253	48.13	30.820	-2.2	12668
91JAN19	1333	48.80	30.500	-2.2	12537
91JAN19	1352	49.12	30.700	-2.2	12619
91JAN19	1423	49.63	30.520	-2.2	12545
91JAN19	1443	49.97	30.770	-2.2	12648
91JAN19	1513	50.47	30.530	-2.2	12549
91JAN19	1551	51.10	30.810	-2.2	12664
91JAN19	1618	51.55	30.565	-2.2	12563
91JAN19	1654	52.15	30.815	-2.2	12666
91JAN19	1715	52.50	30.615	-2.2	12584
91JAN19	1801	53.27	30.885	-2.2	12695
91JAN19	1823	53.63	30.665	-2.2	12604
91JAN19	1905	54.33	30.910	-2.2	12705
91JAN19	1928	54.72	30.700	-2.2	12619
91JAN19	1932	54.78	30.680	-2.2	12611
91JAN19	1938	54.88	30.415	-2.1	12502
91JAN19	2005	55.33	30.720	-2.2	12627
91JAN19	2035	55.83	30.500	-2.2	12537
91JAN19	2110	56.42	30.740	-2.2	12635
91JAN19	2137	56.87	30.530	-2.2	12549
91JAN19	2215	57.50	30.790	-2.2	12656
91JAN19	2237	57.87	30.550	-2.2	12557
91JAN19	2316	58.52	30.780	-2.2	12652
91JAN19	2338	58.88	30.540	-2.2	12553
91JAN20	0014	59.48	30.760	-2.2	12643
91JAN20	0041	59.93	30.540	-2.2	12553
91JAN20	0117	60.53	30.770	-2.2	12648
91JAN20	0143	60.97	30.490	-2.1	12533
91JAN20	0220	61.58	30.775	-2.2	12650
91JAN20	0247	62.03	30.580	-2.2	12570

CHART READINGS AND CALCULATIONS

Company: SASK OIL

Element No. 50701

Run Depth: 617.2

Range (kPa): 20685

Calib. Equation: 410.9

Location: 4-22-11-26-WFM

IHW: 57284

6.38

360 hr Clock #: 13597

Calib. Date: 9OCT24

Date	Time	Cumulative	Deflection	P-PC	Pressure
91JAN20	0324	62.65	30.800	-2.2	12660
91JAN20	0345	63.00	30.610	-2.2	12582
91JAN20	0428	63.72	30.820	-2.2	12668
91JAN20	0448	64.05	30.610	-2.2	12582
91JAN20	0529	64.73	30.820	-2.2	12668
91JAN20	0551	65.10	30.600	-2.2	12578
91JAN20	0627	65.70	30.825	-2.2	12670
91JAN20	0651	66.10	30.570	-2.2	12565
91JAN20	0725	66.67	30.800	-2.2	12660
91JAN20	0750	67.08	30.590	-2.2	12574
91JAN20	0828	67.72	30.805	-2.2	12662
91JAN20	0850	68.08	30.450	-2.1	12516
91JAN20	0927	68.70	30.640	-2.2	12594
91JAN20	0950	69.08	30.460	-2.1	12520
91JAN20	1027	69.70	30.680	-2.2	12611
91JAN20	1051	70.10	30.530	-2.2	12549
91JAN20	1137	70.87	30.530	-2.2	12549
91JAN20	1145	71.00	27.810	-1.2	11432
91JAN20	1215	71.50	27.775	-1.2	11418
91JAN20	1245	72.00	27.680	-1.2	11379
91JAN20	1315	72.50	28.830	-1.6	11851
91JAN20	1345	73.00	28.940	-1.6	11896
91JAN20	1415	73.50	29.950	-2.0	12311
91JAN20	1445	74.00	29.570	-1.9	12155
91JAN20	1515	74.50	30.390	-2.1	12492
91JAN20	1545	75.00	30.435	-2.1	12510
91JAN20	1615	75.50	30.440	-2.1	12512
END INJECTION					
91JAN20	1630	75.75	27.800	-1.2	11428
91JAN20	1645	76.00	27.780	-1.2	11420
91JAN20	1700	76.25	27.765	-1.2	11414
91JAN20	1715	76.50	27.510	-1.1	11309
91JAN20	1730	76.75	26.450	-0.7	10874
91JAN20	1745	77.00	26.425	-0.7	10864
91JAN20	1815	77.50	26.410	-0.7	10858
91JAN20	1845	78.00	25.390	-0.4	10439
91JAN20	1915	78.50	25.365	-0.4	10429
91JAN20	1945	79.00	24.630	-0.1	10127
91JAN20	2015	79.50	24.570	-0.1	10102
91JAN20	2045	80.00	24.080	+0.1	9901

CHART READINGS AND CALCULATIONS

Company: SASK OIL

Element No. 50701

Run Depth: 617.2

Range (kPa): 20685

Calib. Equation: 410.9

Location: 4-32-11-26-WFM

IHW: 57284

6.38

360 hr Clock #: 13597

Calib. Date: 90OCT24

Date	Time	Cumulative	Deflection	P-PC	Pressure
91JAN20	2115	80.50	24.020	+0.1	9876
91JAN20	2145	81.00	23.890	+0.2	9823
91JAN20	2215	81.50	23.460	+0.3	9646
91JAN20	2245	82.00	23.465	+0.3	9648
91JAN20	2315	82.50	23.075	+0.5	9488
91JAN20	2345	83.00	23.070	+0.5	9486
91JAN21	0015	83.50	22.675	+0.6	9324
91JAN21	0045	84.00	22.675	+0.6	9324
91JAN21	0115	84.50	22.380	+0.7	9203
91JAN21	0145	85.00	22.355	+0.7	9193
91JAN21	0215	85.50	22.095	+0.8	9086
91JAN21	0245	86.00	22.080	+0.8	9080
91JAN21	0315	86.50	22.000	+0.9	9047
91JAN21	0345	87.00	21.780	+0.9	8957
91JAN21	0415	87.50	21.770	+0.9	8953
91JAN21	0445	88.00	21.555	+1.0	8864
91JAN21	0545	89.00	21.320	+1.1	8768
91JAN21	0645	90.00	21.265	+1.1	8745
91JAN21	0745	91.00	21.030	+1.2	8649
91JAN21	0845	92.00	20.850	+1.3	8575
91JAN21	0945	93.00	20.670	+1.3	8501
91JAN21	1045	94.00	20.475	+1.4	8421
91JAN21	1145	95.00	20.440	+1.4	8407
91JAN21	1245	96.00	20.250	+1.5	8329
91JAN21	1345	97.00	20.095	+1.6	8265
91JAN21	1445	98.00	20.070	+1.6	8255
91JAN21	1545	99.00	19.950	+1.7	8205
91JAN21	1645	100.00	19.760	+1.8	8128
91JAN21	1745	101.00	19.705	+1.8	8105
91JAN21	1845	102.00	19.570	+1.9	8050
91JAN21	1945	103.00	19.535	+2.0	8035
91JAN21	2045	104.00	19.395	+2.1	7978
91JAN21	2145	105.00	19.290	+2.1	7935
91JAN21	2245	106.00	19.200	+2.2	7898
91JAN21	2345	107.00	19.135	+2.3	7871
91JAN22	0045	108.00	19.070	+2.3	7845
91JAN22	0145	109.00	18.970	+2.4	7804
91JAN22	0245	110.00	18.950	+2.4	7795
91JAN22	0345	111.00	18.835	+2.5	7748
91JAN22	0445	112.00	18.750	+2.5	7713

CHART READINGS AND CALCULATIONS

Company: SASK OIL

Location: 4-32-11-26-WPM

Element No. 50701

Range (kPa): 20485

IHH: 57284

360 hr Clock #: 13597

Run Depth: 617.2

Calib. Equation: 410.9 6.38

Calib. Date: 90OCT24

Date	Time	Cumulative	Deflection	P-PC	Pressure
91JAN22	0545	113.00	18.680	+2.6	7685
91JAN22	0645	114.00	18.620	+2.6	7660
91JAN22	0745	115.00	18.575	+2.7	7642
91JAN22	0845	116.00	18.495	+2.7	7609
91JAN22	0945	117.00	18.425	+2.8	7580
91JAN22	1045	118.00	18.390	+2.8	7566
91JAN22	1145	119.00	18.330	+2.8	7541
91JAN22	1245	120.00	18.265	+2.9	7514
91JAN22	1445	122.00	18.165	+3.0	7473
91JAN22	1645	124.00	18.075	+3.0	7436
91JAN22	1845	126.00	17.960	+3.1	7389
91JAN22	2045	128.00	17.860	+3.2	7348
91JAN22	2245	130.00	17.780	+3.2	7315
91JAN23	0045	132.00	17.700	+3.3	7283
91JAN23	0245	134.00	17.615	+3.4	7248
91JAN23	0445	136.00	17.540	+3.4	7217
91JAN23	0645	138.00	17.470	+3.5	7188
91JAN23	0845	140.00	17.390	+3.5	7155
91JAN23	1045	142.00	17.320	+3.6	7127
91JAN23	1245	144.00	17.255	+3.6	7100
91JAN23	1445	146.00	17.200	+3.7	7078
91JAN23	1645	148.00	17.130	+3.7	7049
91JAN23	1845	150.00	17.070	+3.8	7024
91JAN23	2045	152.00	17.015	+3.8	7002
91JAN23	2245	154.00	16.970	+3.8	6983
91JAN24	0045	156.00	16.910	+3.9	6959
91JAN24	0245	158.00	16.850	+3.9	6934
91JAN24	0445	160.00	16.800	+4.0	6913
91JAN24	0645	162.00	16.760	+4.0	6897
91JAN24	0845	164.00	16.710	+4.0	6877
91JAN24	1045	166.00	16.670	+4.0	6860
91JAN24	1245	168.00	16.620	+4.1	6840
91JAN24	1645	172.00	16.530	+4.2	6803
91JAN24	2045	176.00	16.460	+4.2	6774
91JAN25	0045	180.00	16.390	+4.3	6745
91JAN25	0445	184.00	16.320	+4.3	6717
91JAN25	0845	188.00	16.250	+4.4	6688
91JAN25	1245	192.00	16.180	+4.4	6659
91JAN25	1645	196.00	16.110	+4.5	6630
91JAN25	2045	200.00	16.050	+4.5	6606

