

9211-P33-7-3

**PRODUCTIVITY AND BUILDUP TEST REPORT
ON WELL**

PARAMOUNT et al Cameron

NWT / C-75 60° 10' 117° 15'

Sulphur Point

March 25 - 31, 1994

1793

Fekete
Associates Inc.

N.E.B. COPY

9211-P33-7-3

**PRODUCTIVITY AND BUILDUP TEST REPORT
ON WELL**

PARAMOUNT et al Cameron

NWT / C-75 60° 10' 117° 15'

Sulphur Point

March 25 - 31, 1994

1793

**Prepared for:
PARAMOUNT Resources Ltd.**

**Prepared by:
FEKETE ASSOCIATES INC.**



Reservoir Engineering & Geology — Oil & Gas Property Evaluation — Well Test Interpretation — Software Development

June 28, 1994

PARAMOUNT Resources Ltd.
4000, 350 - 7th Avenue S.W.
Calgary, Alberta
T2P 3W5

ATTENTION: Mr. John Gee

**RE: PRODUCTIVITY AND BUILDUP TEST REPORT
PARAMOUNT et al Cameron C-75
Sulphur Point
March 25 - 31, 1994**

Please find enclosed an "Inflow Performance Relationship and Buildup Test Report" resulting from a Flow and Buildup test conducted on the Sulphur Point horizon from the period of March 25th to 31st, 1994.

A pressure transient analysis was performed and the results were confirmed by undertaking pressure history matching (Synthesis) to gain the reservoir characteristics. The pressure history matching indicated a permeability to oil of 2.55 mD and a skin of -4.30, indicating an effective stimulation treatment.

The test results are summarized below:

Reservoir Pressure	(p_i, p_R)	9400	kPa	(1363	psia)
Permeability to Oil	(k_o)	2.55	mD	(2.59	md)
Skin Effect	(s)	-4.30			

Inflow Performance Relationship:

Qmax (oil)	17.48	m³/d	(110	bbl/d)
Qmax (water)	12.41	m³/d	(78	bbl/d)

A detailed discussion of our test results follows in this report. If you have any questions, please call the undersigned or Mr. Marty Santo.

Yours truly,
FEKETE ASSOCIATES INC.

(ORIGINAL SIGNED BY)

Reza N. Ali, C.E.T.
Project Technologist

(ORIGINAL SIGNED BY)

L. Mattar, P. Eng.
President

RNA/MSS

TABLE OF CONTENTS

DISCUSSION

OPERATIONS SUMMARY

INFLOW PERFORMANCE RELATIONSHIP

Oil Well Deliverability Test Summary
IPR & Deliverability Curve

BUILDUP ANALYSIS

Log-Log Diagnostic Plot
Horner Semilog Analysis
Tandem Root T Plot
Tandem Quad Root T Plot
Pressure Transient Analysis Data

ANALYSIS BY SYNTHESIS

Composite Model Description
Strip Chart
Log-Log Type Curve Plot
Semilog Plot
Model Parameters/Analysis Results

FLOW VOLUMES

Strip Chart
Production History

FIELD DATA

Completion Field Notes

SUBSURFACE PRESSURES

FLUID ANALYSIS

EQUATIONS AND NOMENCLATURE

Report Distribution

PRODUCTIVITY AND BUILDUP TEST REPORT
PARAMOUNT et al Cameron C-75
Sulphur Point
March 25 - 31, 1994

Background And Test Overview

Following the acid treatment on the subject horizon, on March 24th, 1994, swabbing operations commenced and the well was opened to flow on a short duration cleanup. The well was then shut-in for the production tubing string to be run. On the 25th, subsurface mechanical pressure recorders were landed in the tubing at 1414.0 m CF. The well was then opened to flow on test. On the 28th, after 69.5 hours of flow the well was shut-in on buildup. The subsurface pressure recorders were retrieved on March 31st. The total buildup time was 62.7 hours.

Reservoir Parameters

The reservoir parameters used in the pressure transient analysis were reported by PARAMOUNT Resources Ltd., and are as follows:

$$h = 10.7 \text{ m}$$

$$\phi = 10.0 \%$$

$$S_w = 28.6 \%$$

Pressure Transient Analysis

A pressure transient analysis was performed on the pressure buildup data and the pressure derivative was used as a diagnostic tool to identify the different flow regimes. Referring to the type curve and derivative diagnostic plot, the early-time data is indicative of wellbore storage effects followed by radial flow.

The results of the Horner Semi-Log analysis indicated a permeability to oil of 3.10 mD and a skin of -4.0, indicating that the acid treatment was successful.

The semi-log extrapolation yielded a reservoir pressure of 10 012 kPaa, which is 600 kPa higher than the DST pressure. The DST pressure appears to be reliable, hence, it is suspected that the subject test buildup duration was insufficient to provide

a reliable estimate of the reservoir pressure. To obtain a pressure close to that of the DST, the buildup data would have to exhibit an increase in mobility beyond 62.7 hours of shut-in. The late-time response may be indicating an increase in mobility beyond 62.7 hours. This is possible since there is an overlying gas zone which was identified in the I-74 well.

Based on the aforementioned conclusions, pressure history matching was performed by anchoring to the DST pressure of 9400 kPaa and using a "composite" model.

Results are as follows:

Permeability to Oil	(k_o)	2.55 mD
Permeability to Gas	(k_g)	0.33 mD
Skin Effect	(s)	-4.30

Reservoir Pressure

The reservoir pressure was assumed equal to the initial DST pressure (9400 kPaa). The final buildup pressure was 8921 kPaa.

Inflow Performance Relationship

Based on the reservoir pressure of 9400 kPaa, and the producing conditions at the time of shut-in, an Inflow Performance Relationship curve was constructed. By assuming that the saturation pressure was equal to the reservoir pressure and by applying a quadratic curve factor of 0.2, the maximum stabilized oil rate was determined as below:

$$Q_{\max} (\text{oil}) = 17.48 \text{ m}^3/\text{d}$$

By fitting a straight line through the water flow point, the maximum water rate was determined to be 12.41 m³/d.

