

**Home Oil Company Limited**

1600 Home Oil Tower  
324 Eighth Avenue S.W.  
Calgary, Alberta T2P 2Z5  
Telephone (403) 232-7100  
Fax (403) 232-7678



October 28, 1992

Province of Manitoba  
Department of Energy and Mines  
Petroleum Branch  
555 - 330 Graham Avenue  
WINNIPEG, Manitoba  
R3C 4E3

Pierson

L. Amaranth /  
nc 3b A Pool

Pressure Surveys

**Attention: Mr. J. N. Fox, P.Eng.**

Dear Sir,

**RE: South Pierson 1992 Pressure Survey Results  
Lower Amaranth Pool**

Please find attached for your records the analyzed pressure build-ups on the following two South Pierson wells conducted in the summer of 1992:

06-17-002-29 W1M  
14-11-002-29 W1M

All test were conducted with an automatic acoustic wellbore sounder (AWS) using surface pressures.

The required shut-in time to derive pressure data out of the wellbore storage regime in this field is quite prohibitive. In addition, the tight nature of the reservoir rock makes analysis of these tests quite difficult resulting in a smaller degree of accuracy.

Home Oil is in receipt of your letter dated June 18, 1992 providing support for RFT pressure testing in the South Pierson field in lieu of pressure build-ups. RFT data from five (5) recently drilled wells has already been forwarded to the Branch along with log data. Home Oil also acknowledges the Branch's request for pressure data in Sections 16 and 19 and is presently selecting candidates for further AWS pressure tests.

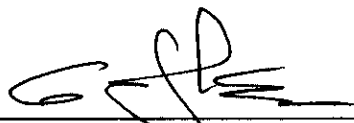
If you have any question or require further clarification, please contact Curt Labelle at (403) 232-7457.

Sincerely,

HOME OIL COMPANY LIMITED  
SCURRY-RAINBOW OIL LIMITED

CWL/cwl  
ATTACH.



  
G.C.K. Johnson, P. Eng.  
Coordinator, Southern Production

October 28, 1992

Province of Manitoba  
Department of Energy and Mines  
Petroleum Branch  
555 - 330 Graham Avenue  
WINNIPEG, Manitoba  
R3C 4E3

**Attention: Mr. J. N. Fox, P.Eng.**

Dear Sir,

**RE: South Pierson 1992 Pressure Survey Results  
Lower Amaranth Pool**

cc: G.C.K. Johnson  
D. A. Cairns  
J. S. Murray  
Day File  
File PIER.GOV

**PRESSURE SURVEY  
SUMMARY OF RESULTS**

Prepared: October 27,1992

<b>YEAR:</b>	1992	<b>FIELD:</b>	Pierson
<b>POOL:</b>	Lower Amaranth	<b>LOCATION:</b>	14-11-002-29 W1M
<b>WELL:</b>	Home Scurry Pierson 14-11		
<b>ELEVATIONS:</b>	<b>K.B.</b>	470.46 m	
	<b>G.L.</b>	466.21 m	
	<b>TEST DATE (START):</b>	APR 1992	
	<b>(END):</b>	JUNE 1992	
	<b>TYPE OF TEST:</b>	BUILD-UP	
	<b>PRODUCED FLUID:</b>	OIL	
	<b>PRODUCING TIME (HRS):</b>	5840	
	<b>SHUT-IN TIME (HRS):</b>	1630	
	<b>RUN DEPTH (m C.F.):</b>	N/A (AWS)	
	<b>MID POINT of PERFORATIONS (m KB):</b>	1011.75	
	<b>** LMP @ RUN DEPTH (kPaa):</b>	3995	
	<b>DATUM DEPTH (m A.S.L.):</b>	???	
	<b>EXT. RESERVOIR PRESSURE (kPaa):</b>	9765	
	<b>TEMP @ RUN DEPTH (C):</b>	47.0 (est)	
	<b>GRADIENT USED (kPa/m):</b>	N/A	
	<b>"KH" (mD.m):</b>	5.54	
	<b>WELL SKIN FACTOR:</b>	-2.01	

Note: \*\* - Last Measured Pressure

**COMMENTS:**

A composite system in an infinite acting reservoir model was used to provide a reasonable match of the pressure data. The well was stimulated with a hydraulic fracture which may account for the composite flow regime. The pressure data does get into the second composite however, the recorded pressures are low resulting in a steep gradient for the average reservoir pressure extrapolations from the Horner plot. This results in a greater range of pressure accuracy since a slight change in the Horner line slope produces a large magnitude change in the extrapolated pressure from the match. Pressure depletion is evident in this portion of the reservoir from the original pressure of approximately 10,550 kPa.

As noted above, permeability-thickness values for this well are very low due to the tight nature of the matrix rock. The well had produced about 160 m<sup>3</sup> of oil before the test was conducted.

1

Scientific Software-Intercomp

Interpret/2

## WELL TEST ANALYSIS REPORT

Company: HOME OIL COMPANY LTD

Field: SOUTH PIERSON

Date: 27-Oct-92

Formation:

Test No: 1

Zone:

Test Date: APR/92

Well: PIERSON 06-17-2-29W1

Gauge: AWS

Depth: m

Perforations:

From

To

1

m

m

## ANALYSIS SUMMARY

AWS SURVEY (WELL IS FRACTURE STIMULATED)

1

Scientific Software-Intercomp

Interpret/2

## Results Summary

Company: HOME OIL COMPANY LTD

Field: SOUTH PIERSON

Date: 27-Oct-92

Formation:

Test No: 1

Zone:

Test Date: APR/92

Well: PIERSON 06-17-2-29W1

Gauge: AWS

Depth: m

Near wellbore effects: Wellbore Storage and Skin

Reservoir behaviour: Composite

Boundary effects: Infinite Lateral Extent

Flow Period: 8 UNITS

(pav)i	11685.021	kPa
p(Dt=0)	573.030	kPa
kh	.5438	mD.m
k	.1295	mD
C	6.583E-05	m3/kPa
S	-3.52	
rl	29.	m
(pch)1/2	.6691	
(kh/u)1/2	.3000	
ri	76.	m
PI	6.300E-05	m3/D/kPa
FE	2.162	fraction

1

Scientific Software-Intercomp

Interpret/2

# Well & Reservoir Parameters

Company: HOME OIL COMPANY LTD

Field: SOUTH PIERSON

Formation:

Zone:

Well: PIERSON 06-17-2-29W1

Date: 27-Oct-92

Test No: 1

Test Date: APR/92

Gauge: AWS

Depth: m

## WELL AND RESERVOIR DATA (Oil)

Multiphase flow at wellbore: NO  
Multiphase in reservoir : NO

Matrix Porosity	.153	fraction
Reservoir Thickness	4.20	m
Wellbore Radius	.107	m
Distance To Producing Well (*)	0.0	m
Oil Formation Volume Factor	1.175	Rm3/m3
Oil Viscosity	1.30	cp
Total Compressibility	1.708E-6	1/kPa

(\*) = For Interference Tests Only

1

Scientific Software-Intercomp

Interpret/2

## Well & Reservoir Parameters

Company: HOME OIL COMPANY LTD

Field: SOUTH PIERSON

Formation:

Zone:

Well: PIERSON 06-17-2-29W1

Date: 27-Oct-92

Test No: 1

Test Date: APR/92

Gauge: AWS

Depth: m

## TOTAL COMPRESSIBILITY CALCULATION

$$ct = So*co + Sg*cg + Sw*cw + cf$$

Oil Compressibility,	co:	1.083E-6	1/kPa
Gas Compressibility,	cg:		1/kPa
Water Compressibility,	cw:	4.860E-7	1/kPa
Formation Compressibility,	cf:	8.700E-7	1/kPa

Oil Saturation,	So:	.590	fraction
Gas Saturation,	Sg:	0.0	fraction
Water Saturation,	Sw:	.410	fraction

Total Compressibility,	ct:	1.708E-6	1/kPa
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1

Scientific Software-Intercomp	Interpret/2
Rates	

Company: HOME OIL COMPANY LTD

Field: SOUTH PIERSON

Formation:

Zone:

Well: PIERSON 06-17-2-29W1

Date: 27-Oct-92

Test No: 1

Test Date: APR/92

Gauge: AWS

Depth: m

#### RATES

Flow Period	Start hrs	End hrs	Duration hrs	Oil Sm3/D	Gas 1E3Sm3/D	Water Sm3/D
1	0.0	365.0000	365.0000	3.80	0.0	10.60
2	365.0000	1095.0000	730.0000	6.30	0.0	20.30
3	1095.0000	1825.0000	730.0000	1.80	0.0	7.70
4	1825.0000	10585.0000	8760.0000	1.70	0.0	9.12
5	10585.0000	19345.0000	8760.0000	.80	0.0	7.40
6	19345.0000	28105.0000	8760.0000	.64	0.0	5.77
7	28105.0000	30660.0000	2555.0000	.70	0.0	5.90
8	30660.0000	32004.0000	1344.0000	0.0	0.0	0.0

1

Scientific Software-Intercomp	Interpret/2
Analysis Parameters	

Company: HOME OIL COMPANY LTD

Field: SOUTH PIERSON

Formation:

Zone:

Well: PIERSON 06-17-2-29W1

Date: 27-Oct-92

Test No: 1

Test Date: APR/92

Gauge: AWS

Depth: m

ANALYSIS MODEL, FLOW PERIOD: 8

Near wellbore effects: Wellbore Storage and Skin  
Reservoir behaviour: Composite  
Boundary effects: Infinite Lateral Extent

ANALYSIS PARAMETERS, FLOW PERIOD: 8

Pressure match, PM	2.725E-04	1/kPa
Time match, TM	.142	1/hr
Curve Match, Log CDe2S	-.134	
Dimensionless composite discontinuity radius, r1D	88.3	
Composite storativity ratio, (pch)1/2	.669	
Composite mobility ratio, (kh/u)1/2	.300	

1

## Analysis Results

Company: HOME OIL COMPANY LTD

Field: SOUTH PIERSON

Formation:

Zone:

Well: PIERSON 06-17-2-29W1

Date: 27-Oct-92

Test No: 1

Test Date: APR/92

Gauge: AWS

Depth: m

ANALYSIS MODEL, FLOW PERIOD: 8

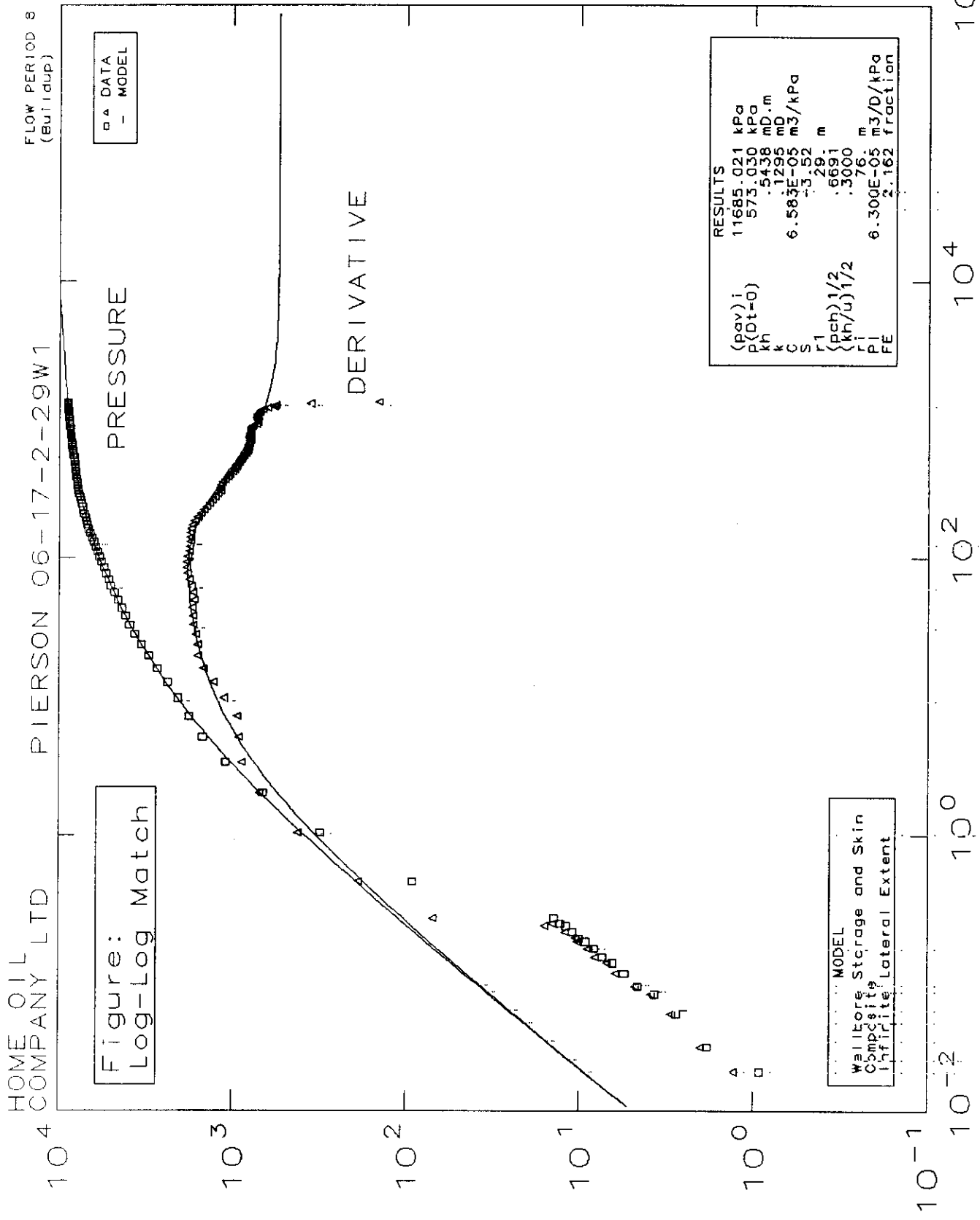
Near wellbore effects: Wellbore Storage and Skin