CHART READINGS AND CALCULATIONS

Company: SASK OIL

Element No. 50701

Run Depth: 617.2

Range (kPa): 20685

Calib. Equation: 410.9

Location: 4-32-11-26-WFM

IHM: 57284

360 hr Clock #: 13597

Calib. Date: 90OCT24

Date	Time	Cumulative	Deflection	P-PC	Pressure
91JAN26	0045	204.00	15.990	+4.5	6581
91JAN26	0445	208.00	15.940	+4.6	6561
91JAN26	0845	212.00	15.985	+4.6	6538
91JAN26	1245	216.00	15.935	+4.7	6518
91JAN26	1645	220.00	15.785	+4.7	6497
91JAN26	2045	224.00	15.730	+4.7	6475
91JAN27	0045	228.00	15.690	+4.8	6458
91JAN27	0445	232.00	15.650	+4.8	6442
91JAN27	0845	236.00	15.620	+4.8	6429
91JAN27	1245	240.00	15.590	+4.8	6417
91JAN27	1645	244.00	15.550	+4.9	6401
91JAN27	2045	248.00	15.525	+4.9	6390
91JAN28	0445	256.00	15.460	+4.9	6364
91JAN28	0845	260.00	15.435	+4.9	6354
91JAN28	1245	264.00	15.410	+5.0	6343
91JAN28	1645	268.00	15.380	+5.0	6331
91JAN28	2045	272.00	15.355	+5.0	6321
91JAN29	0045	276.00	15.325	+5.0	6308
91JAN29	0445	280.00	15.300	+5.0	6298
91JAN29	0845	284.00	15.270	+5.1	6286
91JAN29	1245	288.00	15.240	+5.1	6274
91JAN29	1645	292.00	15.220	+5.1	6265
91JAN29	2045	296.00	15.190	+5.1	6253
91JAN30	0045	300.00	15.160	+5.1	6241
91JAN30	0445	304.00	15.140	+5.2	6233
91JAN30	0845	308.00	15.115	+5.2	6222
91JAN30	1245	312.00	15.090	+5.2	6212
91JAN30	1645	316.00	15.070	+5.2	6204
91JAN30	2045	320.00	15.050	+5.2	6196
91JAN31	0045	324.00	15.030	+5.2	6187
91JAN31	0445	328.00	15.050	+5.2	6196
91JAN31	0845	332.00	14.990	+5.3	6171
91JAN31	1245	336.00	14.965	+5.3	6161
91JAN31	1645	340.00	14.955	+5.3	6157
91JAN31	2045	344.00	14.935	+5.3	6148
91FEB01	0045	348.00	14.910	+5.3	6138
91FEB01	0445	352.00	14.910	+5.3	6138
91FEB01	0845	356.00	14.900	+5.3	6134
91FEB01	1035	357.93	15.025	+5.2	6185

OFF BOTTOM

CHART READINGS AND CALCULATIONS

Company: SASK DIL
 Element No. 50700
 Run Depth: 619

Range (kPa): 20685
 Calib. Equation: 411.95

Location: 4-32-11-26-WFM
 IHH: 49039
 3.55

360 hr Clock #: 13598
 Calib. Date: 90OCT24

Date	Time	Cumulative	Deflection	P-PC	Pressure
91JAN17	1245	0.00	24.540	+0.6	10113
			ON BOTTOM - APPROX.		
91JAN17	1345	1.00	23.610	+0.8	9730
91JAN17	1445	2.00	23.600	+0.8	9726
91JAN17	1545	3.00	23.200	+0.8	9562
91JAN17	1615	3.50	23.190	+0.8	9557
			START INJECTION		
91JAN17	1645	4.00	24.245	+0.6	9992
91JAN17	1715	4.50	27.570	+0.0	11361
91JAN17	1745	5.00	29.780	-0.4	12271
91JAN17	1815	5.50	29.615	-0.3	12203
91JAN17	1845	6.00	29.800	-0.4	12279
91JAN17	1945	7.00	30.135	-0.4	12417
91JAN17	2045	8.00	30.290	-0.4	12481
91JAN17	2145	9.00	30.440	-0.4	12543
91JAN17	2245	10.00	30.560	-0.4	12592
91JAN17	2315	10.50	30.590	-0.4	12605
91JAN17	2345	11.00	30.275	-0.4	12475
91JAN18	0045	12.00	30.280	-0.4	12477
91JAN18	0145	13.00	30.355	-0.4	12508
91JAN18	0245	14.00	30.410	-0.4	12531
91JAN18	0345	15.00	30.470	-0.4	12555
91JAN18	0445	16.00	30.415	-0.4	12533
91JAN18	0545	17.00	30.475	-0.4	12557
91JAN18	0645	18.00	30.535	-0.4	12582
91JAN18	0745	19.00	30.565	-0.4	12594
91JAN18	0845	20.00	30.580	-0.4	12601
91JAN18	0945	21.00	30.450	-0.4	12547
91JAN18	1045	22.00	30.450	-0.4	12547
91JAN18	1145	23.00	30.465	-0.4	12553
91JAN18	1245	24.00	30.480	-0.4	12559
91JAN18	1445	26.00	30.560	-0.4	12592
91JAN18	1715	28.50	30.740	-0.3	12667
91JAN18	1845	30.00	30.595	-0.4	12607
91JAN18	2045	32.00	30.650	-0.3	12629
91JAN18	2115	32.50	30.670	-0.3	12638
91JAN18	2245	34.00	30.430	-0.4	12539
91JAN19	0045	36.00	30.440	-0.4	12543
91JAN19	0245	38.00	30.490	-0.4	12564
91JAN19	0445	40.00	30.550	-0.4	12588

CHART READINGS AND CALCULATIONS

Company: SASK OIL

Location: 4-32-11-26-WPM

Element No. 50700

Range (kPa): 20685

IH#: 49039

360 hr Clock #: 13598

Run Depth: 619

Calib. Equation: 411.95

2.55

Calib. Date: 90OCT24

Date	Time	Cumulative	Deflection	P-PC	Pressure
91JAN19	0645	42.00	30.620	-0.3	12617
91JAN19	0845	44.00	30.700	-0.3	12650
91JAN19	0915	44.50	30.720	-0.3	12658
91JAN19	0930	44.75	30.660	-0.3	12634
91JAN19	1000	45.25	31.050	-0.3	12794
91JAN19	1030	45.75	30.745	-0.3	12669
91JAN19	1100	46.25	31.040	-0.3	12790
91JAN19	1130	46.75	30.735	-0.3	12665
91JAN19	1157	47.20	31.020	-0.3	12782
91JAN19	1232	47.78	30.670	-0.3	12638
91JAN19	1253	48.13	30.935	-0.3	12747
91JAN19	1333	48.80	30.560	-0.4	12592
91JAN19	1352	49.12	30.810	-0.3	12695
91JAN19	1423	49.63	30.550	-0.4	12588
91JAN19	1443	49.97	30.830	-0.3	12704
91JAN19	1513	50.47	30.560	-0.4	12592
91JAN19	1551	51.10	30.920	-0.3	12741
91JAN19	1618	51.55	30.610	-0.3	12613
91JAN19	1654	52.15	30.935	-0.3	12747
91JAN19	1715	52.50	30.640	-0.3	12625
91JAN19	1801	53.27	30.890	-0.3	12770
91JAN19	1823	53.63	30.700	-0.3	12650
91JAN19	1905	54.33	31.020	-0.3	12782
91JAN19	1928	54.72	30.700	-0.3	12650
91JAN19	1932	54.78	30.775	-0.3	12681
91JAN19	1938	54.88	30.690	-0.3	12646
91JAN19	2005	55.33	30.815	-0.3	12697
91JAN19	2035	55.83	30.515	-0.4	12574
91JAN19	2110	56.42	30.830	-0.3	12704
91JAN19	2137	56.87	30.540	-0.4	12584
91JAN19	2215	57.50	30.850	-0.3	12712
91JAN19	2237	57.87	30.560	-0.4	12592
91JAN19	2316	58.52	30.880	-0.3	12724
91JAN19	2338	58.88	30.595	-0.4	12607
91JAN20	0014	59.48	30.880	-0.3	12724
91JAN20	0041	59.93	30.560	-0.4	12592
91JAN20	0117	60.53	30.880	-0.3	12724
91JAN20	0143	60.97	30.570	-0.4	12597
91JAN20	0220	61.58	30.890	-0.3	12728
91JAN20	0247	62.03	30.570	-0.4	12597