Conclusions

1. The pressure buildup response observed during the 62.7 hour buildup test indicated that the stimulation treatment was effective. The semi-log analysis indicated a skin of -4.0 and a permeability to oil of 3.1 mD.
2. The semi-log P^* extrapolation ($P^* = 10112$ kPaa) is approximately 600 kPa higher than the DST pressure. The DST pressure appears to be reliable, hence, it is suspected that the buildup duration was insufficient to provide a reliable estimate of the reservoir pressure. To obtain a pressure which would be close to that of the DST, the buildup data would have to exhibit an increase in mobility beyond 62.7 hours of buildup. This would be possible since there is an overlying gas cap identified in the I-74 well.
3. To confirm the above results, a longer buildup test is required.

PRODUCTIVITY AND BUILDUP TEST REPORT
PARAMOUNT et al Cameron C-75
Sulphur Point
March 25 - 31, 1994

OPERATIONS

March 24, 1994	1130 Hours	Acidize perforations. Spot 8.5 m ³ of 15% acid with additives; 5 100 L stages of acid over each set of perforations.
	1745 Hours	Open well to flow on cleanup.
	1930 Hours	Shut-in well.
		Pull acidizing tubing string and run production string.

TEST OPERATIONS

March 25, 1994		Slickline on location to land subsurface mechanical pressure recorders.
	1330 Hours	Subsurface pressure recorders landed at 1414.0 m CF. Rig out slickline unit.
	1430 Hours	Open well top flow on test.
March 26, 1994	0700 Hours	Well flowing on test.
March 27, 1994	0700 Hours	Well flowing on test.
March 28, 1994	0700 Hours	Well flowing on test.
	1200 Hours	Shut-in well; End of flow test.

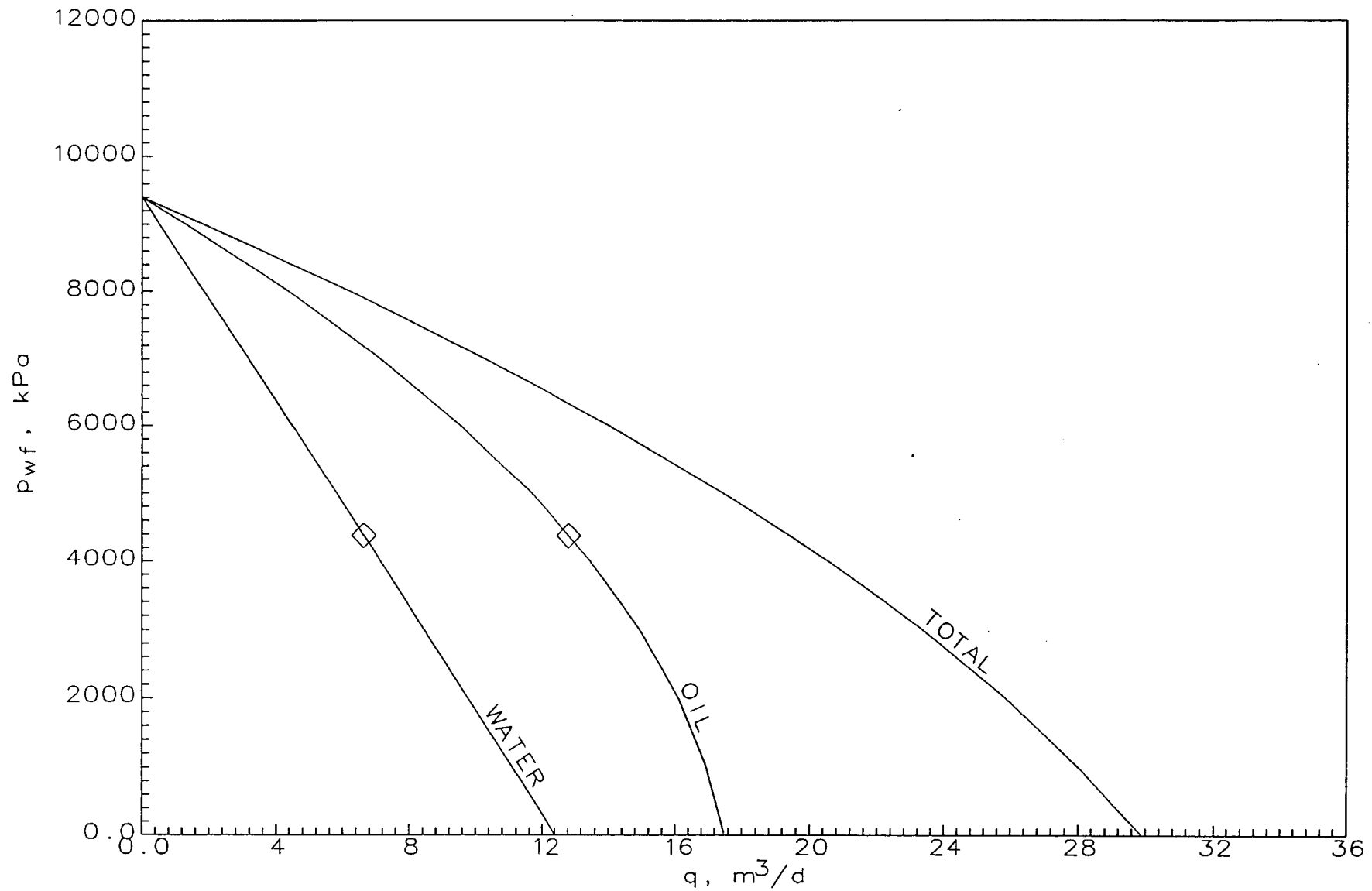
March 31, 1994		Slickline on location to retrieve subsurface pressure recorders.
	0240 Hours	Subsurface pressure recorders off bottom.

-END OF TEST-

I.P.R.