Reservoir behaviour: Composite

Boundary effects: Infinite Lateral Extent

ANALYSIS RESULTS, FLOW PERIOD: 8

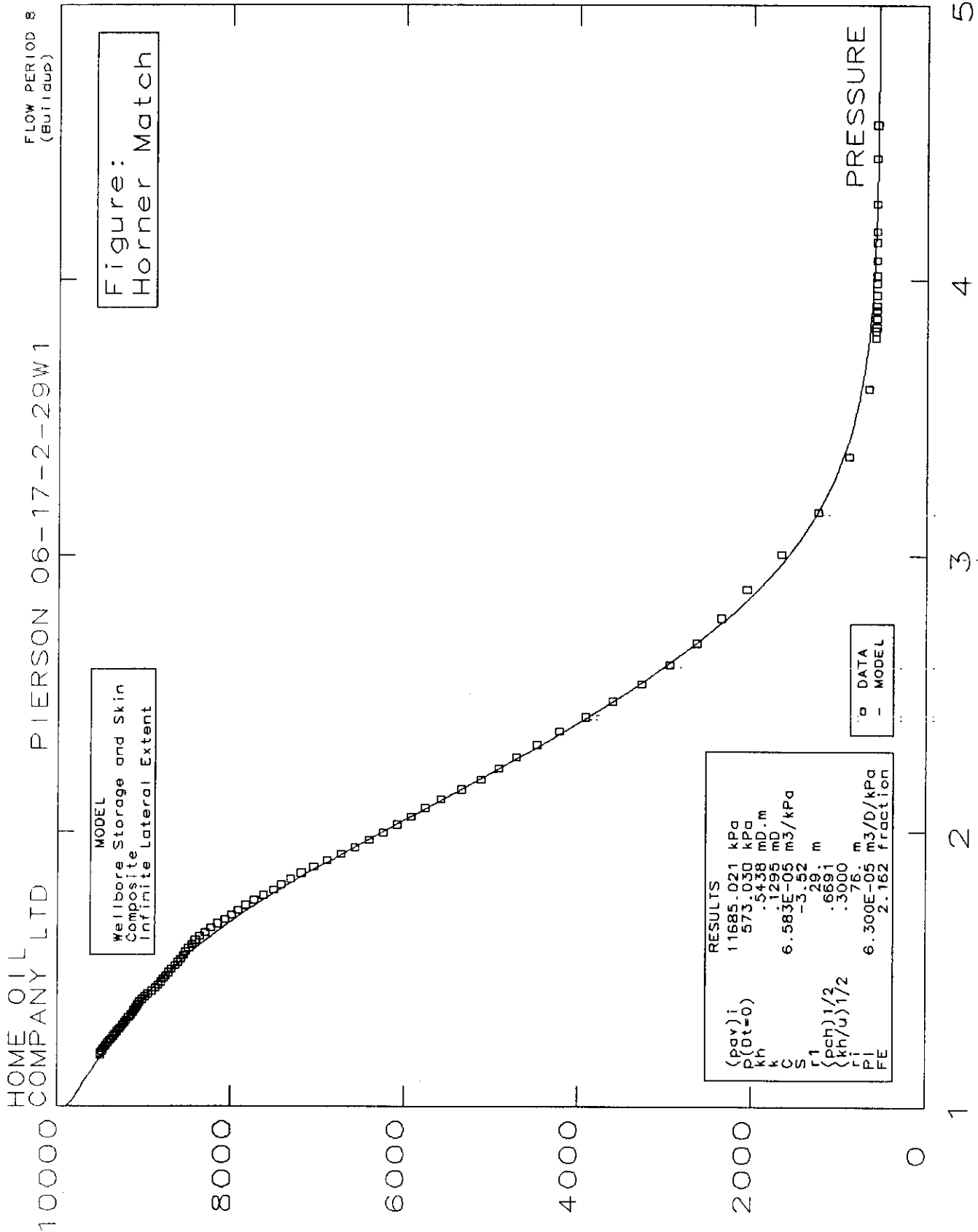
Initial average reservoir pressure, (pav) <sub>i</sub>	11685.021	kPa
P (Delta t = 0), p(Dt=0)	573.030	kPa
Permeability-thickness, kh	.544	mD.m
Permeability, k	.129	mD
Wellbore storage coefficient, C	6.583E-05	m <sup>3</sup> /kPa
Wellbore skin factor, S	-3.52	
Composite discontinuity radius, r <sub>l</sub>	29.	m
Composite storativity ratio, (p <sub>ch</sub> ) <sup>1/2</sup>	.669	
Composite mobility ratio, (kh/u) <sup>1/2</sup>	.300	
Radius of investigation (approx), r <sub>i</sub>	76.	m
Measured Productivity Index, PI	6.300E-05	m <sup>3</sup> /D/kPa
Flow Efficiency, FE	2.16	fraction



Pressure Change and Derivative (kPa):

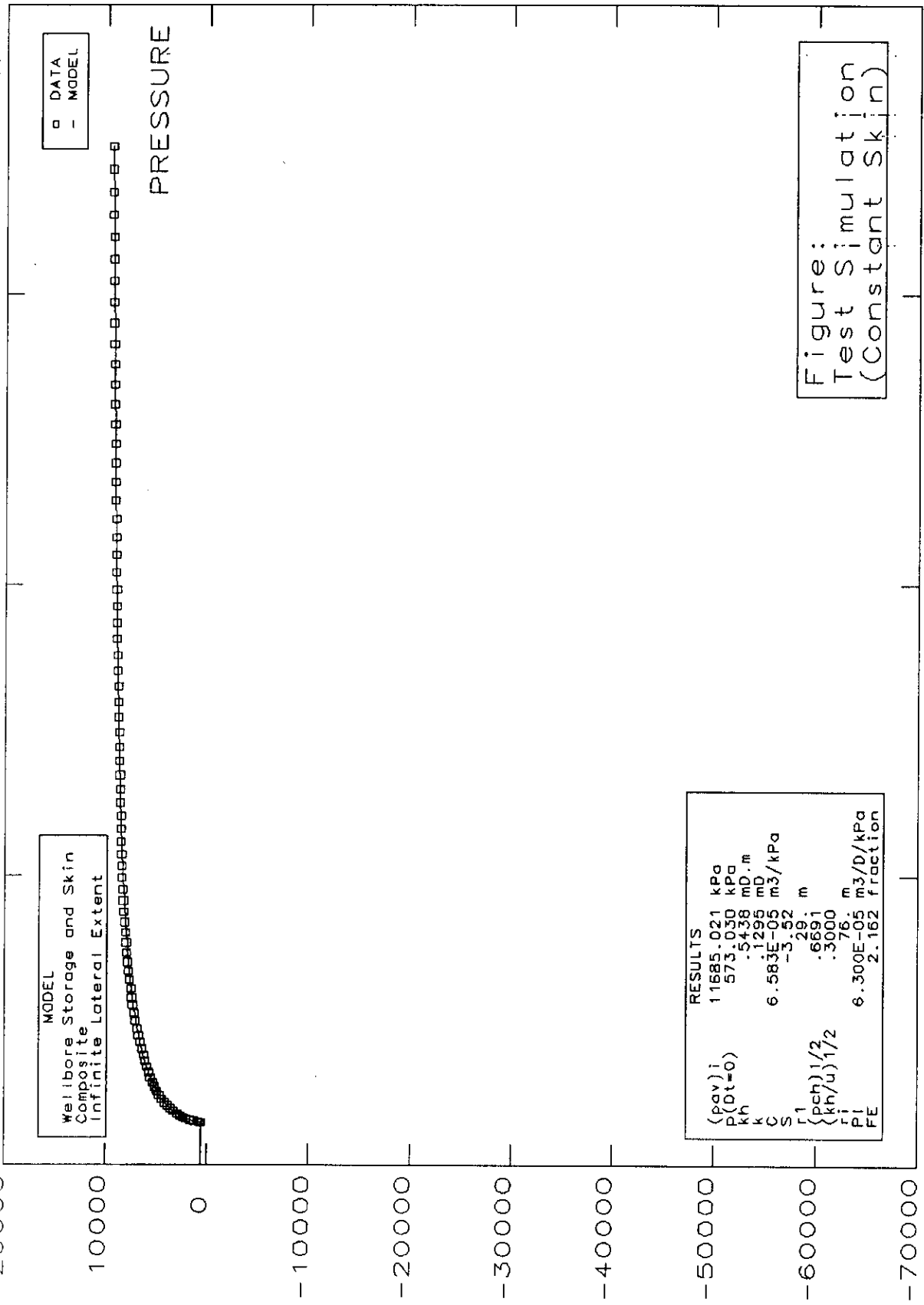
Elapsed time (hrs)





Superposition time (Sm3/D)

HOME OIL COMPANY LTD PIERSON 06-17-2-29W 1 FLOW PERIOD 8 (Buildup)



Interpret / 2

**PRESSURE SURVEY  
SUMMARY OF RESULTS**

Prepared: October 27, 1992

<b>YEAR:</b>	1992	<b>FIELD:</b>	Pierson
<b>POOL:</b>	Lower Amaranth	<b>LOCATION:</b>	06-17-002-29 W1M
<b>WELL:</b>	Home Scurry Pierson 06-17		
<b>ELEVATIONS:</b>	K.B.	480.45 m	
	G.L.	476.00 m	
	<b>TEST DATE (START):</b>	APR 1992	
	<b>(END):</b>	JUNE 1992	
	<b>TYPE OF TEST:</b>	BUILD-UP	
	<b>PRODUCED FLUID:</b>	OIL	
	<b>PRODUCING TIME (HRS):</b>	30660	
	<b>SHUT-IN TIME (HRS):</b>	1344	
	<b>RUN DEPTH (m C.F.):</b>	N/A (AWS)	
	<b>MID POINT of PERFORATIONS (m KB):</b>	1027.75	
	<b>** LMP @ RUN DEPTH (kPaa):</b>	9498	
	<b>DATUM DEPTH (m A.S.L):</b>	???	
	<b>EXT. RESERVOIR PRESSURE (kPaa):</b>	11685	
	<b>TEMP @ RUN DEPTH (C):</b>	47.0 (est)	
	<b>GRADIENT USED (kPa/m):</b>	N/A	
	<b>"KH" (mD.m):</b>	.544	
	<b>WELL SKIN FACTOR:</b>	-3.52	

Note: \*\* - Last Measured Pressure

**COMMENTS:**

A composite system in an infinite acting reservoir model was used to provide a reasonable match of the pressure data. The well was stimulated with a hydraulic fracture which may account for the composite flow regime. The pressure data does get marginally into the second composite therefore extrapolated pressure and parameters of the second composite are questionable. Pressure data suggests a  $P^*$  of 11,685 which is greater than the estimated pool pressure of approximately 10,550 kPa.

As noted above, permeability-thickness values for this well are very low due to the tight nature of the matrix rock. The well had produced about 1568 m<sup>3</sup> of oil before the test was conducted.