CHART READINGS AND CALCULATIONS

Company: SASK OIL

Location: 4-32-11-26-WFM

Element No. 50700

Range (kPa): 20685

IH#: 49039

360 hr Clock #: 13596

Run Depth: 619

Calib. Equation: 411.95

3.55

Calib. Date: 90OCT24

Date	Time	Cumulative	Deflection	P-PC	Pressure
91JAN20	0324	62.65	30.895	-0.3	12730
91JAN20	0345	63.00	30.610	-0.3	12613
91JAN20	0428	63.72	30.920	-0.3	12741
91JAN20	0448	64.05	30.640	-0.3	12625
91JAN20	0529	64.73	30.935	-0.3	12747
91JAN20	0551	65.10	30.650	-0.3	12629
91JAN20	0627	65.70	30.930	-0.3	12745
91JAN20	0651	66.10	30.625	-0.3	12619
91JAN20	0725	66.67	30.900	-0.3	12733
91JAN20	0750	67.08	30.605	-0.4	12611
91JAN20	0828	67.72	30.915	-0.3	12739
91JAN20	0850	68.08	30.620	-0.3	12617
91JAN20	0927	68.70	30.920	-0.3	12741
91JAN20	0950	69.08	30.485	-0.4	12561
91JAN20	1027	69.70	30.770	-0.3	12679
91JAN20	1051	70.10	30.485	-0.4	12561
91JAN20	1137	70.87	30.785	-0.3	12685
91JAN20	1145	71.00	29.880	-0.4	12312
91JAN20	1215	71.50	29.530	-0.1	11756
91JAN20	1245	72.00	27.685	+0.0	11408
91JAN20	1315	72.50	27.030	+0.1	11139
91JAN20	1345	73.00	28.185	-0.1	11614
91JAN20	1415	73.50	29.235	-0.3	12047
91JAN20	1445	74.00	29.760	-0.4	12263
91JAN20	1515	74.50	30.090	-0.4	12399
91JAN20	1545	75.00	30.305	-0.4	12487
91JAN20	1615	75.50	30.490	-0.4	12564
END INJECTION					
91JAN20	1630	75.75	29.530	-0.3	12168
91JAN20	1645	76.00	29.750	-0.2	11847
91JAN20	1700	76.25	28.200	-0.1	11620
91JAN20	1715	76.50	27.775	-0.0	11445
91JAN20	1730	76.75	27.380	+0.1	11283
91JAN20	1745	77.00	27.060	+0.1	11151
91JAN20	1815	77.50	26.480	+0.2	10912
91JAN20	1845	78.00	25.955	+0.3	10696
91JAN20	1915	78.50	25.525	+0.4	10519
91JAN20	1945	79.00	25.138	+0.5	10360
91JAN20	2015	79.50	24.800	+0.5	10220
91JAN20	2045	80.00	24.480	+0.6	10089

CHART READINGS AND CALCULATIONS

Company: SASK OIL
 Element No. 50700
 Run Depth: 619

Range (kPa): 20685 IH#: 49039
 Calib. Equation: 411.95 3.55

Location: 4-32-11-26-WPM
 360 hr Clock #: 13598
 Calib. Date: 90OCT24

Date	Time	Cumulative	Deflection	P-PC	Pressure
91JAN20	2115	80.50	24.215	+0.6	9980
91JAN20	2145	81.00	23.960	+0.7	9875
91JAN20	2215	81.50	23.715	+0.7	9774
91JAN20	2245	82.00	23.500	+0.8	9685
91JAN20	2315	82.50	23.290	+0.8	9599
91JAN20	2345	83.00	23.100	+0.8	9520
91JAN21	0015	83.50	22.920	+0.9	9446
91JAN21	0045	84.00	22.760	+0.9	9380
91JAN21	0115	84.50	22.595	+0.9	9312
91JAN21	0145	85.00	22.445	+1.0	9251
91JAN21	0215	85.50	22.300	+1.0	9191
91JAN21	0245	86.00	22.165	+1.0	9135
91JAN21	0315	86.50	22.030	+1.0	9080
91JAN21	0345	87.00	21.915	+1.1	9032
91JAN21	0415	87.50	21.790	+1.1	8981
91JAN21	0445	88.00	21.680	+1.1	8936
91JAN21	0545	89.00	21.470	+1.1	8849
91JAN21	0645	90.00	21.270	+1.2	8767
91JAN21	0745	91.00	21.085	+1.2	8691
91JAN21	0845	92.00	20.920	+1.2	8623
91JAN21	0945	93.00	20.760	+1.3	8557
91JAN21	1045	94.00	20.600	+1.3	8491
91JAN21	1145	95.00	20.460	+1.3	8433
91JAN21	1245	96.00	20.230	+1.4	8339
91JAN21	1345	97.00	20.200	+1.4	8326
91JAN21	1445	98.00	20.075	+1.4	8275
91JAN21	1545	99.00	19.960	+1.4	8227
91JAN21	1645	100.00	19.855	+1.4	8184
91JAN21	1745	101.00	19.740	+1.5	8137
91JAN21	1845	102.00	19.640	+1.5	8096
91JAN21	1945	103.00	19.540	+1.5	8055
91JAN21	2045	104.00	19.450	+1.5	8017
91JAN21	2145	105.00	19.360	+1.5	7980
91JAN21	2245	106.00	19.270	+1.5	7943
91JAN21	2345	107.00	19.185	+1.6	7908
91JAN22	0045	108.00	19.110	+1.6	7877
91JAN22	0145	109.00	19.030	+1.6	7845
91JAN22	0245	110.00	18.950	+1.6	7812
91JAN22	0345	111.00	18.880	+1.6	7783
91JAN22	0445	112.00	18.810	+1.6	7754

CHART READINGS AND CALCULATIONS

Company: SASK OIL

Location: 4-32-11-26-WPM

Element No. 50700

Range (kPa): 20685

IH#: 49039

360 hr Clock #: 13598

Run Depth: 619

Calib. Equation: 411.95

3.55

Calib. Date: 9OCT24

Date	Time	Cumulative	Deflection	P-PC	Pressure
91JAN22	0545	113.00	18.745	+1.6	7727
91JAN22	0645	114.00	18.680	+1.7	7700
91JAN22	0745	115.00	18.610	+1.7	7672
91JAN22	0845	116.00	18.500	+1.7	7626
91JAN22	0945	117.00	18.490	+1.7	7622
91JAN22	1045	118.00	18.430	+1.7	7597
91JAN22	1145	119.00	18.375	+1.7	7575
91JAN22	1245	120.00	18.315	+1.7	7550
91JAN22	1445	122.00	18.210	+1.7	7507
91JAN22	1645	124.00	18.110	+1.8	7466
91JAN22	1845	126.00	18.010	+1.8	7425
91JAN22	2045	128.00	17.915	+1.8	7385
91JAN22	2245	130.00	17.830	+1.8	7350
91JAN23	0045	132.00	17.740	+1.8	7313
91JAN23	0245	134.00	17.660	+1.8	7280
91JAN23	0445	136.00	17.580	+1.9	7247
91JAN23	0645	138.00	17.505	+1.9	7217
91JAN23	0845	140.00	17.435	+1.9	7188
91JAN23	1045	142.00	17.365	+1.9	7159
91JAN23	1245	144.00	17.300	+1.9	7132
91JAN23	1445	146.00	17.240	+1.9	7107
91JAN23	1645	148.00	17.175	+1.9	7081
91JAN23	1845	150.00	17.120	+1.9	7058
91JAN23	2045	152.00	17.060	+2.0	7033
91JAN23	2245	154.00	17.000	+2.0	7009
91JAN24	0045	156.00	16.950	+2.0	6988
91JAN24	0245	158.00	16.900	+2.0	6967
91JAN24	0445	160.00	16.850	+2.0	6947
91JAN24	0645	162.00	16.810	+2.0	6930
91JAN24	0845	164.00	16.760	+2.0	6910
91JAN24	1045	166.00	16.710	+2.0	6889
91JAN24	1245	168.00	16.665	+2.0	6871
91JAN24	1645	172.00	16.575	+2.0	6834
91JAN24	2045	176.00	16.495	+2.1	6801
91JAN25	0045	180.00	16.410	+2.1	6766
91JAN25	0445	184.00	16.345	+2.1	6739
91JAN25	0845	188.00	16.280	+2.1	6712
91JAN25	1245	192.00	16.210	+2.1	6683
91JAN25	1645	196.00	16.145	+2.1	6657
91JAN25	2045	200.00	16.090	+2.1	6634