PARAMOUNT et al Cameron
C-75
Sulphur Point (1423.5-1431.5 m KB)
March 25 - 31, 1994

LEGEND	
○	- Oil
△	- Water
◇	- Stab
□	- Ignored



Oil Well Test

Inflow Performance Relationship

PARAMOUNT et al Cameron
C-75

Sulphur Point (1423.5-1431.5 m KB)
March 25 - 31, 1994

Reservoir Pressure	=	9400.0	kPa	
Bubble Point Pressure	=	-	kPa	<DEF>

Stabilized Conditions

Flowing Pressure	=	4376.9	kPa	
Stabilized Oil Rate	=	12.82	m ³ /d	
Stabilized Water Rate	=	6.63	m ³ /d	

I. P. R. Results

Maximum Oil Rate	=	17.48	m ³ /d	
Maximum Water Rate	=	12.41	m ³ /d	
Maximum Total Rate	=	29.89	m ³ /d	

Oil Well Test

Inflow Performance Relationship

PARAMOUNT et al Cameron
C-75

Sulphur Point (1423.5-1431.5 m KB)
March 25 - 31, 1994

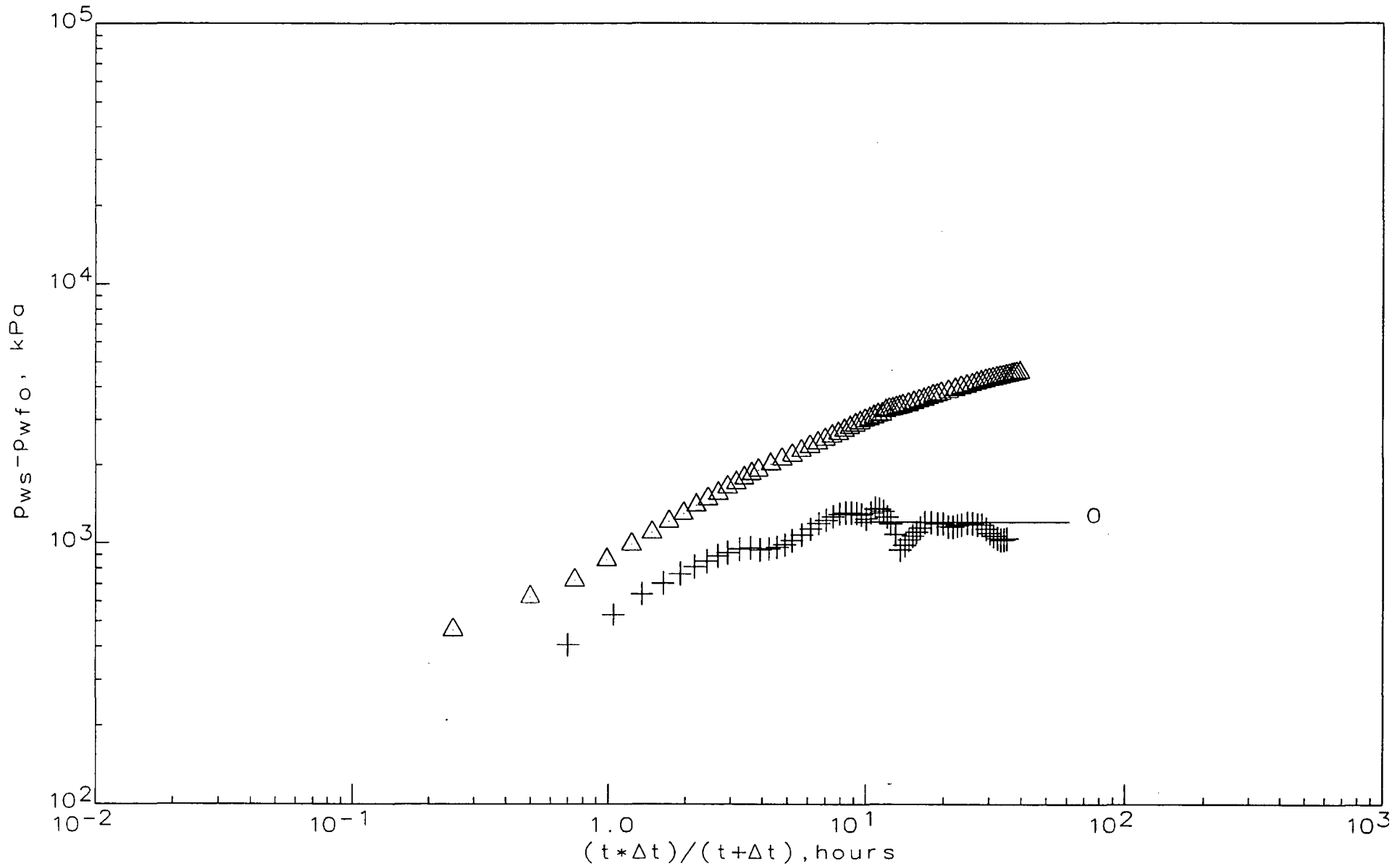
Flowing Pressure	Oil Rate	Water Rate	Total Rate	Test Oil Rate	Test Water Rate	
	3	3	3	3	3	
kPa	m /d	m /d	m /d	m /d	m /d	
-----	-----	-----	-----	-----	-----	-----
0.0	17.48	12.41	29.89	-	-	
1000.0	16.95	11.09	28.04	-	-	
2000.0	16.10	9.77	25.87	-	-	
3000.0	14.94	8.45	23.39	-	-	
4000.0	13.46	7.13	20.59	-	-	
4376.9	12.82	6.63	19.45	12.82	6.63	Stabilized
5000.0	11.66	5.81	17.47	-	-	
6000.0	9.55	4.49	14.04	-	-	
7000.0	7.12	3.17	10.29	-	-	
8000.0	4.38	1.85	6.22	-	-	
9000.0	1.31	0.53	1.84	-	-	
9400.0	0.00	0.00	0.00	-	-	