1

Scientific Software-Intercomp

Interpret/2

## WELL TEST ANALYSIS REPORT

Company: HOME OIL COMPANY LTD

Field: SOUTH PIERSON

Formation: LOWER AMARANTH

Zone:

Well: SP 14-11-2-29 W1M

Date: 27-Oct-92

Test No:

Test Date: APR/92

Gauge: AWS

Depth: m

Perforations:

From

To

1

m

m

## ANALYSIS SUMMARY

AWS SURVEY (WELL IS FRACTURE STIMULATED)

1

Scientific Software-Intercomp

Interpret/2

## Results Summary

Company: HOME OIL COMPANY LTD

Field: SOUTH PIERSON

Formation: LOWER AMARANTH

Zone:

Well: SP 14-11-2-29 W1M

Date: 27-Oct-92

Test No:

Test Date: APR/92

Gauge: AWS

Depth: m

Near wellbore effects: Wellbore Storage and Skin

Reservoir behaviour: Composite

Boundary effects: Infinite Lateral Extent

Flow Period: 9 UNITS

(pav)i	9765.609	kPa
p(Dt=0)	171.570	kPa
kh	5.538	mD.m
k	1.319	mD
C	1.658E-04	m3/kPa
S	-2.01	
rl	31.	m
(pch)1/2	.1462	
(kh/u)1/2	107.4	
ri	268.	m
PI	6.254E-05	m3/D/kPa
FE	1.065	fraction

1

Scientific Software-Intercomp

Interpret/2

# Well & Reservoir Parameters

Company: HOME OIL COMPANY LTD

Field: SOUTH PIERSON  
Formation: LOWER AMARANTH

Zone:  
Well: SP 14-11-2-29 W1M

Date: 27-Oct-92

Test No:  
Test Date: APR/92

Gauge: AWS

Depth: m

## WELL AND RESERVOIR DATA (Oil)

Multiphase flow at wellbore: NO  
Multiphase in reservoir : NO

Matrix Porosity	.153	fraction
Reservoir Thickness	4.20	m
Wellbore Radius	.107	m
Distance To Producing Well (*)	0.0	m
Oil Formation Volume Factor	1.175	Rm3/m3
Oil Viscosity	1.30	cp
Total Compressibility	1.708E-6	1/kPa

(\*) = For Interference Tests Only

1

Scientific Software-Intercomp

Interpret/2

## Well & Reservoir Parameters

Company: HOME OIL COMPANY LTD

Field: SOUTH PIERSON  
Formation: LOWER AMARANTH

Zone:  
Well: SP 14-11-2-29 W1M

Date: 27-Oct-92

Test No:  
Test Date: APR/92

Gauge: AWS

Depth: m

## TOTAL COMPRESSIBILITY CALCULATION

$$ct = So*co + Sg*cg + Sw*cw + cf$$

Oil Compressibility,	co:	1.083E-6	1/kPa
Gas Compressibility,	cg:		1/kPa
Water Compressibility,	cw:	4.860E-7	1/kPa
Formation Compressibility,	cf:	8.700E-7	1/kPa
Oil Saturation,	So:	.590	fraction
Gas Saturation,	Sg:	0.0	fraction
Water Saturation,	Sw:	.410	fraction
Total Compressibility,	ct:	1.708E-6	1/kPa

1

Scientific Software-Intercomp	Interpret/2
Rates	

Company: HOME OIL COMPANY LTD

Field: SOUTH PIERSON

Date: 27-Oct-92

Formation: LOWER AMARANTH

Test No:

Zone:

Test Date: APR/92

Well: SP 14-11-2-29 W1M

Gauge: AWS

Depth: m

#### RATES

Flow Period	Start hrs	End hrs	Duration hrs	Oil Sm3/D	Gas 1E3Sm3/D	Water Sm3/D
1	0.0	730.0000	730.0000	1.80	0.0	3.50
2	730.0000	1460.0000	730.0000	.60	0.0	1.50
3	1460.0000	2190.0000	730.0000	.50	0.0	1.10
4	2190.0000	2920.0000	730.0000	.60	0.0	1.50
5	2920.0000	3650.0000	730.0000	.30	0.0	1.20
6	3650.0000	4380.0000	730.0000	.20	0.0	.80
7	4380.0000	5110.0000	730.0000	.20	0.0	.90
8	5110.0000	5840.0000	730.0000	.60	0.0	.90
9	5840.0000	7470.0000	1630.0000	0.0	0.0	0.0

1

Scientific Software-Intercomp	Interpret/2
Analysis Parameters	

Company: HOME OIL COMPANY LTD

Field: SOUTH PIERSON

Date: 27-Oct-92

Formation: LOWER AMARANTH

Test No:

Zone:

Test Date: APR/92

Well: SP 14-11-2-29 W1M

Gauge: AWS

Depth: m

ANALYSIS MODEL, FLOW PERIOD: 9

Near wellbore effects: Wellbore Storage and Skin  
 Reservoir behaviour: Composite  
 Boundary effects: Infinite Lateral Extent

ANALYSIS PARAMETERS, FLOW PERIOD: 9

Pressure match, PM	3.237E-03	1/kPa
Time match, TM	.574	1/hr
Curve Match, Log CDe2S	1.58	
Dimensionless composite discontinuity radius, r1D	38.9	
Composite storativity ratio, (pch)1/2	.146	
Composite mobility ratio, (kh/u)1/2	107.	

Scientific Software-Intercomp	Interpret/2
Analysis Results	

Company: HOME OIL COMPANY LTD

Field: SOUTH PIERSON Date: 27-Oct-92

Formation: LOWER AMARANTH

Test No:

Zone:

Test Date: APR/92

Well: SP 14-11-2-29 W1M

Gauge: AWS

Depth: m

ANALYSIS MODEL, FLOW PERIOD: 9

Near wellbore effects: Wellbore Storage and Skin

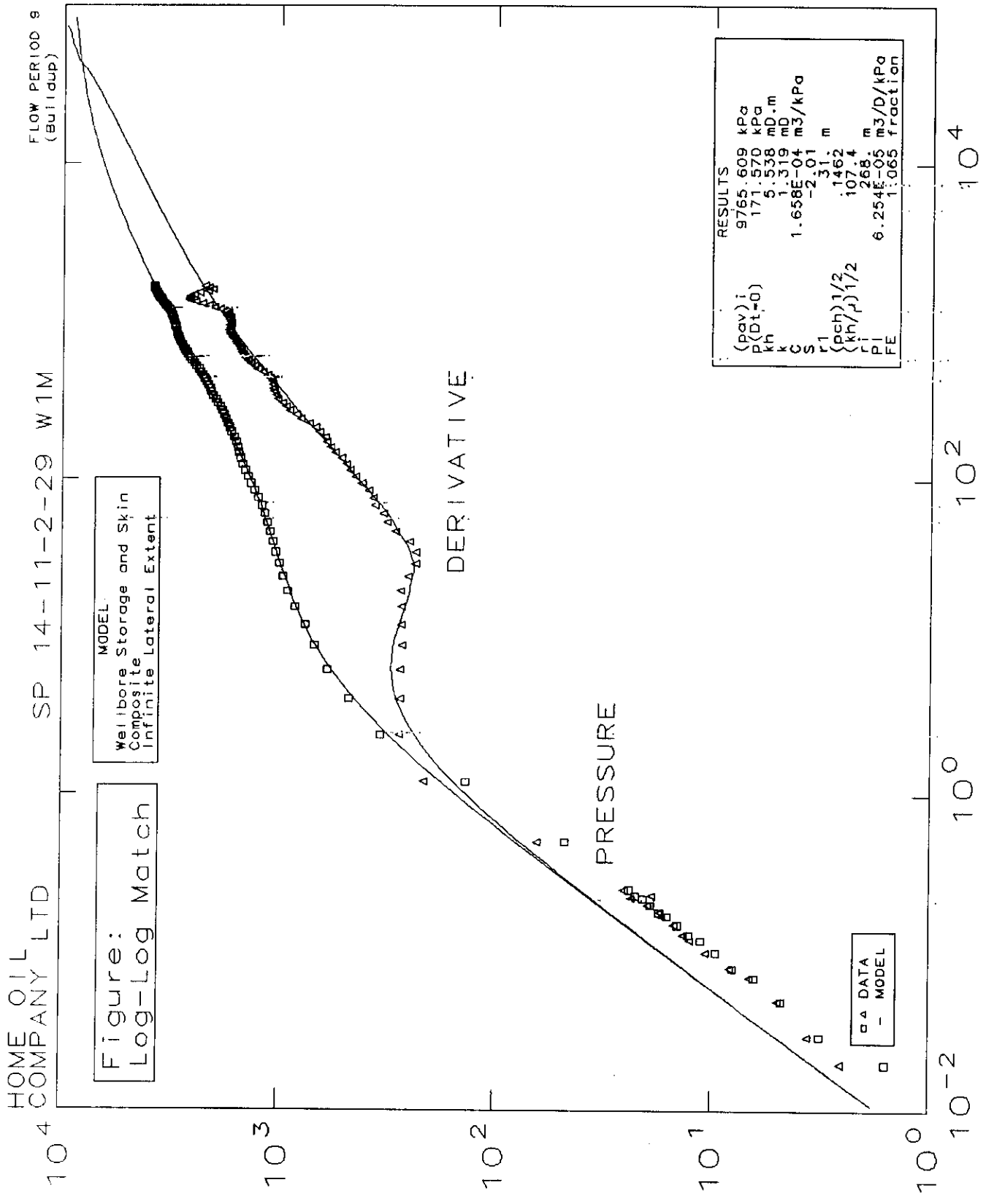
Reservoir behaviour: Composite

Boundary effects: Infinite Lateral Extent

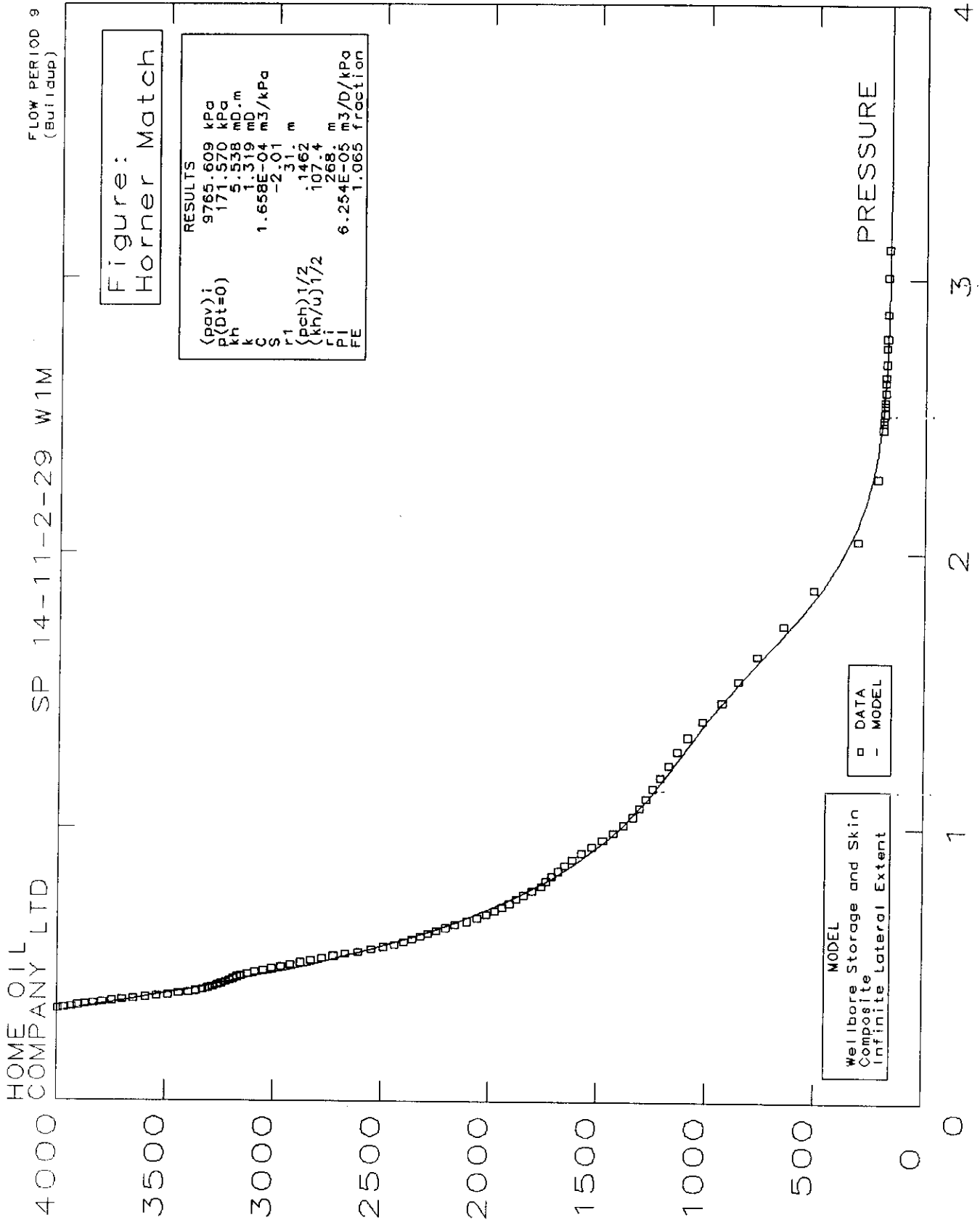
ANALYSIS RESULTS, FLOW PERIOD: 9

Initial average reservoir pressure, (pav) <sub>i</sub>	9765.609	kPa
P (Delta t = 0), p(Dt=0)	171.570	kPa
Permeability-thickness, kh	5.54	mD.m
Permeability, k	1.32	mD
Wellbore storage coefficient, C	1.658E-04	m <sup>3</sup> /kPa
Wellbore skin factor, S	-2.01	
Composite discontinuity radius, r <sub>l</sub>	31.	m
Composite storativity ratio, (p <sub>ch</sub> ) <sup>1/2</sup>	.146	
Composite mobility ratio, (kh/u) <sup>1/2</sup>	107.	
Radius of investigation (approx), r <sub>i</sub>	268.	m
Measured Productivity Index, PI	6.254E-05	m <sup>3</sup> /D/kPa
Flow Efficiency, FE	1.06	fraction