CHART READINGS AND CALCULATIONS

Company: SASK OIL

Location: 4-32-11-26-WPM

Element No. 50700

Range (kPa): 20685

IH#: 49039

360 hr Clock #: 13596

Run Depth: 619

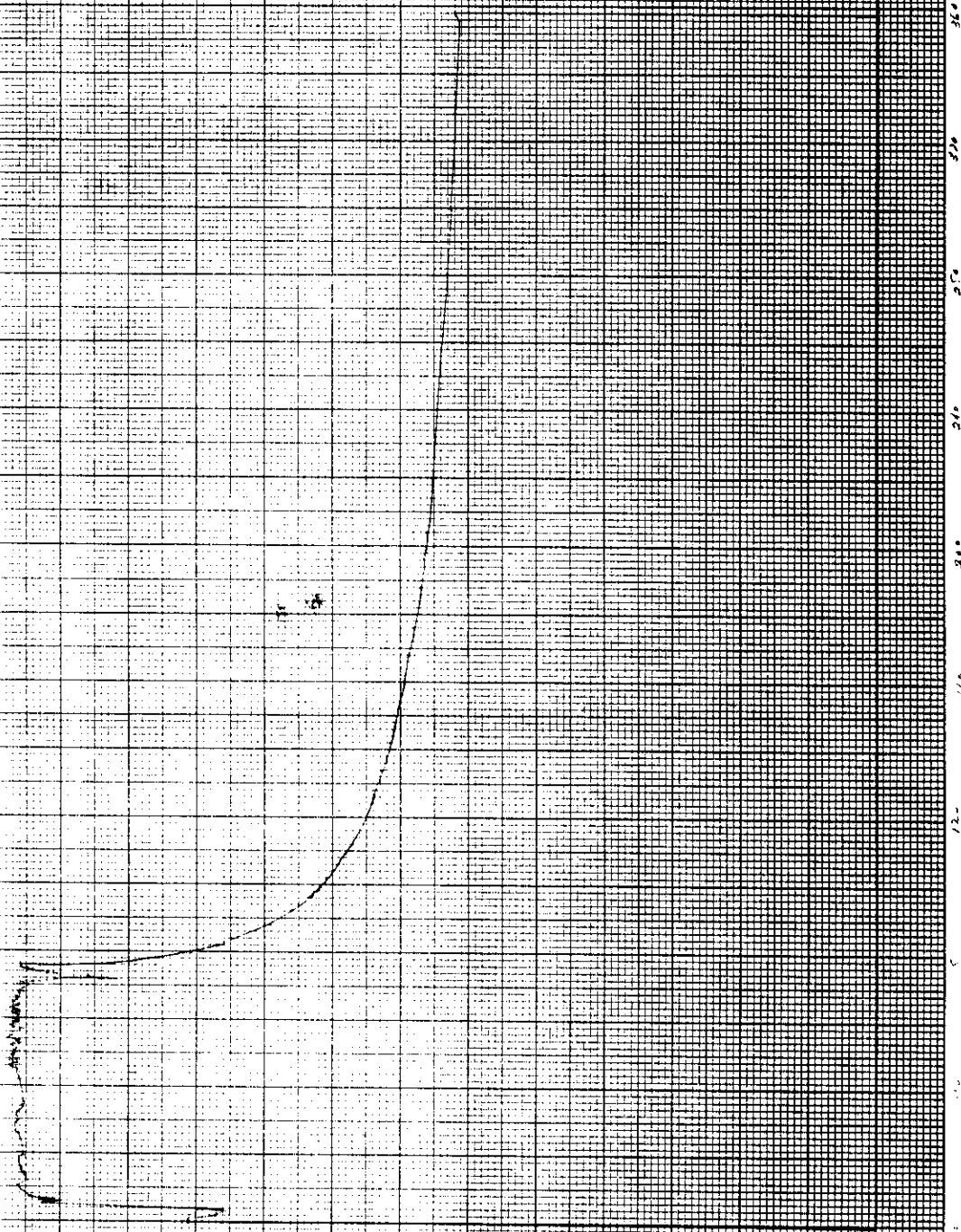
Calib. Equation: $411.95 - 3.55$

Calib. Date: 90OCT24

Date	Time	Cumulative	Deflection	P-PC	Pressure
91JAN26	0045	204.00	16.025	+2.1	6607
91JAN26	0445	208.00	15.980	+2.2	6589
91JAN26	0845	212.00	15.920	+2.2	6564
91JAN26	1245	216.00	15.865	+2.2	6541
91JAN26	1645	220.00	15.820	+2.2	6523
91JAN26	2045	224.00	15.775	+2.2	6504
91JAN27	0045	228.00	15.730	+2.2	6486
91JAN27	0445	232.00	15.690	+2.2	6469
91JAN27	0845	236.00	15.660	+2.2	6457
91JAN27	1245	240.00	15.625	+2.2	6442
91JAN27	1645	244.00	15.590	+2.2	6428
91JAN27	2045	248.00	15.560	+2.2	6416
91JAN28	0445	256.00	15.500	+2.2	6391
91JAN28	0845	260.00	15.470	+2.2	6379
91JAN28	1245	264.00	15.440	+2.3	6366
91JAN28	1645	268.00	15.415	+2.3	6356
91JAN28	2045	272.00	15.385	+2.3	6344
91JAN29	0045	276.00	15.350	+2.3	6329
91JAN29	0445	280.00	15.320	+2.3	6317
91JAN29	0845	284.00	15.295	+2.3	6307
91JAN29	1245	288.00	15.270	+2.3	6296
91JAN29	1645	292.00	15.240	+2.3	6284
91JAN29	2045	296.00	15.215	+2.3	6274
91JAN30	0045	300.00	15.195	+2.3	6265
91JAN30	0445	304.00	15.165	+2.3	6253
91JAN30	0845	308.00	15.140	+2.3	6243
91JAN30	1245	312.00	15.120	+2.3	6235
91JAN30	1645	316.00	15.095	+2.3	6224
91JAN30	2045	320.00	15.080	+2.3	6218
91JAN31	0045	324.00	15.050	+2.3	6206
91JAN31	0445	328.00	15.035	+2.3	6200
91JAN31	0845	332.00	15.000	+2.3	6185
91JAN31	1245	336.00	15.000	+2.3	6185
91JAN31	1645	340.00	14.970	+2.3	6173
91JAN31	2045	344.00	14.945	+2.3	6162
91FEB01	0045	348.00	14.945	+2.3	6162
91FEB01	0445	352.00	14.910	+2.4	6146
91FEB01	0845	356.00	14.900	+2.4	6144
91FEB01	1035	357.83	15.055	+2.3	6208

OFF BOTTOM

North Virdan Unit #2
4-32-11-26-WPM
January 17, 1991



MOOSE MOUNTAIN
WELL SERVICES LTD.

COMPANY: SASK OIL	WELL NAME: NORTH VIRDAN UNIT# 2
ADDRESS: REGINA SASKATCHEWAN	LOCATION: 4-33-11-26-WPM
FIELD-POOL: SCALLION	WELL STATUS:
TYPE OF TEST: STATIC GRADIENT	DATE OF TEST: 91FEB01
PERF/OH INTERVAL: 631 - 640	PRODUCING THROUGH: 60.3 TUBE@ 647
ELEVATIONS: (GL) 483.20 (KB) 486.90	MP PROD. INTER: 631.8 GL
POOL DATUM:	DATUM DEPTH: (DF)

PUT IN: 1615 1/20/91	RUN DEPTH TEMP: (C) 27
DWG PRESS: (KPA) T=0 C=0	ON/OFF BTM: 1228 - 1243

	TOP RECORDER	BOTTOM RECORDER
ELEMENT SERIAL NO:	50701	50700
RUN DEPTH: (MDF)	630	631.8
RUN DEPTH PRESS: (KPA)	6233	6261
GRADIENT-RUN DEPTH: (KPA/M)	10.428	10.643
PRESSURE AT MMP: (KPA)	6252	6261
DATUM DEPTH PRESS: (KPA)		

REMARKS:

Company: SASK OIL

Location: 4-32-11-26-WFM

Element #: 50701 Range(kPa): 20685 IH#: 57284 C hr Clock #: A14054

Run Date: 91FEB01 Calib. Equation: $410.9 \pm .38$ Calib. Date: 90OCT24

Depth Below cfm	Time	Deflection mm	P-PC kPa	Pressure kPa	Gradient kPa/m
-1.80	1118-1123	0.000	+0	0	0.000
98.20	1124-1129	1.625	-4	670	6.702
198.20	1131-1136	4.170	-0	1720	10.486
298.20	1139-1144	6.700	+4	2763	10.434
398.20	1145-1150	9.240	+8	3811	10.476
448.20	1151-1156	10.515	+8	4336	10.485
498.20	1158-1203	11.800	+8	4863	10.541
548.20	1204-1209	13.070	+7	5384	10.418
577.20	1210-1215	13.710	+6	5646	10.500
598.20	1216-1221	14.340	+6	5904	10.536
618.20	1222-1227	14.840	+5	6110	10.254
650.00	1228-1243	15.140	+5	6233	10.428