DIAGNOSTIC PREPLOT TYPECURVE

PRESSURE BUILDUP PLOT

PARAMOUNT et al Cameron
C-75

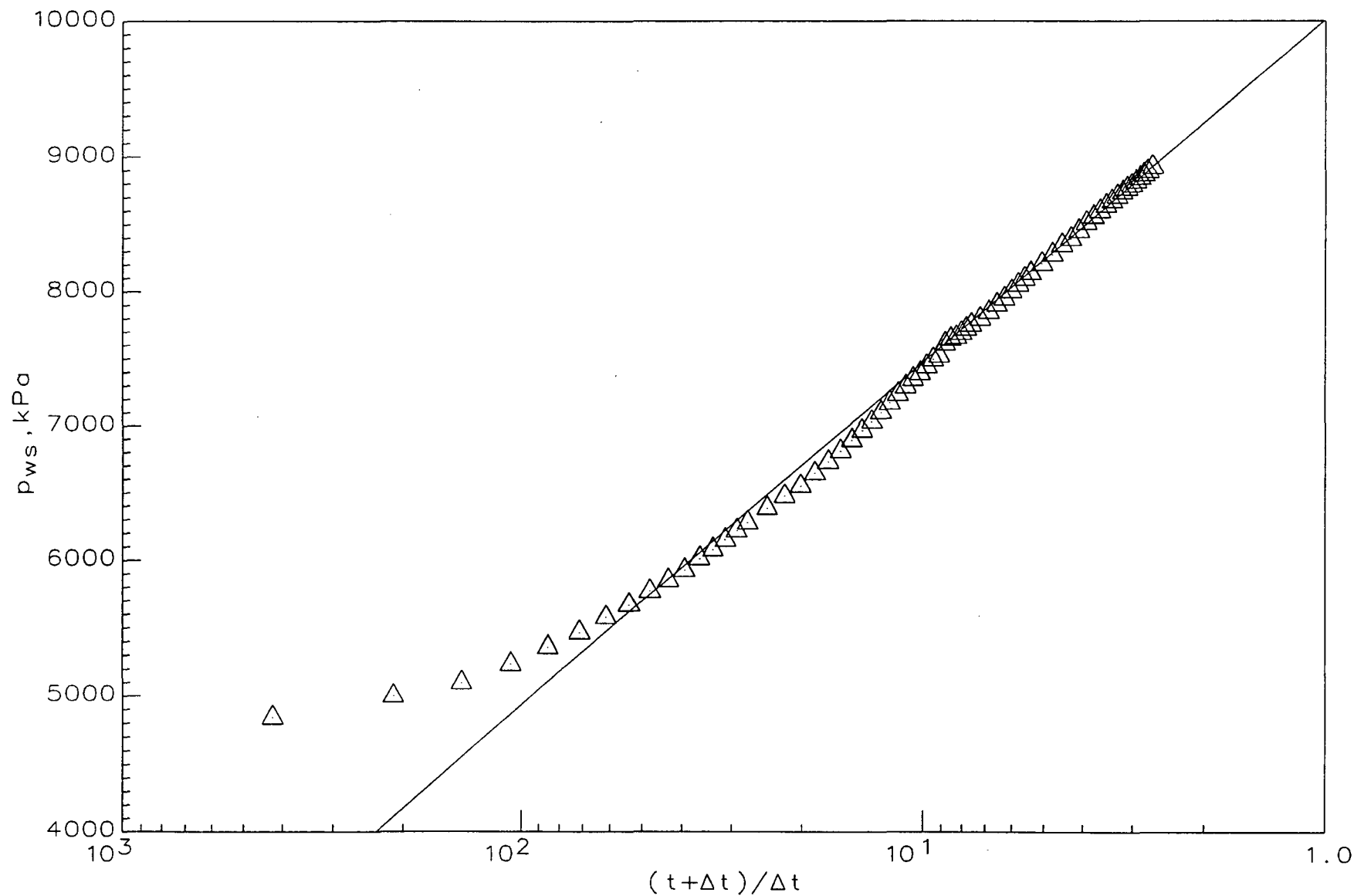
Sulphur Point (1423.5 - 1431.5 m KB)
March 25 - 31, 1994



HORNER PRESSURE BUILDUP PLOT

PARAMOUNT et al Cameron Sulphur Point (1423.5 - 1431.5 m KB)
C-75 March 25 - 31, 1994

$[k_1/u]_t = 11.53$ $k_1 = 3.10$ mD $s = -4.0$ $p^* = 10011.5$



Oil Well Test - BUILDUP

Radial Flow Analysis

(Horner Time)

PARAMOUNT et al Cameron
C-75

Sulphur Point (1423.5 - 1431.5 m KB
March 25 - 31, 1994

Production And Times

Cumulative Production (oil)	=	-	³ m	<DEF>
Corrected Flow Time	tc =	105.483	hr	<DEF>
Final Oil Rate	qo =	18.76	³ m /d	

Fluid Properties

P V T Reference Pressure	pRef =	8920.8	kPa	<DEF>
Oil Compressibility	co =	3.921x10 ⁻⁰⁵	kPa ⁻¹	<DEF>
Oil Formation Vol Factor	Bo =	1.15		<DEF>
Oil Viscosity	muo =	1.845	mPa.s	<DEF>
Solution Gas Oil Ratio	Rso =	40.4	³ m /m	<DEF>

Reservoir Parameters

Net Pay	h =	10.70	m	
Perforated Interval	=	-	m	
Total Porosity	phit =	10.00	%	
Water Saturation	Sw =	28.60	%	
Oil Saturation	So =	71.40	%	
Gas Saturation	Sg =	0.00	%	
Wellbore Radius	rw =	0.08	m	
Formation Temperature	T =	54.00	deg C	
Formation Compressibility	cf =	7.052x10 ⁻⁰⁷	kPa ⁻¹	<DEF>
Total Compressibility	ct =	2.877x10 ⁻⁰⁵	kPa ⁻¹	<DEF>

Oil Well Test - BUILDUP

Radial Flow Analysis

(Horner Time)

PARAMOUNT et al Cameron
C-75

Sulphur Point (1423.5 - 1431.5 m KB
March 25 - 31, 1994

Zone 1

Pressures

Initial Pressure	pi =	-	kPa
Extrapolated Pressure	p* =	10011.5	kPa
Average Reservoir Pressure	pR =	-	kPa
Final Flowing Pressure	pwfo =	4376.9	kPa

Straight Line Results

Total Sandface Rate	QTBT =	147.53	³ m /d
Semilog Slope	msl =	2535.5	kPa/cycle
Transmissivity (Total)	kh/mu =	123.39	mDm/mPa.s
Mobility (Total)	k/mu =	11.532	mD/mPa.s
Flow Capacity (Oil)	kh =	33.15	mDm
Permeability (Oil)	ko =	3.10	mD
Permeability (Gas)	kg =	0.13	mD
Permeability (Water)	kw =	0.41	mD
Skin Effect (Total)	s =	-4.03	
Partial Penetration Skin	spp =	-	
Inclination Skin	sinc =	0.000	
Damage Skin	sd =	-4.03	
Pressure Drop (Total Skin)	delps =	-	kPa

Oil Well Test - BUILDUP

Radial Flow Analysis

(Horner Time)