# Pressure Change and Derivative (kPa)







HOME OIL  
COMPANY LTD

SP 14-11-2-29 W1M

FLOW PERIOD 9  
(Buildup)

Figure:  
Test Simulation  
(Constant Skin)

RESULTS	
(pav) i	9765.609 kPa
p(Dt=0)	171.570 kPa
kh	5.538 mD.m
k	1.319 mD
C	1.658E-04 m <sup>3</sup> /kPa
S	-2.01
r <sub>i</sub>	31. m
(p <sub>ch</sub> ) <sup>1/2</sup>	1462
(kh/u) <sup>1/2</sup>	107.4
r <sub>i</sub>	268. m
PI	6.254E-05 m <sup>3</sup> /D/kPa
FE	1.065 fraction

MODEL	
Wellbore Storage and Skin	
Composite	
Infinite Lateral Extent	

□ DATA  
- MODEL

Pressure (kPa)

PRESSURE

5800 6200 6600 7000 7400

Elapsed time (hrs)

**Home Oil Company Limited**

May 26, 1992

1600 Home Oil Tower  
324 Eighth Avenue S.W.  
Calgary, Alberta T2P 2Z5  
Telephone (403) 232-7100  
Fax (403) 232-7678



Province of Manitoba  
Department of Energy and Mines  
Room 309, Legislative Building  
450 Broadway Avenue  
WINNIPEG, Manitoba  
R3C 0V8

File:

Pierson  
Lower Amaranth  
C Pool  
Pressure Survey

**Attention: Mr. J. N. Fox, P.Eng.**

Dear Sir,

**RE: South Pierson 1991 Pressure Survey Results  
Lower Amaranth Pool**

Please find attached for your records the analyzed pressure build-ups on the following three South Pierson wells conducted in the summer of 1991:

08-17-002-29 W1M - 6782 kPa  
02-16-002-29 W1M - 6467 kPa  
16-18-002-29 W1M - 9997 kPa

1992  
NOTE: RFT  
PRESSURE DATA  
6-8 9250  
to  
9800 kPa

All test were conducted with an automatic acoustic wellbore sounder using surface pressures.

The required shut-in time to derive pressure data out of the wellbore storage regime in this field is quite prohibitive. In addition, the tight nature of the reservoir rock makes analysis of these tests quite difficult resulting in a smaller degree of accuracy.

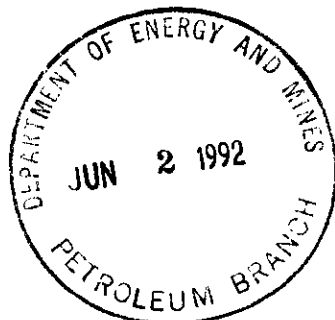
Development evaluations for the field suggest that a significant amount of infill drilling will be required over the next several years which would enable the operator to obtain reservoir pressure data from RFT's. These RFT's would likely produce more accurate data since no large pressure pulses will be induced in the wellbore avoiding large amounts of time to recover from transient effects and extrapolation of Horner plots. It is suggested that the crown consider RFT's as an acceptable alternative to annual pressure build-up interpretation.

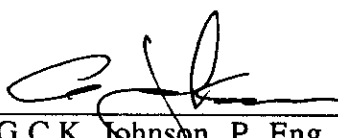
If you have any question or require further clarification, please contact Curt Labelle at (403) 232-7457.

Sincerely,

HOME OIL COMPANY LIMITED  
SCURRY-RAINBOW OIL LIMITED

CWL/cwl  
ATTACH.



  
G.C.K. Johnson, P. Eng.  
Coordinator, Southern Production

May 26, 1992

Province of Manitoba  
Department of Energy and Mines  
Room 309, Legislative Building  
450 Broadway Avenue  
WINNIPEG, Manitoba  
R3C 0V8

**Attention: Mr. J. N. Fox, P.Eng.**

Dear Sir;

**RE: South Pierson 1991 Pressure Survey Results  
Lower Amaranth Pool**

cc: G.C.K. Johnson  
D. A. Cairns  
J. S. Murray  
Day File  
File PIER.GOV

**PRESSURE SURVEY  
SUMMARY OF RESULTS**

Prepared: May 26,1992

<b>YEAR:</b>	1991	<b>FIELD:</b>	Pierson
<b>POOL:</b>	Lower Amaranth	<b>LOCATION:</b>	08-17-002-29 W1M
<b>WELL:</b>	Home Scurry Pierson 8-17		
<b>ELEVATIONS:</b>	<b>K.B.</b>	479.55 m	
	<b>G.L.</b>	475.15 m	
	<b>TEST DATE (START):</b>	JUNE 1991	
	<b>(END):</b>	JULY 1991	
	<b>TYPE OF TEST:</b>	BUILD-UP	
	<b>PRODUCED FLUID:</b>	OIL	
	<b>PRODUCING TIME (HRS):</b>	7249	
	<b>SHUT-IN TIME (HRS):</b>	763	
	<b>DATUM DEPTH (m CF):</b>	1015.9	
	<b>EXT. RESERVOIR PRESSURE (kPaa):</b>	6782	
	<b>TEMP @ RUN DEPTH (C):</b>	42.0	
	<b>"KH" (mD.m):</b>	6.8	
	<b>WELL SKIN FACTOR:</b>	-4.2	

**COMMENTS:**

A composite, dual porosity , restricted interporosity flow in an infinite acting reservoir model was used to provide a reasonable match of the pressure data. The well was stimulated with a hydraulic fracture which may account for the composite flow regime. The pressure data does get marginally out of wellbore storage however, the recorded pressures are low resulting in a steep gradient for the average reservoir pressure extrapolations from the Horner plot . This results in a greater range of pressure accuracy since a slight change in the Horner line slope produces a large magnitude change in the extrapolated pressure from the match. Pressure depletion is evident in this portion of the reservoir from the original pressure of approximately 10,550 kPa.

As noted above, permeability-thickness values for this well are fairly good for this field. The well had produced about 700 m<sup>3</sup> before the test.

Scientific Software-Intercomp

Interpret/2

WELL TEST ANALYSIS REPORT

Company: Home Oil Company

Field: Pierson, Manitoba

Formation: Lower Amaranth

Zone: A,B,C

Well: 8-17 Pierson

Date: 25-May-92

Test No:

Test Date: June, 1991

Gauge:

Depth: ft

Perforations:

From

1

ft

To

ft

ANALYSIS SUMMARY

Composite reservoir used to match test. Test conducted with acoustic well sounder. Well on production July, 1990.

Scientific Software-Intercomp

Interpret/2

Results Summary

Company: Home Oil Company

Field: Pierson, Manitoba

Formation: Lower Amaranth

Zone: A,B,C

Well: 8-17 Pierson

Date: 25-May-92

Test No:

Test Date: June, 1991

Gauge:

Depth: ft

Near wellbore effects:

Reservoir behaviour:

Boundary effects:

Wellbore Storage and Skin

Composite, 2 Porosity, Restricted Interporosi

Infinite Lateral Extent

Flow Period: 8 UNITS

(pav)i	983.625	psia
p(Dt=0)	79.350	psia
kh	22.21	mD.ft
k	.5892	mD
C	.1109	bbl/psi
S	-4.19	
rl	115.	ft
(pch)1/2	1.572	
(kh/u)1/2	2.137	
Omega	.09258	
Lambda	6.499E-05	
Omega2	.05503	
Lambda2	6.572E-08	
ri	291.	ft
PI	.01382	B/D/psi
FE	1.560	fraction

## Well &amp; Reservoir Parameters

Company: Home Oil Company

Field: Pierson, Manitoba

Formation: Lower Amaranth

Zone: A,B,C

Well: 8-17 Pierson

Date: 25-May-92

Test No:

Test Date: June, 1991

Gauge:

Depth: ft

## WELL AND RESERVOIR DATA (Oil)

Multiphase flow at wellbore: NO  
Multiphase in reservoir : NO

Matrix Porosity	.153	fraction
Reservoir Thickness	37.70	ft
Wellbore Radius	.330	ft
Distance To Producing Well (*)	0.0	ft
Oil Formation Volume Factor	1.169	RB/STB
Oil Viscosity	1.30	cp
Total Compressibility	2.250E-5	1/psi

(\*) = For Interference Tests Only



Scientific Software-Intercomp

Interpret/2

Rates

Company: Home Oil Company

Field: Pierson, Manitoba  
Formation: Lower Amaranth  
Zone: A,B,C  
Well: 8-17 Pierson

Date: 25-May-92

Test No:

Test Date: June, 1991

Gauge:

Depth: ft

RATES

Flow Period	Start hrs	End hrs	Duration hrs	Oil STB/D	Gas Mscf/D	Wa ST
1	0.0	5.0000	5.0000	45.20	0.0	7.00
2	5.0000	670.0000	665.0000	26.40	0.0	6.91
3	670.0000	3543.0000	2873.0000	18.20	0.0	.94
4	3543.0000	4207.0000	664.0000	15.10	0.0	.63
5	4207.0000	4879.0000	672.0000	15.10	0.0	1.26
6	4879.0000	6343.0000	1464.0000	13.20	0.0	1.26
7	6343.0000	7249.0000	906.0000	12.50	0.0	.63
8	7249.0000	8012.3301	763.3301	0.0	0.0	0.0

Scientific Software-Intercomp

Interpret/2

Analysis Parameters

Company: Home Oil Company

Field: Pierson, Manitoba

Formation: Lower Amaranth

Zone: A,B,C

Well: 8-17 Pierson

Date: 25-May-92

Test No:

Test Date: June, 1991

Gauge:

Depth: ft

ANALYSIS MODEL, FLOW PERIOD: 8

Near wellbore effects: Wellbore Storage and Skin  
Reservoir behaviour: Composite, 2 Porosity, Restricted Interporosi  
Boundary effects: Infinite Lateral Extent

ANALYSIS PARAMETERS, FLOW PERIOD: 8

Pressure match, PM	8.280E-03	1/psi
Time match, TM	4.548E-02	1/hr
Curve Match, Log CDe2S	.204	
Dimensionless composite discontinuity radius, r1D	17.3	
Composite storativity ratio, (pch)1/2	1.57	
Composite mobility ratio, (kh/u)1/2	2.14	
Storativity ratio, Omega	9.258E-02	
Transition curve match, LCD	.456	
Storativity ratio in zone 2, Omega2	5.503E-02	
Transition curve match in zone 2, LCD2	4.607E-04	

## Analysis Results

Company: Home Oil Company

Field: Pierson, Manitoba

Formation: Lower Amaranth

Zone: A,B,C

Well: 8-17 Pierson

Date: 25-May-92

Test No:

Test Date: June, 1991

Gauge:

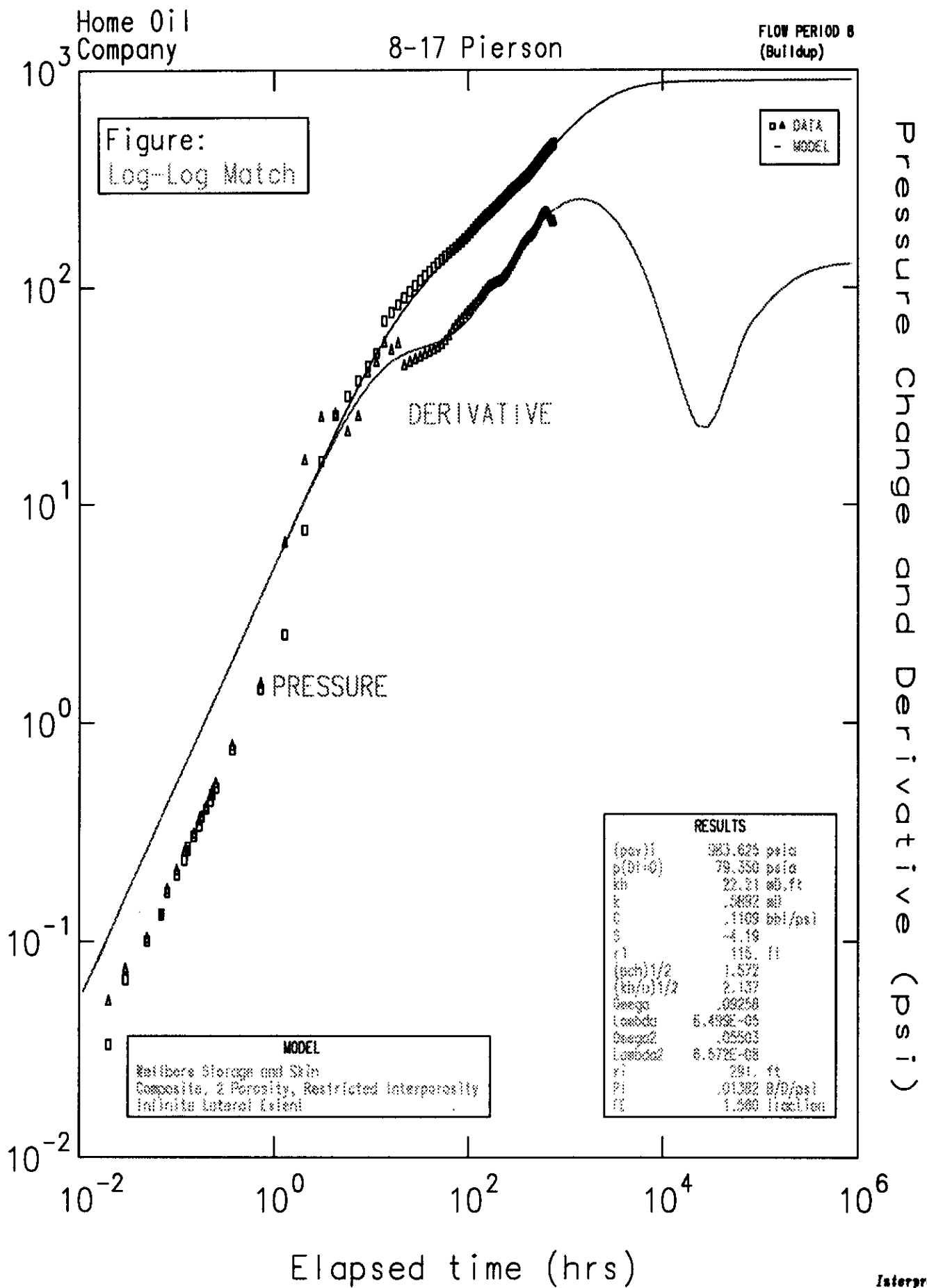
Depth: ft

## ANALYSIS MODEL, FLOW PERIOD: 8

Near wellbore effects: Wellbore Storage and Skin  
Reservoir behaviour: Composite, 2 Porosity, Restricted Interporosi  
Boundary effects: Infinite Lateral Extent

## ANALYSIS RESULTS, FLOW PERIOD: 8

Initial average reservoir pressure, (pav) <sub>i</sub>	983.625	psia
P (Delta t = 0), p(Dt=0)	79.350	psia
Permeability-thickness, kh	22.2	mD.ft
Permeability, k	.589	mD
Wellbore storage coefficient, C	.111	bbl/p
Wellbore skin factor, S	-4.19	
Composite discontinuity radius, r <sub>l</sub>	115.	ft
Composite storativity ratio, (p <sub>ch</sub> ) <sup>1/2</sup>	1.57	
Composite mobility ratio, (kh/u) <sup>1/2</sup>	2.14	
Storativity ratio, Omega	9.258E-02	
Interporosity flow coefficient, Lambda	6.499E-05	
Storativity ratio in zone 2, Omega <sub>2</sub>	5.503E-02	
Interporosity flow coefficient in zone 2, Lambda <sub>2</sub>	6.572E-08	
Radius of investigation (approx), r <sub>i</sub>	291.	ft
Measured Productivity Index, PI	1.382E-02	B/D/p
Flow Efficiency, FE	1.56	fract



Home Oil Company 8-17 Pierson FLOW PERIOD 8 (Buildup)

Figure:  
Horner Match

RESULTS	
(pav)i	983.625 psia
p(Di=0)	79.350 psia
kh	22.21 md.ft
k	.5892 md
C	.1109 bbl/psi
S	-4.18
r1	115. ft
(pwh)1/2	1.572
(kh/u)1/2	2.137
Omega	.09258
Lambda1	6.499E-05
Omega2	.05503
Lambda2	6.672E-08
r1	291. ft
PI	.01382 B/D/psi
FE	1.580 fraction

Pressure (psia)

□ DATA  
- MODEL

MODEL  
Wellbore Storage and Skin  
Composite, 2 Porosity, Restricted Interporosity  
Infinite Lateral Extent

PRESSURE

Superposition time (STB/D)

Home Oil  
Company

8-17 Pierson

FLOW PERIOD 8  
(Buildup)

Figure:  
Test Simulation  
(Constant Skin)

#### RESULTS

(pay)	983.625 psia
p(01-0)	79.350 psia
kh	22.21 mD.ft
k	.5892 mD
C	.1109 bbl/psi
S	-4.19
r	115. ft
(sch)1/2	1.572
(kh/u)1/2	2.137
Omega	.09258
Lambda	6.433E-05
Omega2	.05503
Lambda2	6.572E-08
r	291. ft
PI	.01382 bbl/psi
FE	1.580 fraction

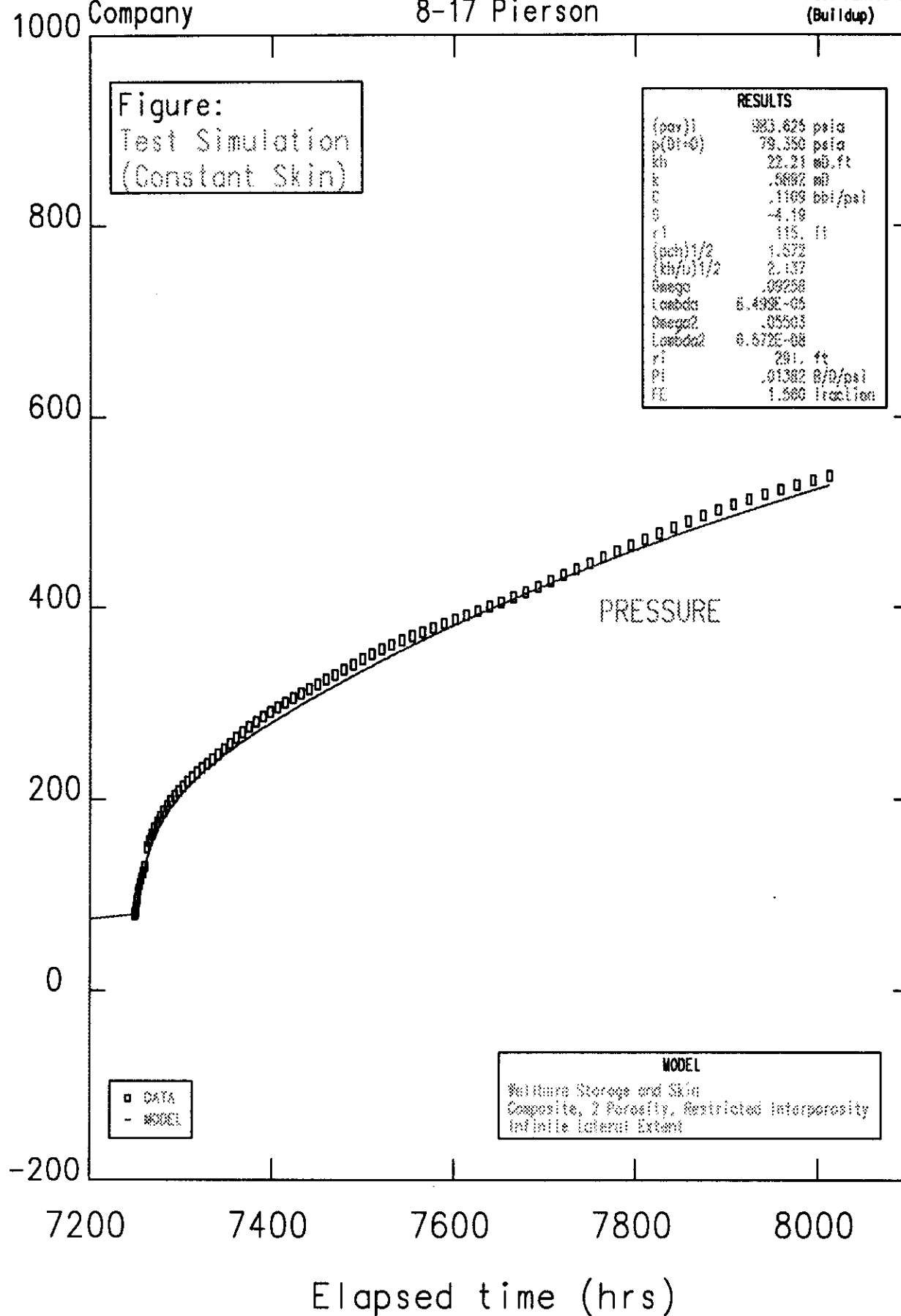
Pressure (psia)

PRESSURE

□ DATA  
- MODEL

#### MODEL

Wellbore Storage and Skin  
Composite, 2 Porosity, Restricted Interporosity  
Infinite Lateral Extent



**PRESSURE SURVEY  
SUMMARY OF RESULTS**

Prepared: May 26,1992

<b>YEAR:</b>	1991	<b>FIELD:</b>	Pierson
<b>POOL:</b>	Lower Amaranth	<b>LOCATION:</b>	02-16-002-29 W1M
<b>WELL:</b>	Home Scurry Pierson 2-16		
<b>ELEVATIONS:</b>	<b>K.B.</b>	476.96 m	
	<b>G.L.</b>	472.56 m	
	<b>TEST DATE (START):</b>	MAY 1991	
	<b>(END):</b>	JUNE 1991	
	<b>TYPE OF TEST:</b>	BUILD-UP	
	<b>PRODUCED FLUID:</b>	OIL	
	<b>PRODUCING TIME (HRS):</b>	7187	
	<b>SHUT-IN TIME (HRS):</b>	517	
	<b>DATUM DEPTH (m CF):</b>	1019.9	
	<b>EXT. RESERVOIR PRESSURE (kPaa):</b>	6467	
	<b>TEMP @ RUN DEPTH (C):</b>	42.0	
	<b>"KH" (mD.m):</b>	1.6	
	<b>WELL SKIN FACTOR:</b>	-1.8	

**COMMENTS:**

A composite, dual porosity , restricted interporosity flow in an infinite acting reservoir model was used to provide a reasonable match of the pressure data. The well was stimulated with a hydraulic fracture which may account for the composite flow regime. The pressure data does get marginally out of wellbore storage however, the recorded pressures are low resulting in a steep gradient for the average reservoir pressure extrapolations from the Horner plot . This results in a greater range of pressure accuracy since a slight change in the Horner line slope produces a large magnitude change in the extrapolated pressure from the match. Pressure depletion is evident in this portion of the reservoir from the original pressure of approximately 10,550 kPa.

As noted above, permeability-thickness values for this well are very low due to the tight nature of the matrix rock. The well had produced about 1700 m<sup>3</sup> of oil before the test was conducted.

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Scientific Software-Intercomp

Interpret/2  
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WELL TEST ANALYSIS REPORT  
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Company: Home Oil Company Ltd

Field: Pierson, Manitoba

Date: 25-May-92

Formation: Lower Amaranth

Test No:

Zone: A,B,C

Test Date: June, 1991

Well: 2-16 Pierson

Gauge:

Depth: ft

Perforations:  
1

From

ft

To

ft

ANALYSIS SUMMARY

Composite reservoir used to match test. Test conducted with acoustic  
sounder. Well on production July, 1991.