Element #: 50700 Range(kPa): 20685 IH#: 49039 C hr Clock #: A15009

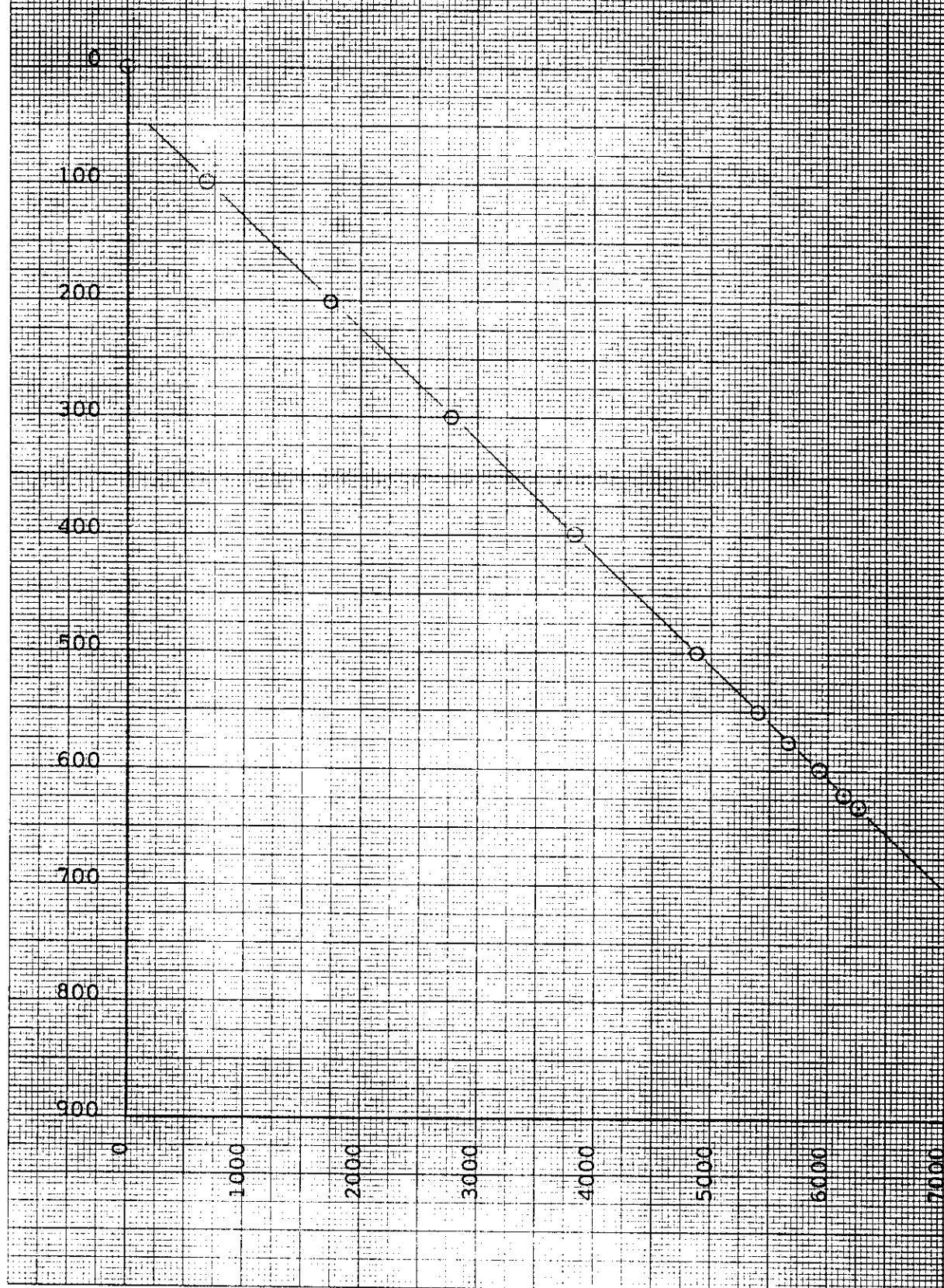
Run Date: 91FEB01 Calib. Equation: 411.95 ± 0.55 Calib. Date: 90OCT24

Depth Below cfm	Time	Deflection mm	P-PC kPa	Pressure kPa	Gradient kPa/m
0.00	1118-1123	0.000	+0	0	0.000
100.00	1124-1129	1.635	-2	675	6.746
200.00	1131-1136	4.230	-1	1741	10.666
300.00	1139-1144	6.750	+1	2785	10.440
400.00	1145-1150	9.295	+3	3835	10.501
450.00	1151-1156	10.560	+3	4357	10.430
500.00	1158-1203	11.835	+3	4882	10.500
550.00	1204-1209	13.105	+3	5405	10.459
575.00	1210-1215	13.745	+3	5668	10.541
600.00	1216-1221	14.380	+2	5930	10.459
620.00	1222-1227	14.880	+2	6136	10.294
631.80	1228-1243	15.185	+2	6261	10.643

46 1510

K&E 10 X 10 TO THE CENTIMETER 18 X 25 CM.
KEUFFEL & ESSER CO. MADE IN U.S.A.

North Virdan Unit #2
4-32-11-26-WPM
February 1, 1991



**PRESSURE BUILDUP TEST REPORT
ICGR ET AL SCALLION
16-30-11-26 W1M
LODGEPOLE CHERTY
JANUARY 17-31, 1991**

**PREPARED BY: John Sliva
Formation Evaluation
March 5, 1991
JS8873**

I. INTRODUCTION

A pressure buildup test was performed on the Lodgepole Cherty formation at ICGR et al Scallion 16-30-11-26 W1M in January, 1991. The well was shut-in on January 17, 1991 with fluid levels and casing pressures taken until January 31, 1991 when the test was concluded. The results of this test are as follows:

Summary of Results

Average Reservoir Pressure (P_R)	6,462.4 KPag (absolute) @ MPP
Flow Capacity (Kh) _o	63.64 md.m
Permeability (K) _o	25.46 md
Skin factor (S)	+0.1

II. DISCUSSION:

All bottom hole pressures were calculated by taking fluid levels and casing pressures and applying the formula:

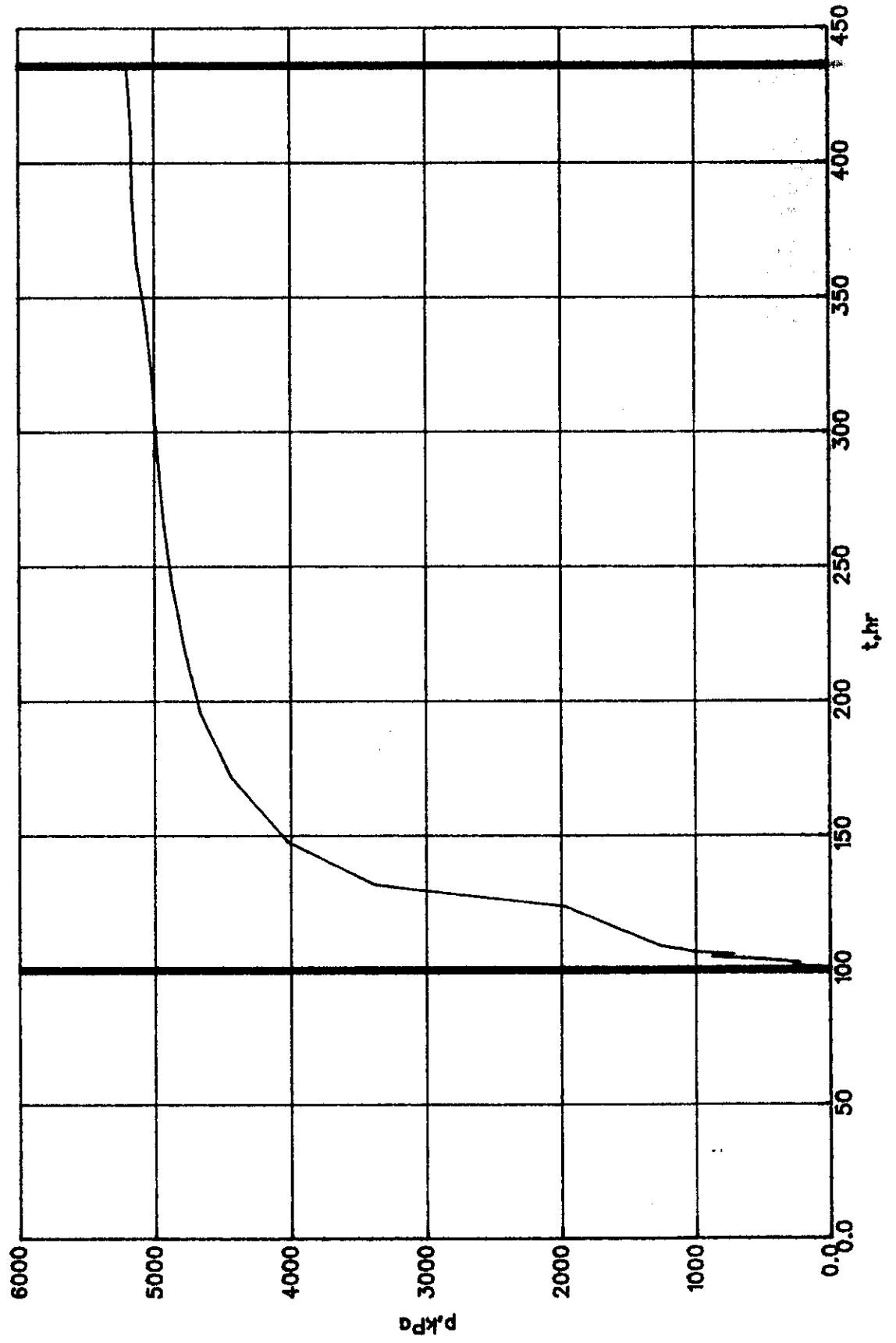
$$P_{\text{Bottomhole}} = P_{F/L} + P_{\text{csg}} + P_{GC}$$

A fluid gradient of 0.40 psi/ft. was assumed for calculating $P_{F/L}$. A summary of all field data can be found in the table at the end of this report.