PARAMOUNT et al Cameron
C-75

Sulphur Point (1423.5 - 1431.5 m KB
March 25 - 31, 1994

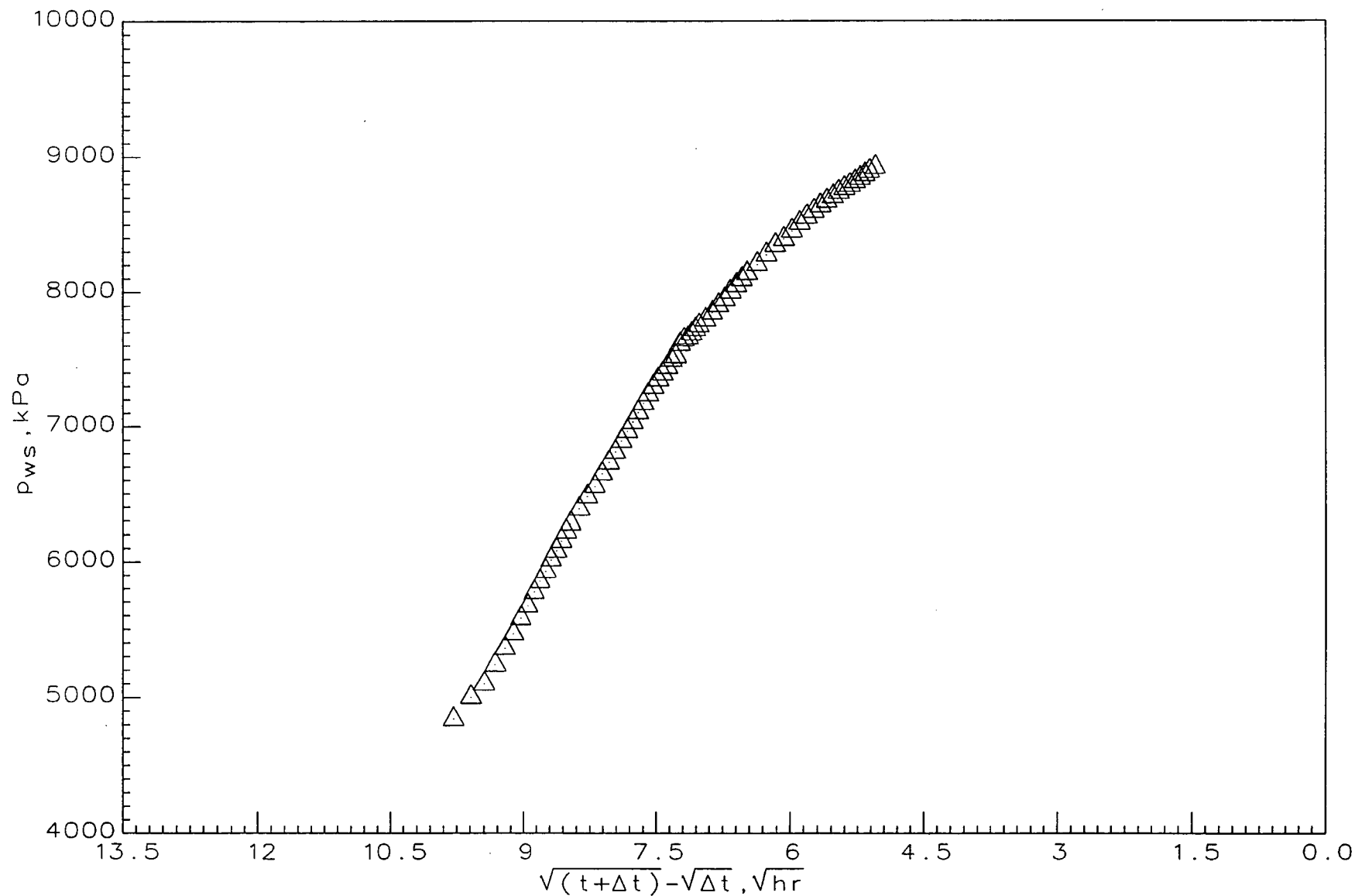
Zone 1

Flow Efficiency	FE =	2.58
Damage Ratio	DR =	0.39
Radius Of Investigation	r(inv) =	- m
@ Time Of Investigation	t(inv) =	- hr