## Results Summary

Company: Home Oil Company Ltd

Field: Pierson, Manitoba

Date: 25-May-92

Formation: Lower Amaranth

Test No:

Zone: A,B,C

Test Date: June, 1991

Well: 2-16 Pierson

Gauge:

Depth: ft

Near wellbore effects:

Wellbore Storage and Skin

Reservoir behaviour:

Composite, 2 Porosity, Restricted Interporosi

Boundary effects:

Infinite Lateral Extent

Flow Period:	6	UNITS
(pav)i	937.975	psia
p(Dt=0)	88.010	psia
kh	156.3	mD.ft
k	5.297	mD
C	.1591	bbl/psi
S	-1.79	
rl	192.	ft
(pch)1/2	1.677	
(kh/u)1/2	9.223	
Omega	.1298	
Lambda	1.061E-04	
Omega2	.03409	
Lambda2	1.973E-07	
ri	718.	ft
PI	.03257	B/D/psi
FE	1.080	fraction

Scientific Software-Intercomp

Interpret/2

Well & Reservoir Parameters

Company: Home Oil Company Ltd

Field: Pierson, Manitoba

Date: 25-May-92

Formation: Lower Amaranth

Test No:

Zone: A,B,C

Test Date: June, 1991

Well: 2-16 Pierson

Gauge:

Depth: ft

WELL AND RESERVOIR DATA (Oil)

Multiphase flow at wellbore: NO  
Multiphase in reservoir : NO

Matrix Porosity	.153	fraction
Reservoir Thickness	29.50	ft
Wellbore Radius	.330	ft
Distance To Producing Well (*)	0.0	ft
Oil Formation Volume Factor	1.169	RB/STB
Oil Viscosity	1.30	cp
Total Compressibility	2.250E-5	1/psi

(\*) = For Interference Tests Only

Scientific Software-Intercomp

Interpret/2

Rates

Company: Home Oil Company Ltd

Field: Pierson, Manitoba

Date: 25-May-92

Formation: Lower Amaranth

Test No:

Zone: A,B,C

Test Date: June, 1991

Well: 2-16 Pierson

Gauge:

Depth: ft

RATES

Flow Period	Start hrs	End hrs	Duration hrs	Oil STB/D	Gas Mscf/D	Wa ST
1	0.0	5.0000	5.0000	440.93	0.0	0.0
2	5.0000	3632.0000	3627.0000	41.51	0.0	3.52
3	3632.0000	4376.0000	744.0000	29.56	0.0	1.26
4	4376.0000	5048.0000	672.0000	31.45	0.0	0.0
5	5048.0000	7187.0000	2139.0000	27.68	0.0	0.0
6	7187.0000	7704.2998	517.2998	0.0	0.0	0.0

Scientific Software-Intercomp

Interpret/2

Analysis Parameters

Company: Home Oil Company Ltd

Field: Pierson, Manitoba

Date: 25-May-92

Formation: Lower Amaranth

Test No:

Zone: A,B,C

Test Date: June, 1991

Well: 2-16 Pierson

Gauge:

Depth: ft

ANALYSIS MODEL, FLOW PERIOD: 6

Near wellbore effects: Wellbore Storage and Skin  
Reservoir behaviour: Composite, 2 Porosity, Restricted Interporosi  
Boundary effects: Infinite Lateral Extent

ANALYSIS PARAMETERS, FLOW PERIOD: 6

Pressure match, PM	2.631E-02	1/psi
Time match, TM	.223	1/hr
Curve Match, Log CDe2S	2.56	
Dimensionless composite discontinuity radius, r1D	26.4	
Composite storativity ratio, (pch)1/2	1.68	
Composite mobility ratio, (kh/u)1/2	9.22	
Storativity ratio, Omega	.130	
Transition curve match, LCD	1.36	
Storativity ratio in zone 2, Omega2	3.409E-02	
Transition curve match in zone 2, LCD2	2.536E-03	

Scientific Software-Intercomp

Interpret/2

Analysis Results

Company: Home Oil Company Ltd

Field: Pierson, Manitoba

Date: 25-May-92

Formation: Lower Amaranth

Test No:

Zone: A,B,C

Test Date: June, 1991

Well: 2-16 Pierson

Gauge:

Depth: ft

ANALYSIS MODEL, FLOW PERIOD: 6

Near wellbore effects: Wellbore Storage and Skin

Reservoir behaviour: Composite, 2 Porosity, Restricted Interporosi

Boundary effects: Infinite Lateral Extent

ANALYSIS RESULTS, FLOW PERIOD: 6

Initial average reservoir pressure, (pav) <sub>i</sub>	937.975	psia
P (Delta t = 0), p(Dt=0)	88.010	psia
Permeability-thickness, kh	156.	mD.ft
Permeability, k	5.30	mD
Wellbore storage coefficient, C	.159	bb1/p
Wellbore skin factor, S	-1.79	
Composite discontinuity radius, r <sub>l</sub>	192.	ft
Composite storativity ratio, (pch) <sup>1/2</sup>	1.68	
Composite mobility ratio, (kh/u) <sup>1/2</sup>	9.22	
Storativity ratio, Omega	.130	
Interporosity flow coefficient, Lambda	1.061E-04	
Storativity ratio in zone 2, Omega <sub>2</sub>	3.409E-02	
Interporosity flow coefficient in zone 2, Lambda <sub>2</sub>	1.973E-07	
Radius of investigation (approx), r <sub>i</sub>	718.	ft
Measured Productivity Index, PI	3.257E-02	B/D/p
Flow Efficiency, FE	1.08	fract

Home Oil  
Company Ltd

2-16 Pierson

FLOW PERIOD 6  
(Buildup)

Figure:  
Log-Log Match

▲ DATA  
- MODEL

Pressure Change and Derivative (psi)

DERIVATIVE

MODEL

Wellbore Storage and Skin  
Composite, 2 Permeability, Restricted Interporosity  
Infinite Lateral Extent

RESULTS

(pay)1	937.976 psia
p(0t=0)	88.010 psia
kh	156.3 md.ft
k	5.297 md
C	.1591 bbl/psi
S	-1.79
r1	192. ft
(pcr)1/2	1.877
(kh/u)1/2	0.223
Omega	.1298
Lambda1	1.061E-04
Omega2	.03408
Lambda2	1.973E-07
r1	718. ft
PI	.03257 B/D/psi
FE	1.080 fraction

10<sup>-1</sup>

10<sup>-2</sup>

10<sup>0</sup>

10<sup>2</sup>

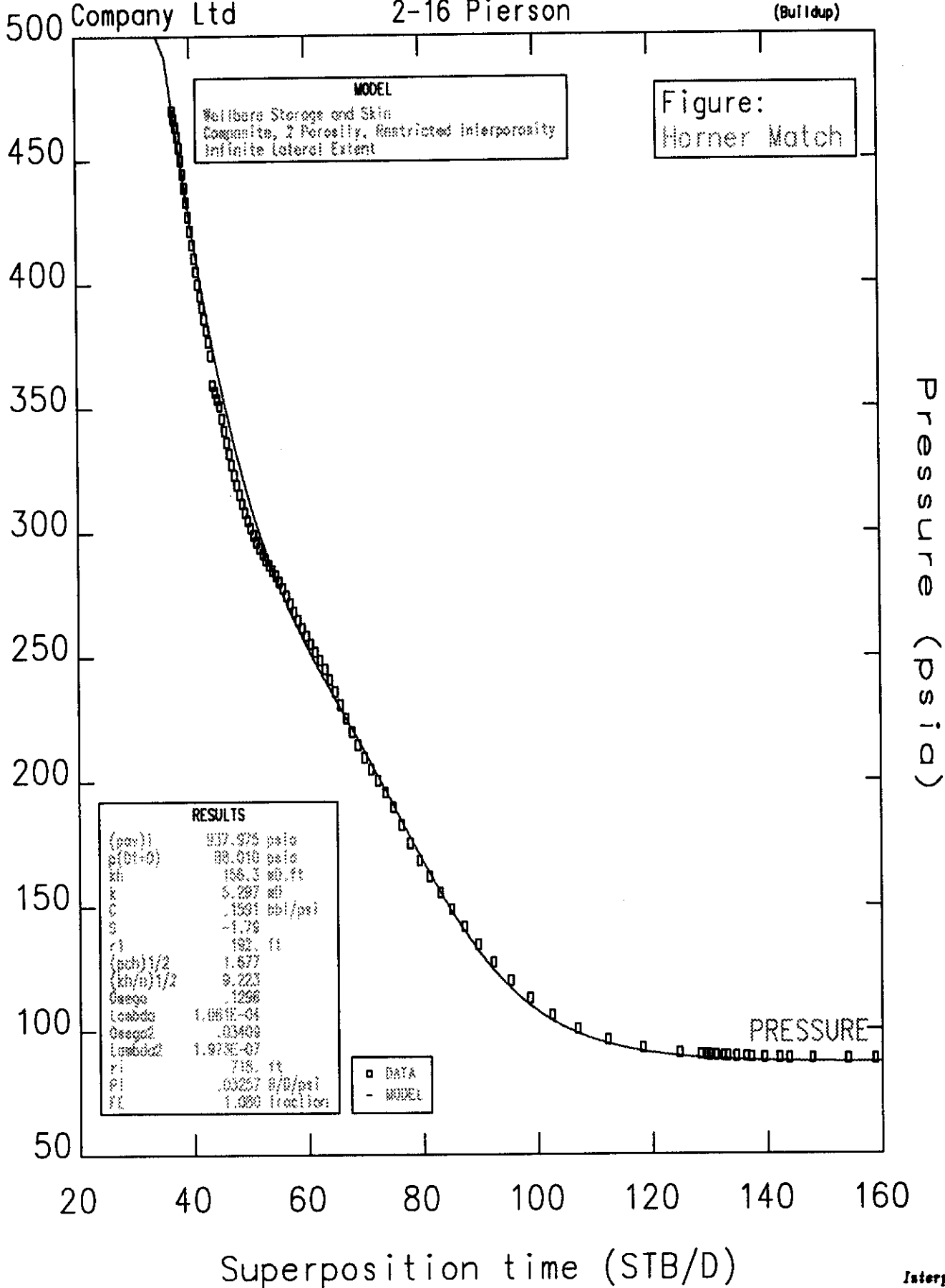
10<sup>4</sup>

Elapsed time (hrs)

Home Oil  
Company Ltd

2-16 Pierson

FLOW PERIOD 6  
(Buildup)



Home Oil  
Company Ltd

2-16 Pierson

FLOW PERIOD 6  
(Buildup)

Figure:  
Test Simulation  
(Constant Skin)

RESULTS

(pav) <sub>i</sub>	937.975 psia
p(DI-0)	88.010 psia
kh	158.3 mD.ft
k	5.297 mD
C	.1593 bbl/psi
S	-1.79
r <sub>i</sub>	182. ft
(pch) <sub>i</sub> /2	1.877
(kh/u) <sub>i</sub> /2	9.223
Omega	.1298
Lambda	1.061E-04
Omega2	.03408
Lambda2	1.975E-07
r <sub>i</sub>	718. ft
PI	.03257 R/D/psi
FE	1.080 fraction