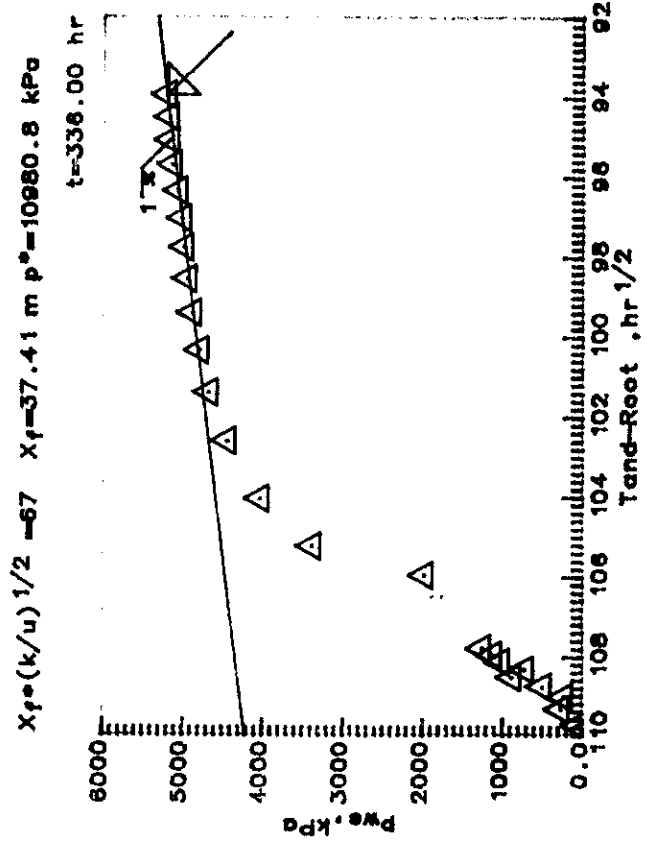
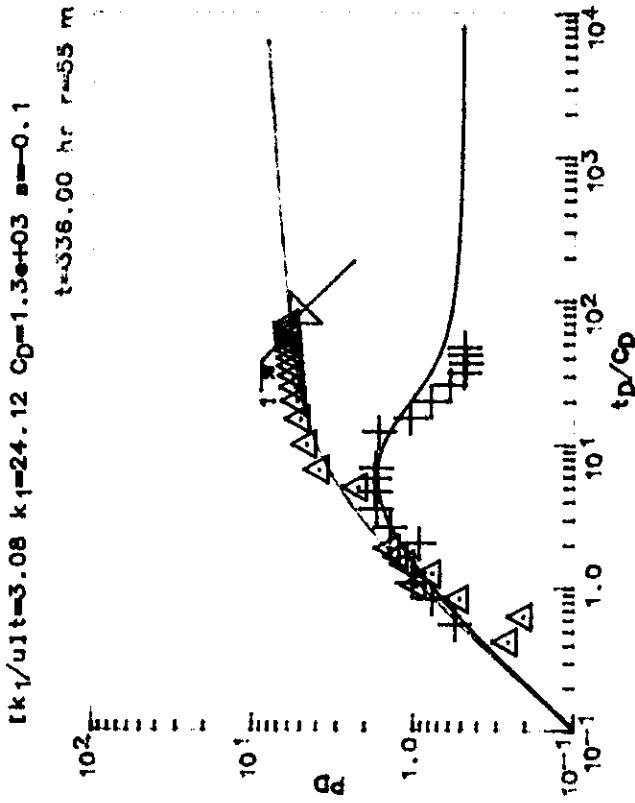
An MRD diagnostic plot of the buildup data suggests the late time data may be in radial flow. A reasonable typecurve match of the buildup data was found utilizing the Bourdet et al - Storage and Skin with Derivative. This match suggests the late time data was in radial flow and as such an analysis utilizing semi-log techniques is possible. The resulting Horner analysis finds a Kh and skin that match those found in the typecurve analysis reasonably close. This further confirms that the right model was chosen.

ICGR ET AL SCALLION
16-30-11-26W3M

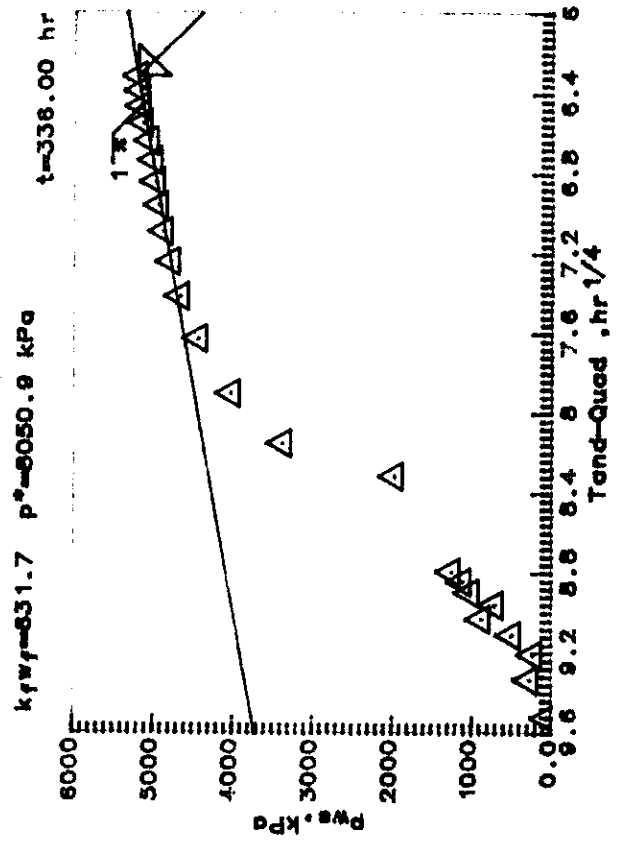
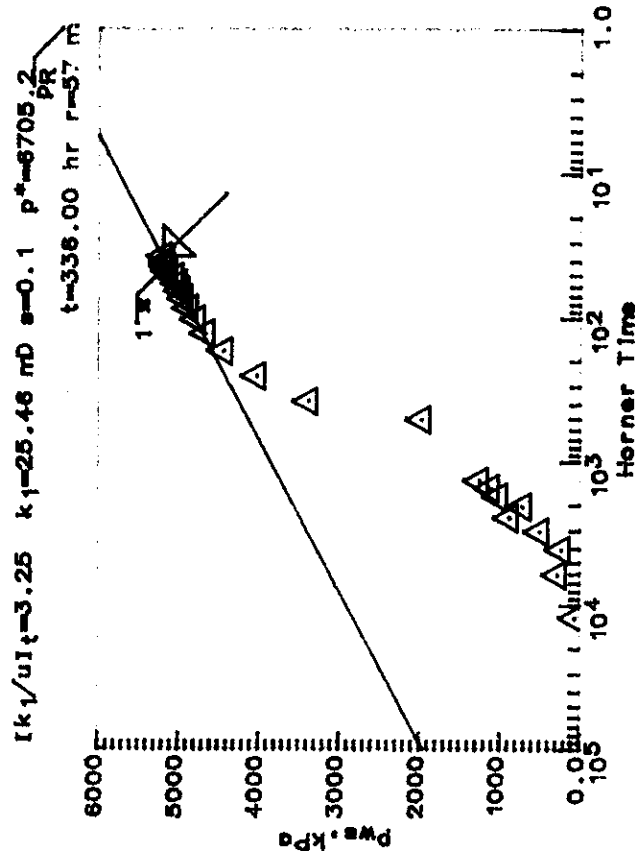
LODGEPOLE CHERTY
JANUARY 17-31, 1991