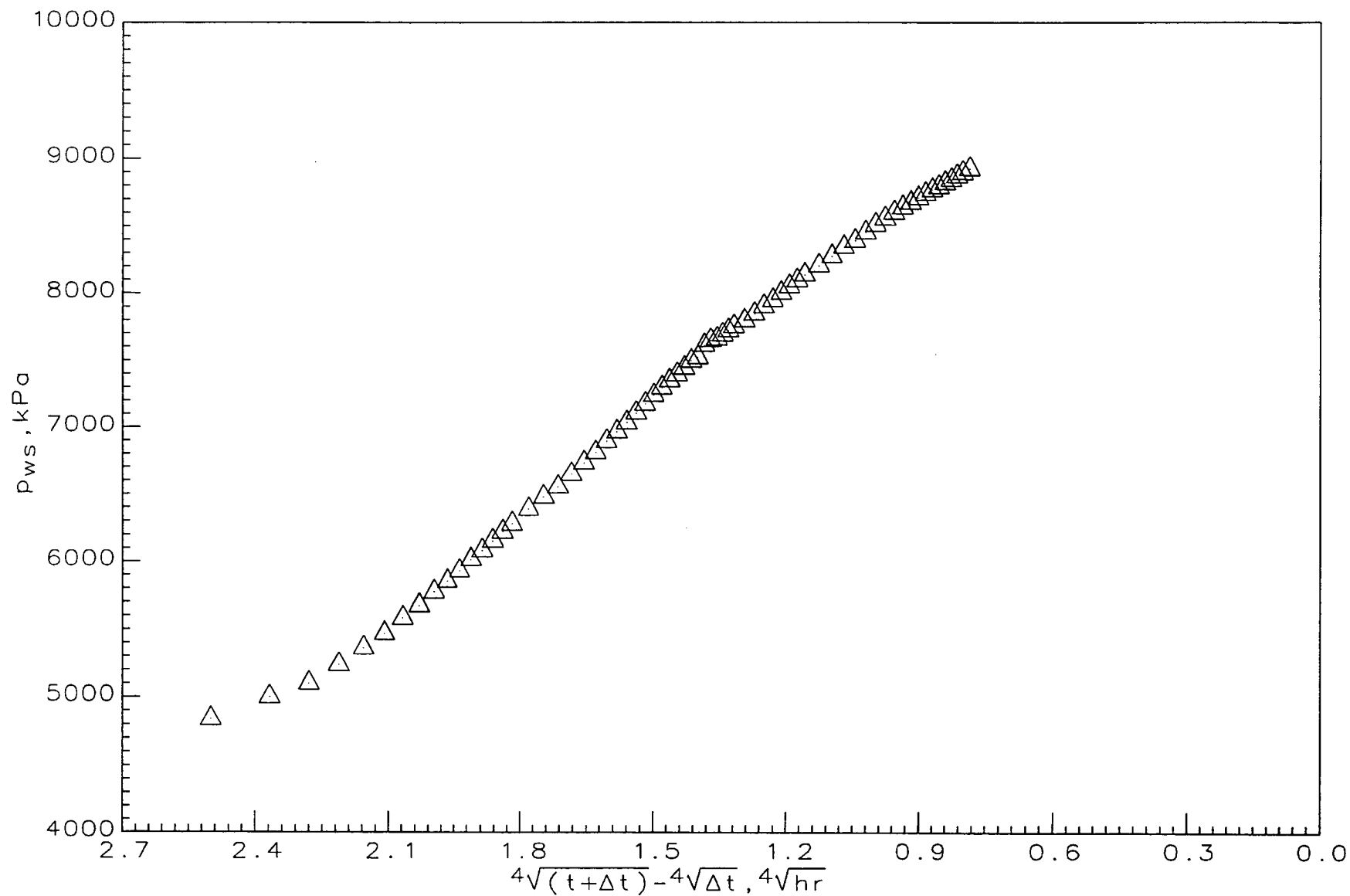
Extended Rates

Specified Reservoir Pressure	=	10011.5 kPa	<DEF>
Specified Flowing Pressure	=	4376.9 kPa	<DEF>
Shape Code - Zone 1	=	R1A	<DEF>
Drainage Area - Zone 1	=	64.7 ha	<DEF>
3 - Month Constant Rate	=	11.76 m ³ /d	
6 - Month Constant Rate	=	10.73 m ³ /d	
Stabilization / Specified Time	=	4487.174 hr	<DEF>
Stabilized Rate @ Current Skin	qs =	10.69 m ³ /d	
Stabilized Rate @ Skin Of 0	qs =	- m ³ /d	
Stabilized Rate @ Skin Of -4	qs =	- m ³ /d	
PI / II (Total Actual)	=	5.051x10 ⁻⁰³ m ³ /d/kPa	
PI / II (Total Ideal)	=	1.961x10 ⁻⁰³ m ³ /d/kPa	
Stab PI / II (Total Actual)	=	2.878x10 ⁻⁰³ m ³ /d/kPa	
Stab PI / II (Total Ideal)	=	1.117x10 ⁻⁰³ m ³ /d/kPa	

TANDEM ROOT T
 PRESSURE BUILDUP PLOT
 PARAMOUNT et al Cameron Sulphur Point (1423.5 - 1431.5 m KB)
 C-75 March 25 - 31, 1994



TANDEM QUAD ROOT T
 PRESSURE BUILDUP PLOT
 PARAMOUNT et al Cameron Sulphur Point (1423.5 - 1431.5 m KB
 C-75 March 25 - 31, 1994



Oil Well Test - BUILDUP

Time / Pressure Listing

(Horner Time)

PARAMOUNT et al Cameron
C-75

Sulphur Point (1423.5 - 1431.5 m KB
March 25 - 31, 1994

Delta Time	Horner Time	Equiv. Time	Root Time	Quad Time	Pressure	Delta Pressure
hr	hr	hr	1/2 hr	1/4 hr	kPa	kPa
0.000	0.000	0.000	0.000	0.000	4376.9	0.0
0.250	422.932	0.249	9.783	2.500	4838.9	462.0
0.500	211.966	0.498	9.588	2.368	4999.3	622.4
0.750	141.644	0.745	9.441	2.280	5098.4	721.5
1.000	106.483	0.991	9.319	2.212	5237.7	860.8
1.250	85.386	1.235	9.213	2.157	5362.1	985.2
1.500	71.322	1.479	9.119	2.109	5469.7	1092.8
1.750	61.276	1.721	9.032	2.068	5581.5	1204.6
2.000	53.741	1.963	8.953	2.031	5672.2	1295.3
2.250	47.881	2.203	8.879	1.997	5773.5	1396.6
2.500	43.193	2.442	8.810	1.966	5853.7	1476.8
2.750	39.357	2.680	8.745	1.938	5929.6	1552.7
3.000	36.161	2.917	8.683	1.911	6016.1	1639.2
3.250	33.456	3.153	8.625	1.886	6081.5	1704.6
3.500	31.138	3.388	8.569	1.863	6153.3	1776.4
3.750	29.129	3.621	8.515	1.841	6220.8	1843.9
4.000	27.371	3.854	8.463	1.821	6279.8	1902.9
4.500	24.441	4.316	8.366	1.782	6387.4	2010.5
5.000	22.097	4.774	8.275	1.747	6478.2	2101.3
5.500	20.179	5.227	8.190	1.714	6554.1	2177.2
6.000	18.580	5.677	8.109	1.684	6649.0	2272.1
6.500	17.228	6.123	8.033	1.656	6733.4	2356.5
7.000	16.069	6.564	7.960	1.630	6811.5	2434.6
7.500	15.064	7.002	7.891	1.605	6893.8	2516.9
8.000	14.185	7.436	7.824	1.582	6965.5	2588.6
8.500	13.410	7.866	7.761	1.560	7033.0	2656.1
9.000	12.720	8.292	7.700	1.539	7104.7	2727.8
9.500	12.103	8.715	7.641	1.519	7174.4	2797.5
10.000	11.548	9.134	7.584	1.500	7237.7	2860.8
10.500	11.046	9.549	7.529	1.482	7294.6	2917.7
11.000	10.589	9.961	7.476	1.464	7349.5	2972.6
11.500	10.172	10.369	7.425	1.447	7391.7	3014.8
12.000	9.790	10.774	7.375	1.431	7442.3	3065.4
12.500	9.439	11.176	7.326	1.415	7495.0	3118.1
13.000	9.114	11.574	7.279	1.400	7520.3	3143.4
13.500	8.814	11.968	7.234	1.386	7611.1	3234.2
14.000	8.534	12.360	7.189	1.372	7646.9	3270.0
14.500	8.275	12.748	7.146	1.358	7661.7	3284.8
15.000	8.032	13.133	7.103	1.345	7691.2	3314.3