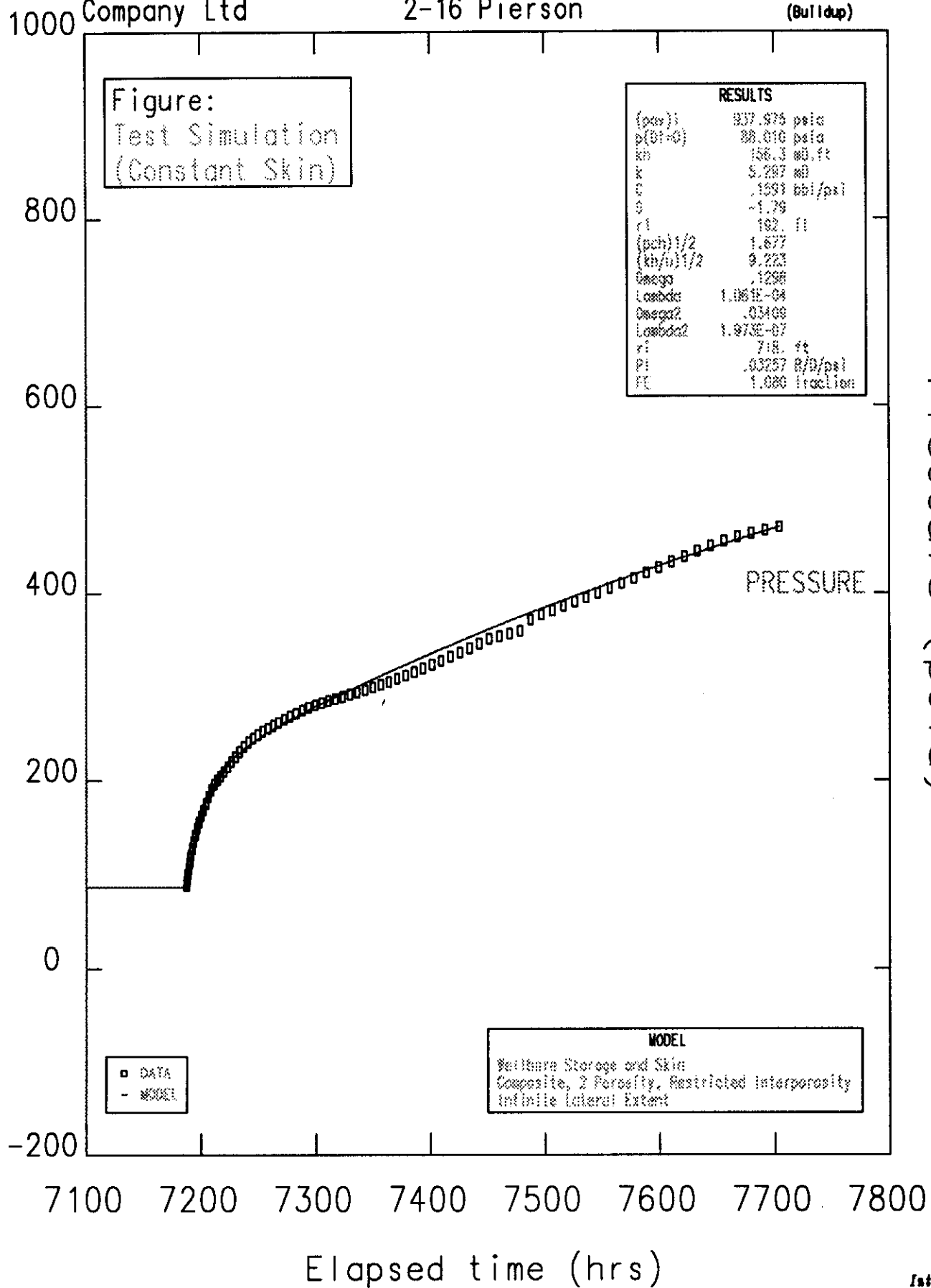
Pressure (psia)

PRESSURE

□ DATA  
- MODEL

MODEL

Wellbore Storage and Skin  
Composite, 2 Porosity, Restricted Interporosity  
Infinite Lateral Extent





**PRESSURE SURVEY**  
**SUMMARY OF RESULTS**

Prepared: May 26, 1992

<b>YEAR:</b>	1991	<b>FIELD:</b>	Pierson
<b>POOL:</b>	Lower Amaranth	<b>LOCATION:</b>	16-18-002-29 W1M
<b>WELL:</b>	Home Scurry Pierson 16-18		
<b>ELEVATIONS:</b>	<b>K.B.</b>	483.26 m	
	<b>G.L.</b>	479.06 m	
<b>TEST DATE (START):</b>		MARCH 1991	
<b>(END):</b>		JULY 1991	
<b>TYPE OF TEST:</b>		BUILD-UP	
<b>PRODUCED FLUID:</b>		OIL	
<b>PRODUCING TIME (HRS):</b>		326	
<b>SHUT-IN TIME (HRS):</b>		2850	
<b>DATUM DEPTH (m CF):</b>		1027.8	
<b>EXT. RESERVOIR PRESSURE (kPaa):</b>		9997	
<b>TEMP @ RUN DEPTH (C):</b>		42.0	
<b>"KH" (mD.m):</b>		0.03	
<b>WELL SKIN FACTOR:</b>		-5.2	

**COMMENTS:**

A composite, dual porosity, restricted interporosity flow in an infinite acting reservoir model was used to provide a reasonable match of the pressure data. The well was stimulated with a hydraulic fracture which may account for the composite flow regime. This well is generally a non-producer and was shut-in for over 118 days and the pressure was still increasing which confirms the low permeability of this location. Some pressure depletion is evident in this portion of the reservoir and must be due to surrounding production.

As noted above, permeability-thickness values for this well are very low due to the tight nature of the matrix rock. The well had produced about 9 m<sup>3</sup> of oil before the test was conducted.

Scientific Software-Intercomp

Interpret/2

WELL TEST ANALYSIS REPORT

Company: Home Oil Company Ltd.

Field: Pierson, Manitoba

Formation: Lower Amaranth

Zone: A,B,C

Well: 16-18 Pierson

Date: 25-May-92

Test No:

Test Date: March, 1991

Gauge:

Depth: ft

Perforations:

From

ft

To

ft

ANALYSIS SUMMARY

Composite reservoir used to match model. Nnough flow data to get good simulation. Well on production February, 1991 and watered out very quickly.

## Results Summary

Company: Home Oil Company Ltd.

Field: Pierson, Manitoba

Date: 25-May-92

Formation: Lower Amaranth

Test No:

Zone: A,B,C

Test Date: March, 1991

Well: 16-18 Pierson

Gauge:

Depth: ft

Near wellbore effects: Wellbore Storage and Skin  
Reservoir behaviour: Composite, 2 Porosity, Restricted Interporosi  
Boundary effects: Infinite Lateral Extent

Flow Period:	3	UNITS
(pav)i	1450.275	psia
p(Dt=0)	38.612	psia
kh	.09671	mD.ft
k	.003691	mD
C	.01617	bb1/psi
S	-5.18	
rl	77.	ft
(pch)1/2	1.257	
(kh/u)1/2	.8251	
Omega	.2706	
Lambda	1.862E-05	
Omega2	.05359	
Lambda2	2.484E-05	
xf	117.1	ft
ri	44.	ft
PI	8.501E-04	B/D/psi
FE	10.77	fraction

Scientific Software-Intercomp

Interpret/2

Well & Reservoir Parameters

Company: Home Oil Company Ltd.

Field: Pierson, Manitoba

Date: 25-May-92

Formation: Lower Amaranth

Test No:

Zone: A,B,C

Test Date: March, 1991

Well: 16-18 Pierson

Gauge:

Depth: ft

WELL AND RESERVOIR DATA (Oil)

Multiphase flow at wellbore: NO  
Multiphase in reservoir : NO

Matrix Porosity	.153	fraction
Reservoir Thickness	26.20	ft
Wellbore Radius	.330	ft
Distance To Producing Well (*)	0.0	ft
Oil Formation Volume Factor	1.169	RB/STB
Oil Viscosity	1.30	cp
Total Compressibility	2.250E-5	1/psi

(\*) = For Interference Tests Only

Scientific Software-Intercomp

Interpret/2

Rates

Company: Home Oil Company Ltd.

Field: Pierson, Manitoba

Formation: Lower Amaranth

Zone: A,B,C

Well: 16-18 Pierson

Date: 25-May-92

Test No:

Test Date: March, 1991

Gauge:

Depth: ft

RATES

Flow Period	Start hrs	End hrs	Duration hrs	Oil STB/D	Gas Mscf/D	Wa ST
1	0.0	58.0000	58.0000	17.60	0.0	17.00
2	58.0000	326.0000	268.0000	1.20	0.0	13.80
3	326.0000	3176.0000	2850.0000	0.0	0.0	0.0

Scientific Software-Intercomp

Interpret/2

Analysis Parameters

Company: Home Oil Company Ltd.

Field: Pierson, Manitoba

Formation: Lower Amaranth

Zone: A,B,C

Well: 16-18 Pierson

Date: 25-May-92

Test No:

Test Date: March, 1991

Gauge:

Depth: ft

ANALYSIS MODEL, FLOW PERIOD: 3

Near wellbore effects: Wellbore Storage and Skin

Reservoir behaviour: Composite, 2 Porosity, Restricted Interporosi

Boundary effects: Infinite Lateral Extent

ANALYSIS PARAMETERS, FLOW PERIOD: 3

Pressure match, PM	3.756E-04	1/psi
Time match, TM	1.358E-03	1/hr
Curve Match, Log CDe2S	-1.33	
Dimensionless composite discontinuity radius, r1D	37.2	
Composite storativity ratio, (pch)1/2	1.26	
Composite mobility ratio, (kh/u)1/2	.825	
Storativity ratio, Omega	.271	
Transition curve match, LCD	2.739E-02	
Storativity ratio in zone 2, Omega2	5.359E-02	
Transition curve match in zone 2, LCD2	3.654E-02	

Scientific Software-Intercomp

Interpret/2

Analysis Results

Company: Home Oil Company Ltd.

Field: Pierson, Manitoba

Date: 25-May-92

Formation: Lower Amaranth

Test No:

Zone: A,B,C

Test Date: March, 1991

Well: 16-18 Pierson

Gauge:

Depth: ft

ANALYSIS MODEL, FLOW PERIOD: 3

Near wellbore effects: Wellbore Storage and Skin  
Reservoir behaviour: Composite, 2 Porosity, Restricted Interporosi  
Boundary effects: Infinite Lateral Extent

ANALYSIS RESULTS, FLOW PERIOD: 3

Initial average reservoir pressure, (pav) <sub>i</sub>	1450.275	psia
P (Delta t = 0), p(Dt=0)	38.612	psia
Permeability-thickness, kh	9.671E-02	mD.ft
Permeability, k	3.691E-03	mD
Wellbore storage coefficient, C	1.617E-02	bb1/p
Wellbore skin factor, S	-5.18	
Composite discontinuity radius, r <sub>1</sub>	77.	ft
Composite storativity ratio, (pch) <sup>1/2</sup>	1.26	
Composite mobility ratio, (kh/u) <sup>1/2</sup>	.825	
Storativity ratio, Omega	.271	
Interporosity flow coefficient, Lambda	1.862E-05	
Storativity ratio in zone 2, Omega <sub>2</sub>	5.359E-02	
Interporosity flow coefficient in zone 2, Lambda <sub>2</sub>	2.484E-05	
Half length of fracture, x <sub>f</sub>	117.1	ft
Radius of investigation (approx), r <sub>i</sub>	44.	ft
Measured Productivity Index, PI	8.501E-04	B/D/p
Flow Efficiency, FE	10.8	fract

Home Oil  
Company Ltd.

16-18 Pierson

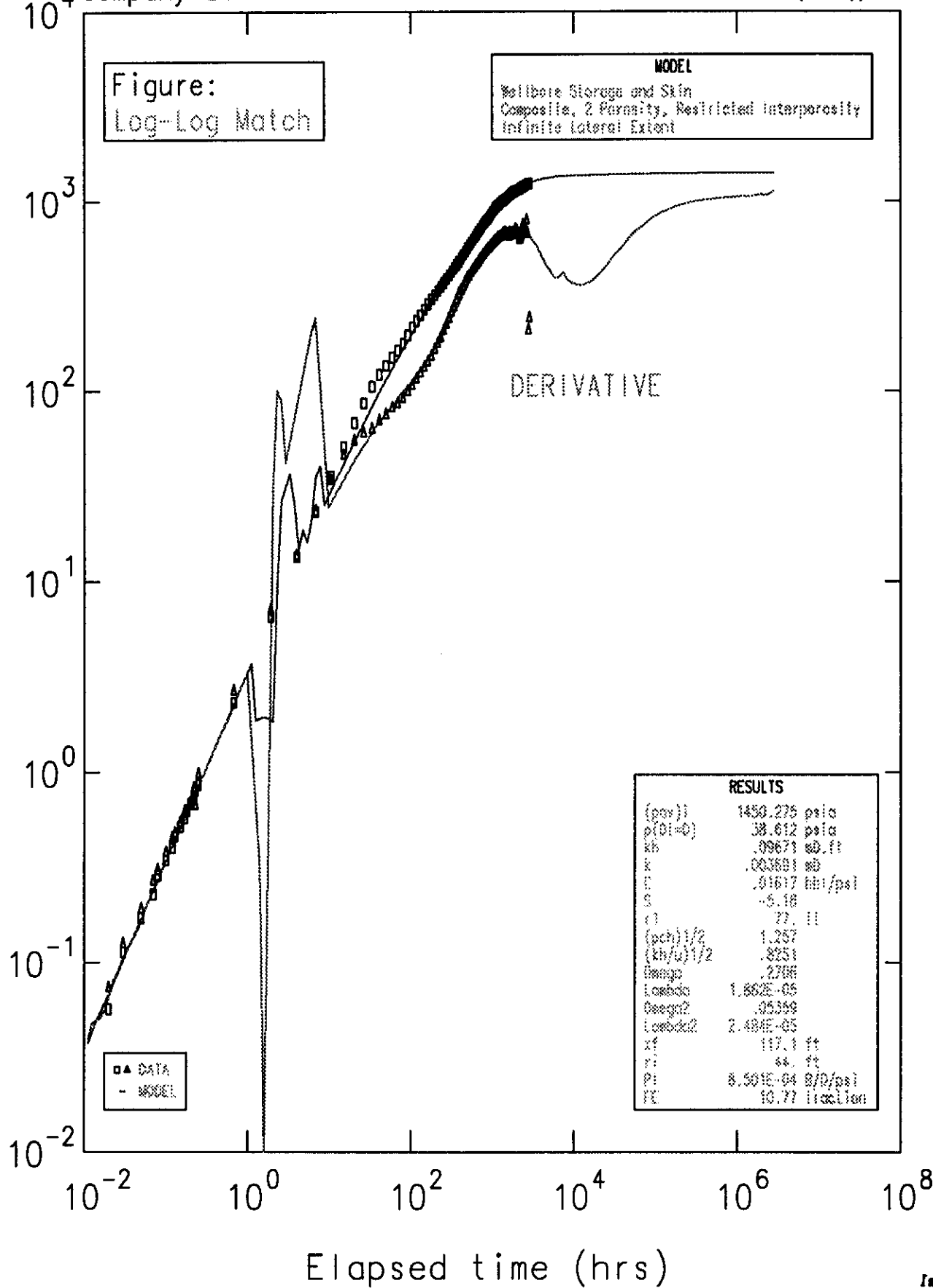
FLOW PERIOD 3  
(Buildup)