ICGR ET AL SCALLION
16-30-11-26W3M



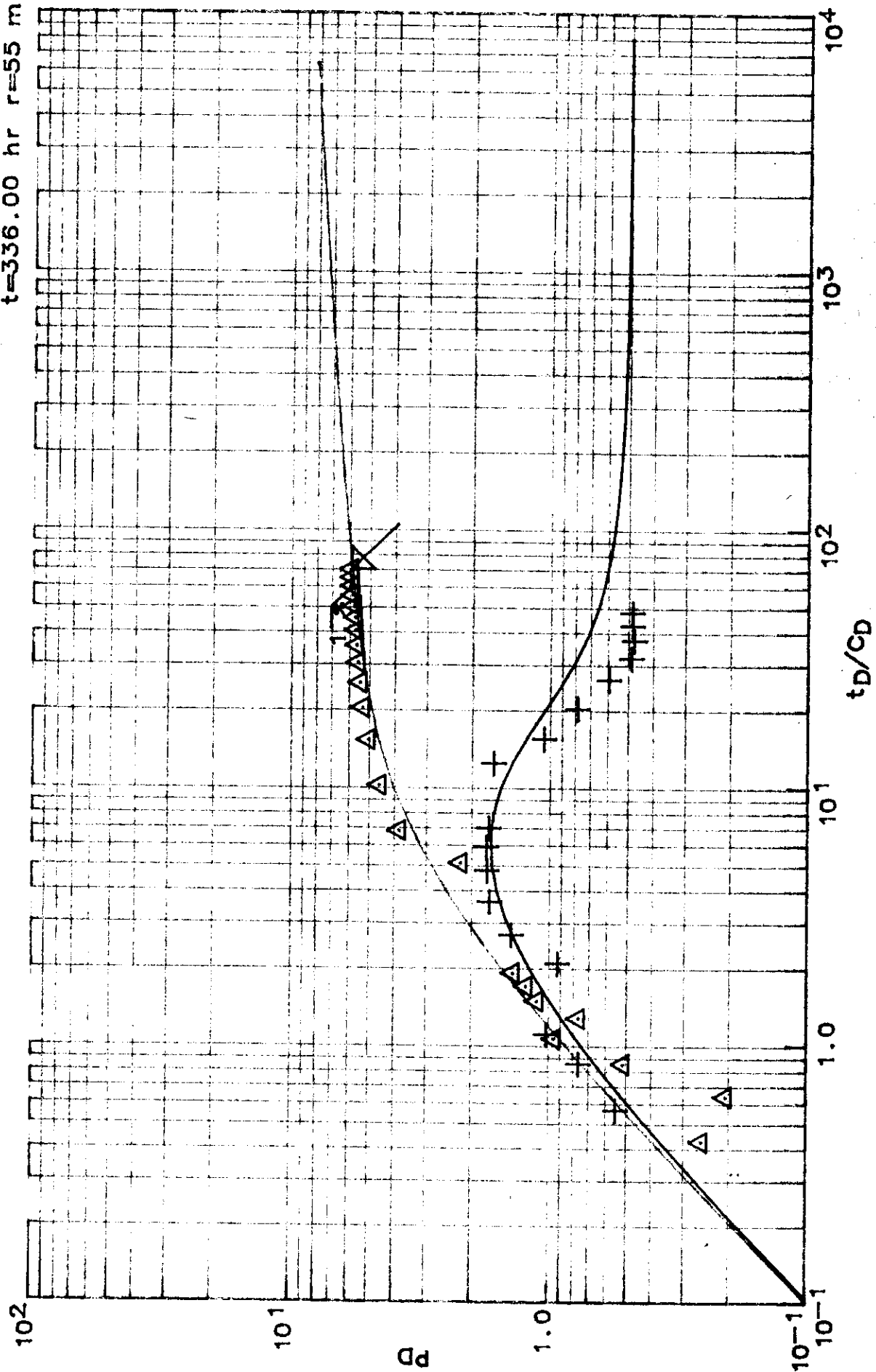
LODGEPOLE CHERTY
JANUARY 17-31, 1991



LODGEPOLE CHERTY
JANUARY 17-31, 1991

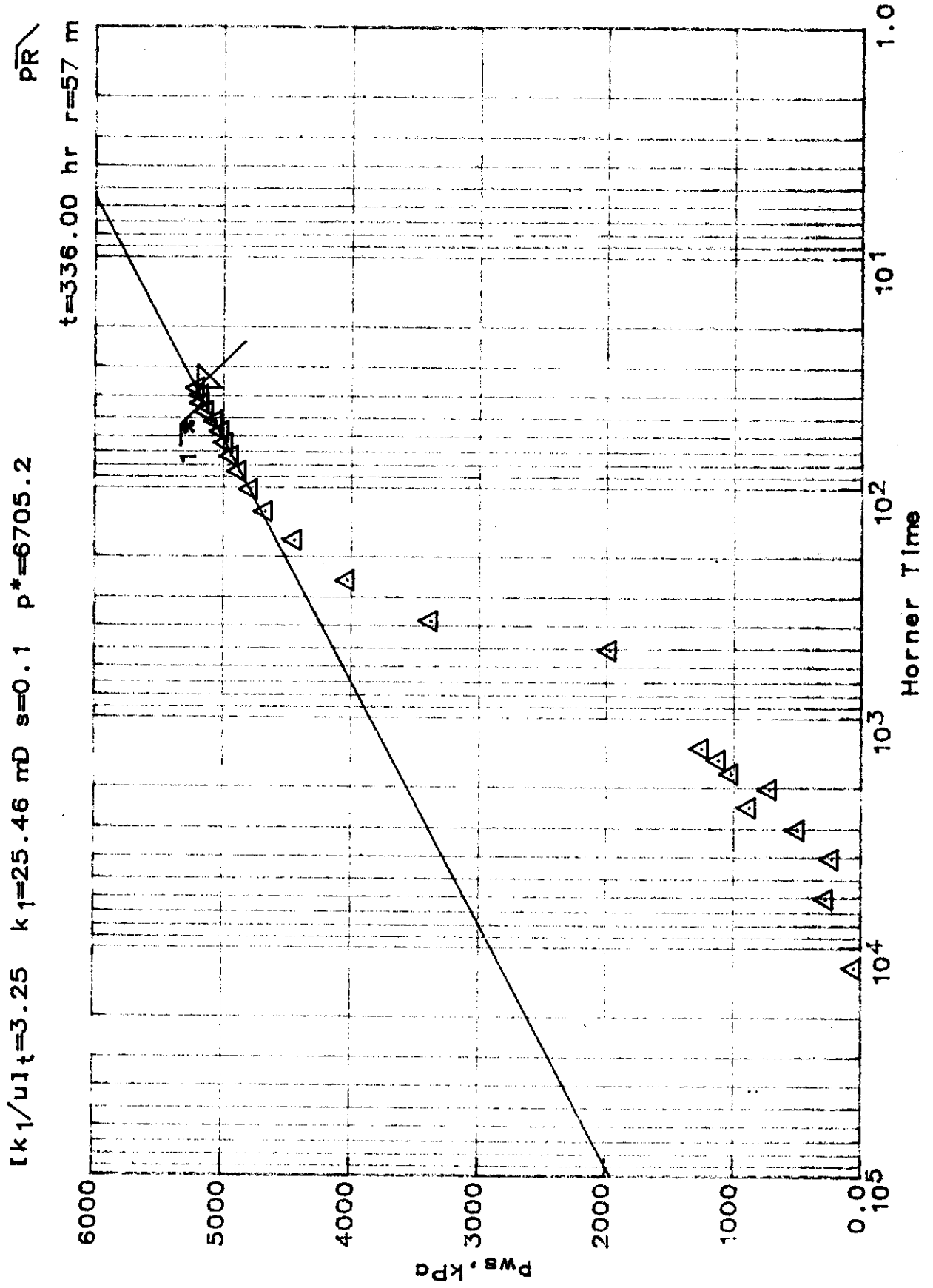
$$[k_1/u]t=3.08 \quad k_1=24.12 \quad C_D=1.3e+03 \quad s=-0.1$$

t=336.00 hr r=55 m



ICGR ET AL SCALLION
16-30-11-26W3M

LODGEPOLE CHERTY
JANUARY 17-31, 1991



Oil Well Test - BUILDUP

Listing

ICGR ET AL SCALLION
16-30-11-26W3M

LODGEPOLE CHERTY
JANUARY 17-31, 1991

Fluid Properties

Gas Gravity	G =	0.65	<DEF>
Oil Gravity	Yo =	0.858	
Bubble Point Pressure	=	- kPa	<DEF>
Reference Pressure	pRef =	5202.6 kPa	<DEF>
Formation Vol Factor	Bo =	1.07	<DEF>
Oil Viscosity	muo =	12.705 mPa.s	<DEF>
Oil Compressibility	co =	7.560x10 ⁻⁵ kPa ⁻¹	<DEF>
Solution Gas Oil Ratio	Rso =	24.3 m ³ /m ³	<DEF>

Reservoir Parameters

Initial Pressure	pi =	- kPa	
Net Pay	h =	2.50 m	
Total Porosity	phit =	24.00 %	
Water Saturation	Sw =	75.00 %	
Oil Saturation	So =	25.00 %	
Gas Saturation	Sg =	0.00 %	
Wellbore Radius	rw =	0.09 m	<DEF>
Formation Temperature	T =	20.00 deg C	
Formation Compressibility	cf =	4.904x10 ⁻⁷ kPa ⁻¹	<DEF>

Oil Well Test - BUILDUP

Listing

ICGR ET AL SCALLION
16-30-11-26W3M

LODGEPOLE CHERTY
JANUARY 17-31, 1991

Afterflow Liquid-filled

Wellbore Volume	Vwb =	-	$\frac{3}{m}$	
Wellbore Fluid Compressibility	=	-	$\frac{-1}{kPa}$	<DEF>
Number Of Points For Smoothing	=	2		<DEF>

Afterflow Changing Liquid Level

Liquid Gradient	=	9.500	$\frac{kPa}{m^2}$	
Effective Wellbore Area	Awb =	0.010	$\frac{m^2}{m}$	
Number Of Points For Smoothing	=	2		<DEF>

Horner Time

Corrected Flow Time	tc =	12264.000	$\frac{hr^3}{m}$	
Cumulative Production (oil)	=	-	$\frac{m^3}{m}$	<DEF>

Oil Well Test - BUILDUP

Time / Pressure Listing

(Horner Time)

ICGR ET AL SCALLION
15-30-11-26W3M

LODGEPOLE CHERTY
JANUARY 17-31, 1991

Delta Time	Super Time	Equiv. Time	Root Time 1/2	Quad Time 1/4	Pressure kPa	Delta Pressure kPa
hr	hr	hr	hr	hr	kPa	kPa
0.000					50.0	0.0
1.000	12265.000	1.000	109.747	9.524	55.0	5.0
2.000	5133.000	2.000	109.338	9.335	272.2	222.2
3.000	4089.000	2.999	109.024	9.208	229.2	179.2
4.000	3067.000	3.999	108.761	9.110	497.3	447.3
5.000	2453.800	4.998	108.529	9.029	678.5	828.5
6.000	2045.000	5.997	108.321	8.960	716.4	666.4
7.000	1753.000	6.996	108.129	8.898	1017.6	967.6
8.000	1534.000	7.995	107.951	8.843	1118.6	1068.6
9.000	1363.667	8.993	107.784	8.793	1252.7	1202.7
24.000	512.000	23.953	105.952	8.315	1975.0	1925.0
32.000	384.250	31.917	105.230	8.152	3378.6	3328.6
48.000	256.500	47.813	104.031	7.902	4027.8	3977.8
72.000	171.333	71.500	102.582	7.626	4440.4	4390.4
96.000	128.750	95.254	101.378	7.414	4667.5	4617.5
120.000	103.200	118.837	100.329	7.239	4785.0	4735.0
144.000	86.167	142.329	99.391	7.090	4876.0	4826.0
168.000	74.000	165.730	98.537	6.959	4939.1	4889.1
192.000	64.875	189.040	97.750	6.842	4980.6	4930.6
216.000	57.778	212.262	97.017	6.736	5012.1	4962.1
240.000	52.100	235.393	96.329	6.639	5060.1	5010.1
264.000	47.455	258.437	95.680	6.549	5134.6	5084.6
288.000	43.583	281.392	95.065	6.465	5166.1	5116.1
312.000	40.308	304.260	94.479	6.387	5171.1	5121.1
336.000	37.500	327.040	93.919	6.313	5202.6	5152.6

Oil Well Test - BUILDUP

Radial Flow Analysis

(Horner Time)

ICGR ET AL SCALLION
16-30-11-26W3M

LODGEPOLE CHERTY
JANUARY 17-31, 1991

Production And Times

Cumulative Production (oil)	=	-	³ m	<DEF>
Corrected Flow Time	tc =	12264.000	hr	
Final Oil Rate	qo =	2.10	³ m /d	

Fluid Properties

Reference Pressure	pRef =	5202.6	kPa	<DEF>
Oil Compressibility	co =	7.560x10 ⁻⁵	kPa ⁻¹	<DEF>
Formation Vol Factor	Bo =	1.07		<DEF>
Oil Viscosity	muo =	12.705	mPa.s	<DEF>
Solution Gas Oil Ratio	Rso =	24.3	³ m /m	<DEF>

Reservoir Parameters

Net Pay	h =	2.50	m	
Total Porosity	phit =	24.00	%	
Water Saturation	Sw =	75.00	%	
Oil Saturation	So =	25.00	%	
Gas Saturation	Sg =	0.00	%	
Wellbore Radius	rw =	0.09	m	<DEF>
Formation Temperature	T =	20.00	deg C	
Formation Compressibility	cf =	4.904x10 ⁻⁷	kPa ⁻¹	<DEF>
Total Compressibility	ct =	1.972x10 ⁻⁵	kPa ⁻¹	

Oil Well Test - BUILDUP

Radial Flow Analysis

(Horner Time)

ICGR ET AL SCALLION
16-30-11-26W3M

LODGEPOLE CHERTY
JANUARY 17-31, 1991

Inner Zone

Pressures

Initial Pressure	$p_i =$	-	kPa
Extrapolated Pressure	$p^* =$	6705.2	kPa
Average Reservoir Pressure	$p_R =$	6462.4	kPa
Final Flowing Pressure	$p_{wfo} =$	50.0	kPa

Straight Line Results

Total Sandface Rate	$q_{tbt} =$	3.64	$\frac{m^3}{d}$
Semilog Slope	$msl =$	950.1	kPa/cycle
Transmissivity (Total)	$kh/\mu =$	8.13	mDm/mPa.s
Permeability (Total)	$k/\mu =$	3.25	mD/mPa.s
Flow Capacity (Oil)	$kh =$	63.64	mDm
Permeability (Oil)	$k =$	25.46	mD
Skin Effect (Total)	$s =$	0.1	
Pressure Drop Due To Skin	$\Delta p_{ps} =$	91.3	kPa
Flow Efficiency	$FE =$	0.99	
Damage Ratio	$DR =$	1.01	
Radius Of Investigation	$r(inv) =$	57	m
Time Of Investigation	$t(inv) =$	336.000	hr

Oil Well Test - BUILDUP

Radial Flow Analysis

(Horner Time)

ICGR ET AL SCALLION
16-30-11-26W3M

LODGEPOLE CHERTY
JANUARY 17-31, 1991

Inner Zone

Extended Rates

Rate After 3 Months	=	2.26	$\frac{\text{m}^3}{\text{d}}$
Rate After 6 Months	=	2.16	$\frac{\text{m}^3}{\text{d}}$

Stabilized Rate

Shape Code	=	R1A	<DEF>
Drainage Area	A =	64.7 ha	<DEF>
Time To Stabilize	ts =	26155.861 hr	
Stabilized Rate @ Current Skin	qs =	1.92 $\frac{\text{m}^3}{\text{d}}$	
Stabilized Rate @ Skin Of 0	qs =	1.95 $\frac{\text{m}^3}{\text{d}}$	
Stabilized Rate @ Skin Of -4	qs =	3.72 $\frac{\text{m}^3}{\text{d}}$	

DATE: MARCH 5, 1991

AREA: VIRGEN

LOCATION: 16-30-11-26W1M

JOINTS IN HOLE	58.00	SPECIFIC GRAVITY	0.50
AVERAGE JOINT LENGTH	51.20	Z	0.50
KFF CORRECTION	0.00	T(RANKIN)	550.00
GRADIENT	0.40		

DATE	DAYS AFTER TIME 0	TIME HR : MIN	DELTA TIME(HRS)	F/L (JTS TO FLD)	CSG PRESS (KPA)	CSG PRESS (PSI)	PRESS(DH) (PSI)	DP (PSI)
JANUARY 17	0	8 : 0	0.00	58.00	50.00	7.25	7.26	0.00
	0	8 : 30	0.50	58.00	50.00	7.25	7.26	0.00
	0	9 : 0	1.00	58.00	50.00	7.25	7.26	0.00
	0	10 : 0	2.00	56.00	100.00	14.50	39.48	32.22
	0	11 : 0	3.00	58.00	100.00	14.50	33.24	25.98
	0	12 : 0	4.00	53.50	110.00	15.95	72.13	64.87
	0	13 : 0	5.00	60.00	190.00	27.56	127.41	120.15
	0	14 : 0	6.00	52.00	200.00	29.01	128.91	96.65
	0	15 : 0	7.00	58.50	200.00	29.01	147.39	140.33
	0	16 : 0	8.00	57.50	215.00	31.18	152.24	154.98
	0	17 : 0	9.00	56.00	220.00	31.91	161.59	174.43
JANUARY 18	1	8 : 0	24.00	49.00	340.00	49.21	285.45	279.19
	1	16 : 0	32.00	33.50	410.00	59.46	490.33	482.77
JANUARY 19	2	8 : 0	48.00	17.00	500.00	72.52	584.13	576.93
JANUARY 20	3	8 : 0	72.00	23.25	590.00	95.37	644.03	636.78
JANUARY 21	4	8 : 0	96.00	21.25	645.00	93.53	676.56	669.71
JANUARY 22	5	8 : 0	120.00	20.00	655.00	95.00	694.01	686.75
JANUARY 23	6	8 : 0	144.00	19.00	660.00	95.72	707.21	699.96
JANUARY 24	7	8 : 0	168.00	18.50	680.00	98.62	716.35	709.09
JANUARY 25	8	8 : 0	192.00	18.25	700.00	101.52	722.37	715.11
JANUARY 26	9	8 : 0	216.00	18.00	710.00	101.57	720.94	719.68
JANUARY 27	10	8 : 0	240.00	17.50	715.00	102.70	735.50	726.65
JANUARY 28	11	8 : 0	264.00	16.75	725.00	105.15	744.71	737.45
JANUARY 29	12	8 : 0	288.00	16.50	735.00	106.60	749.28	742.02
JANUARY 30	13	8 : 0	312.00	16.50	740.00	107.02	750.91	742.75
JANUARY 31	14	8 : 0	336.00	16.25	750.00	108.77	754.59	747.32