Figure:  
Log-Log Match

MODEL

Wellbore Storage and Skin  
Composite, 2 Porosity, Restricted Interporosity  
Infinite Lateral Extent

Pressure Change and Derivative (psi)

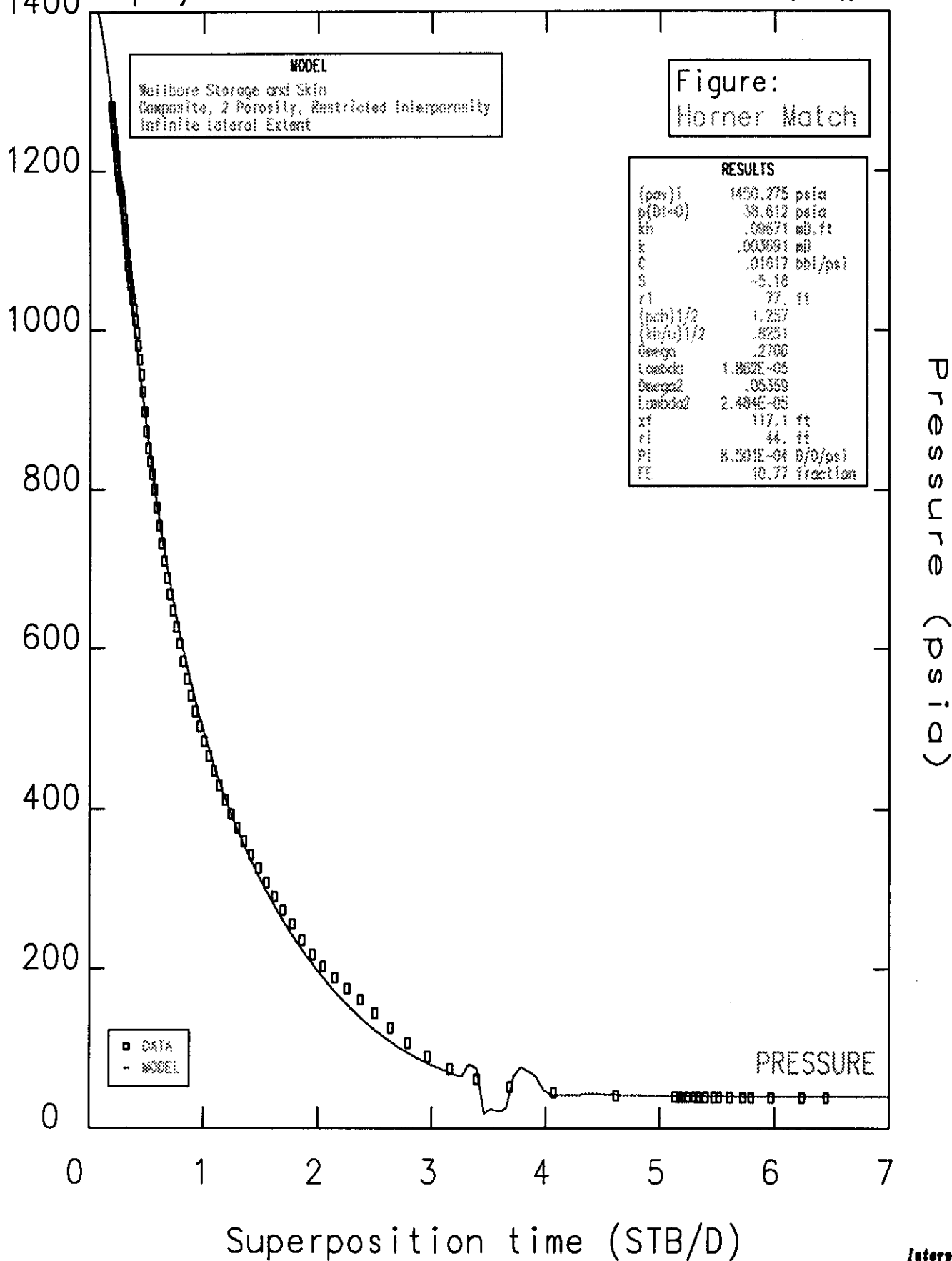




Home Oil  
Company Ltd.

16-18 Pierson

FLOW PERIOD 3  
(Buildup)



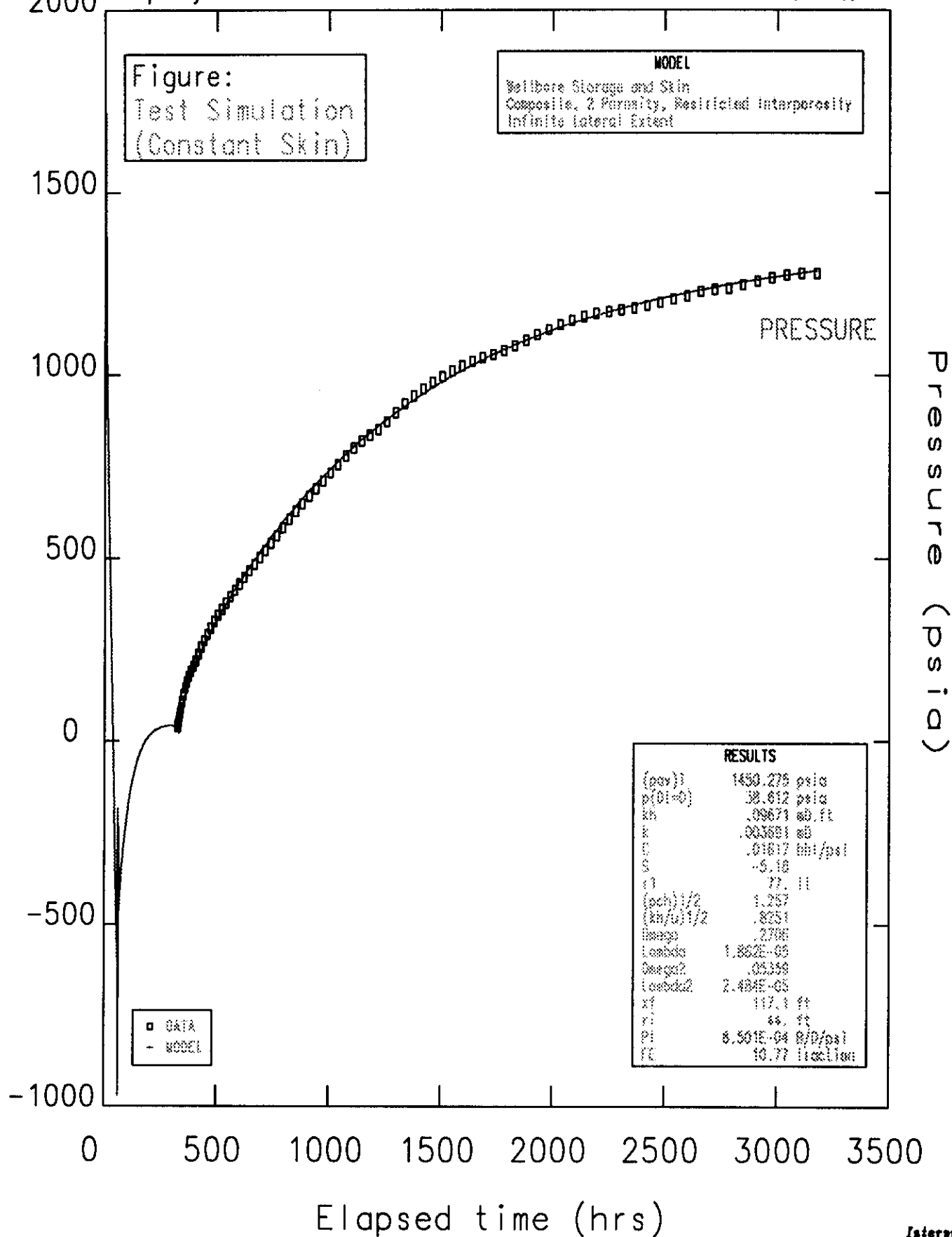
Home Oil  
Company Ltd.

16-18 Pierson

FLOW PERIOD 3  
(Buildup)

Figure:  
Test Simulation  
(Constant Skin)

MODEL  
Wellbore Storage and Skin  
Composite, 2 Porosity, Restricted Interporosity  
Infinite Lateral Extent





Energy and Mines

Petroleum

555 — 330 Graham Avenue  
Winnipeg, Manitoba, CANADA  
R3C 4E3

(204) 945-6577

October 26, 1989

Home Oil Company Limited  
1700 Home Oil Tower  
324 - 8th Avenue S.W.  
Calgary, Alberta  
T2P 2Z5

Attention: Mr. G. B. Harrison, P. Eng.  
Sr. Reservoir Engineer

Dear Gary:

Re: Pressure Survey - South Pierson Lower Amaranth B and C Pools

Your letter dated October 13, 1989 outlining the proposed pressure survey in the South Pierson Lower Amaranth B and C Pools is hereby acknowledged.

As outlined in your letter and modified in subsequent discussions, your proposal to survey, using an acoustic well sounder, the wells 16-5-2-29 (WPM), 16-8-2-29 (WPM) and 16-9-2-29 (WPM) in the Lower Amaranth B Pool and 6-19-2-29 (WPM) in the Lower Amaranth C Pool is hereby approved.

Yours sincerely,

A handwritten signature in dark ink, appearing to be 'LRD' with a stylized flourish.

L. R. Dubreuil  
Director

JNF/LRD/sml

**Home Oil Company Limited**

1700 Home Oil Tower  
324 Eighth Avenue S.W.  
Calgary, Alberta T2P 2Z5  
Telephone (403) 232-7100  
Fax (403) 232-7678



1989-10-13

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

ATTENTION: Mr. J. Fox, Chief Petroleum Engineer

Dear Sir:

RE: Annual Pressure Survey 1989  
South Pierson Lower Amaranth B/C Pool

As requested by the Oil and Natural Gas Conservation Board, Home Oil Company Limited is proposing to conduct a pressure survey in the referenced pool. Attached is a list detailing the wells selected for survey, method of testing, shut-in period, and approximate survey date.

As the proposed survey is subject to Board approval no testing will commence prior to notification of such approval. If you have any questions or concerns with respect to this matter please contact either Gary Harrison (403) 232-7107 or Tom Coburn (403) 232-7728.

Yours truly,

HOME OIL COMPANY LIMITED

*J. Harrison*

*for* / D.A. Betram, P. Eng  
Chief Reservoir Engineer  
Southern District

TAC/eja  
1693e

- 2 -

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

ATTENTION: Mr. J. Fox, Chief Petroleum Engineer

c.c. W.C. Tersmette  
J.M. Feenstra  
J.C. Chan  
D.A. Cairns-Estevan  
G.B. Harrison  
T.A. Coburn  
H.A. Seefeldt  
File 13-Pier-0  
Day File

# 1989 PRESSURE SURVEY

## South Pierson Lower Amaranth B/C Pool

<u>Well Location</u>	<u>Current Well Status</u>	<u>MPP mCF</u>	<u>Type of Test</u>	<u>Approx. Survey Date</u>	<u>Shut-in Period</u>	<u>Elevations mKB</u>	<u>Elevations mCF</u>
16-05-002-29W1	Prod. Oil	1020.75	AWS	Nov/Dec	14 days	478.3	474.3
16-08-002-29W1	Prod. Oil	1019.3	AWS	Nov/Dec	14 days	477.5	473.3
06-19-002-29W1	Prod. Oil	1021.85	AWS	Nov/Dec	14 days	483.4	479.25