Oil Well Test - BUILDUP

Time / Pressure Listing

(Horner Time)

PARAMOUNT et al Cameron
C-75

Sulphur Point (1423.5 - 1431.5 m KB
March 25 - 31, 1994

Delta Time	Horner Time	Equiv. Time	Root Time 1/2	Quad Time 1/4	Pressure kPa	Delta Pressure kPa
hr	hr	hr	hr	hr	kPa	kPa
15.500	7.805	13.514	7.062	1.332	7722.9	3346.0
16.000	7.593	13.893	7.022	1.320	7752.4	3375.5
17.000	7.205	14.640	6.944	1.296	7796.7	3419.8
18.000	6.860	15.376	6.870	1.274	7847.4	3470.5
19.000	6.552	16.100	6.798	1.252	7902.2	3525.3
20.000	6.274	16.812	6.730	1.232	7948.6	3571.7
21.000	6.023	17.513	6.664	1.213	8003.5	3626.6
22.000	5.795	18.203	6.600	1.194	8052.0	3675.1
23.000	5.586	18.883	6.539	1.177	8096.3	3719.4
24.000	5.395	19.552	6.480	1.160	8138.6	3761.7
26.000	5.057	20.859	6.368	1.128	8206.2	3829.3
28.000	4.767	22.127	6.262	1.099	8276.0	3899.1
30.000	4.516	23.357	6.162	1.071	8345.8	3968.9
32.000	4.296	24.552	6.068	1.046	8392.3	4015.4
34.000	4.102	25.712	5.979	1.022	8451.5	4074.6
36.000	3.930	26.840	5.895	0.999	8510.7	4133.8
38.000	3.776	27.936	5.814	0.978	8555.1	4178.2
40.000	3.637	29.002	5.737	0.958	8597.4	4220.5
42.000	3.511	30.039	5.664	0.939	8637.5	4260.6
44.000	3.397	31.049	5.593	0.921	8671.4	4294.5
46.000	3.293	32.031	5.526	0.904	8705.2	4328.3
48.000	3.198	32.989	5.461	0.888	8736.9	4360.0
50.000	3.110	33.921	5.398	0.872	8764.4	4387.5
52.000	3.029	34.830	5.338	0.857	8787.6	4410.7
54.000	2.953	35.716	5.280	0.843	8815.1	4438.2
56.000	2.884	36.580	5.224	0.829	8840.5	4463.6
58.000	2.819	37.423	5.170	0.816	8865.9	4489.0
60.000	2.758	38.245	5.118	0.803	8891.2	4514.3
62.670	2.683	39.313	5.051	0.787	8920.8	4543.9

COMPOSITE MODEL

Analysis is based on the idealized model of a two-zone composite reservoir, with wellbore storage and skin. This model has been extensively studied in the petroleum literature. The principal reference is: Olarewaju and Lee (1987) SPE 16763.

The major assumptions in the model are:

Both the inner and outer zones can be assumed to be homogeneous or dual porosity (pseudo-steady state inter-porosity flow). The wellbore has a finite volume and an infinitesimal skin. The outer zone is finite acting. The inner and outer zone can have different transmissivities and different storativities. There is no transition region between the inner and outer zones. Both zones have the same net pay.

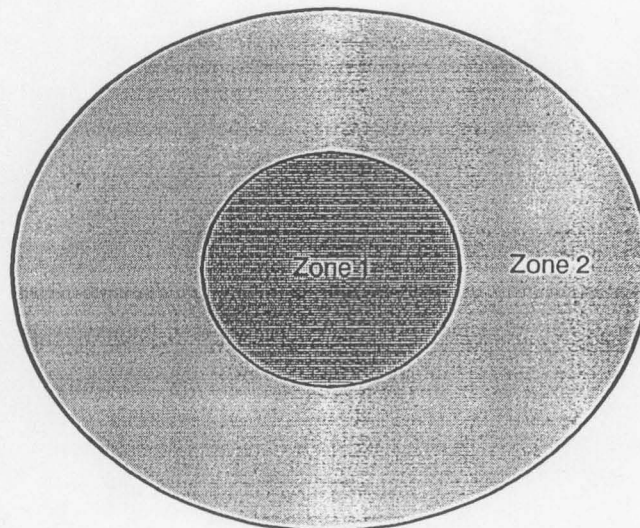
Model Variables

C_D	-	Dimensionless Storage Constant
s	-	Skin Damage
r_w	-	Wellbore Radius
h	-	Net Pay
c_t	-	Total Compressibility
ϕ_{hit}	-	Total Porosity

For each zone specify:

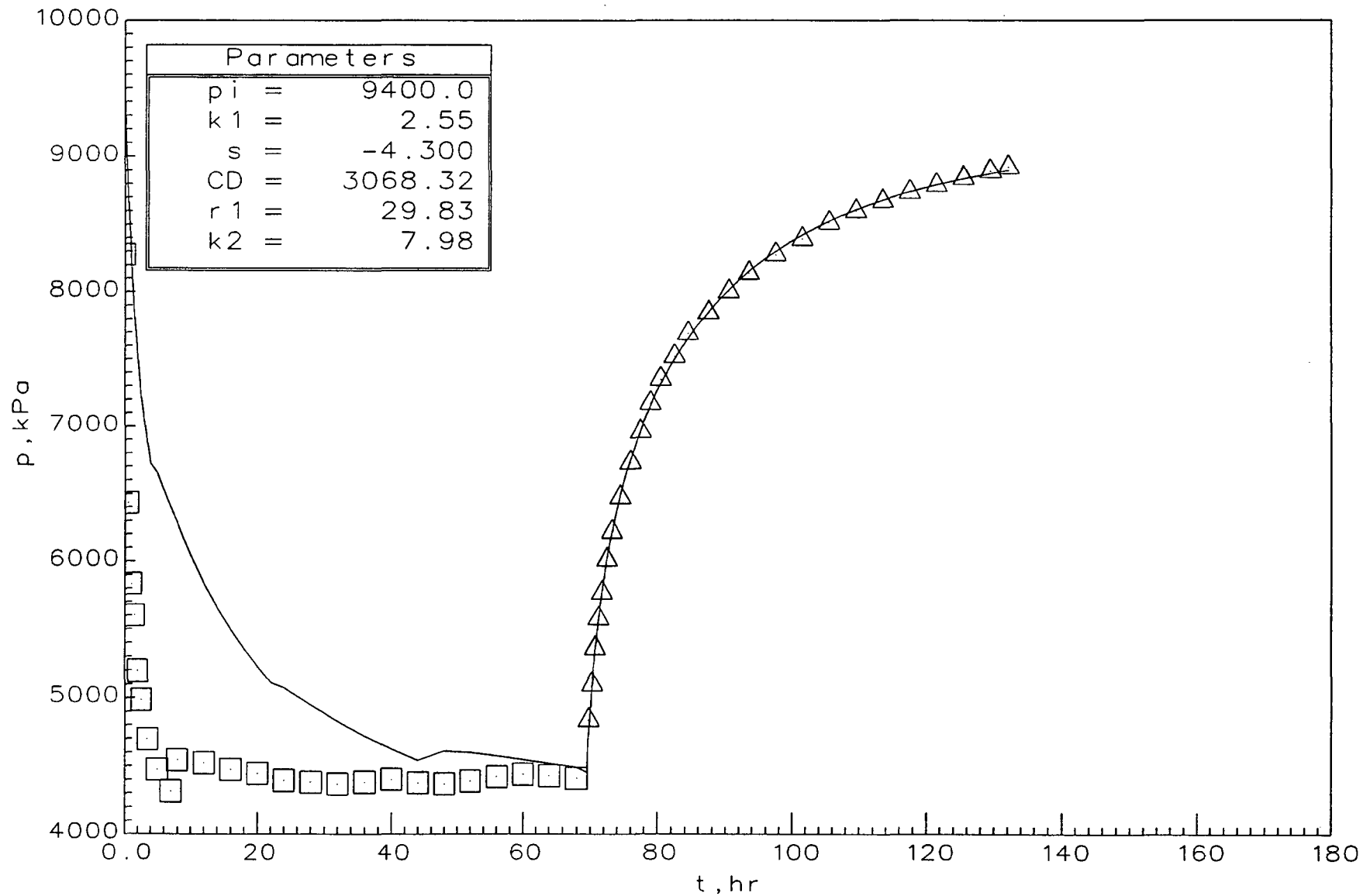
k	-	Permeability
λ	-	Inter-porosity Flow Co-efficient
Ω	-	Storativity Ratio
r	-	Radial Extent of Zone

Schematic



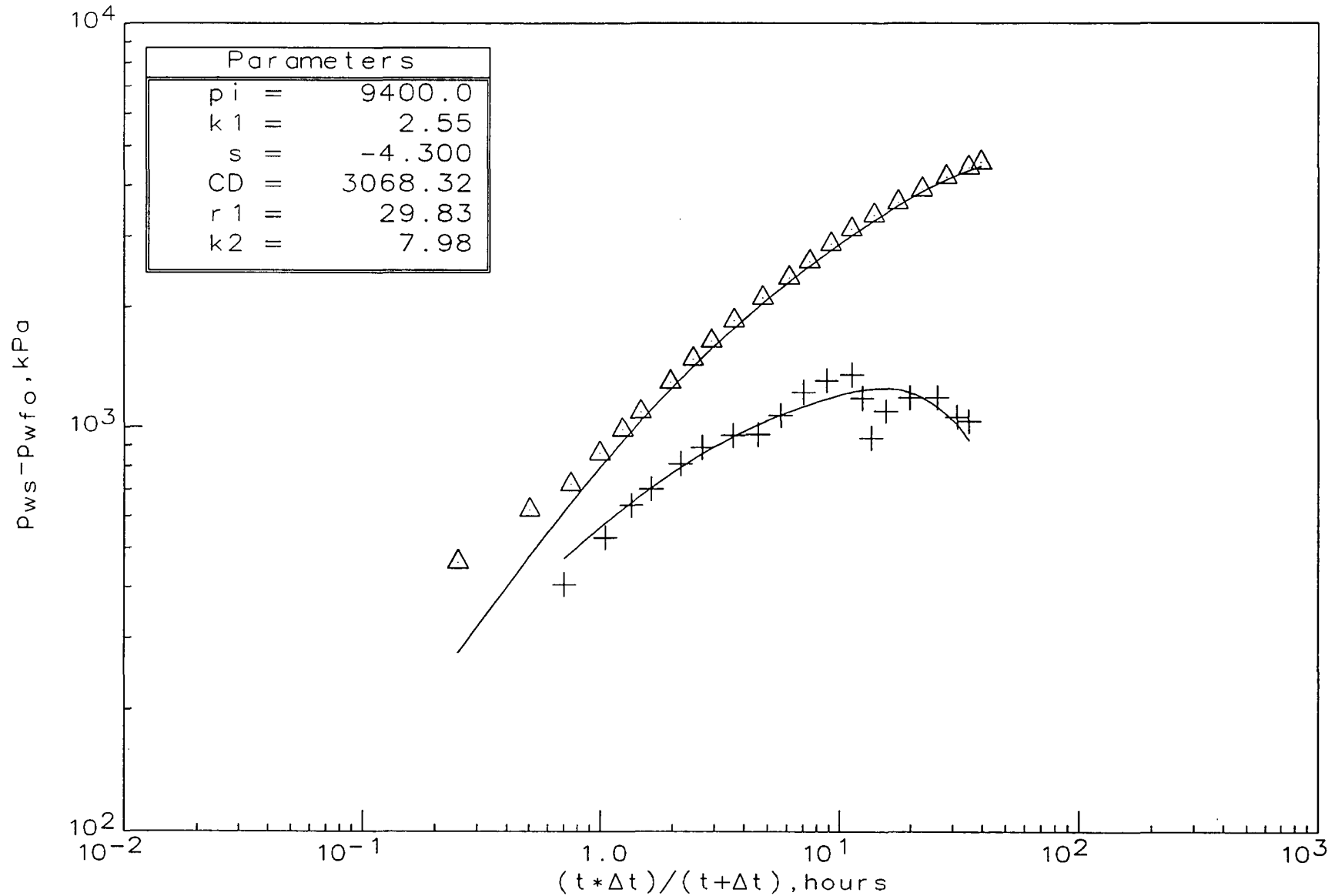
COMPOSITE MODEL

PARAMOUNT et al Cameron
C-75
Sulphur Point (1423.5-1431.5 m KB)
March 25 - 31, 1994



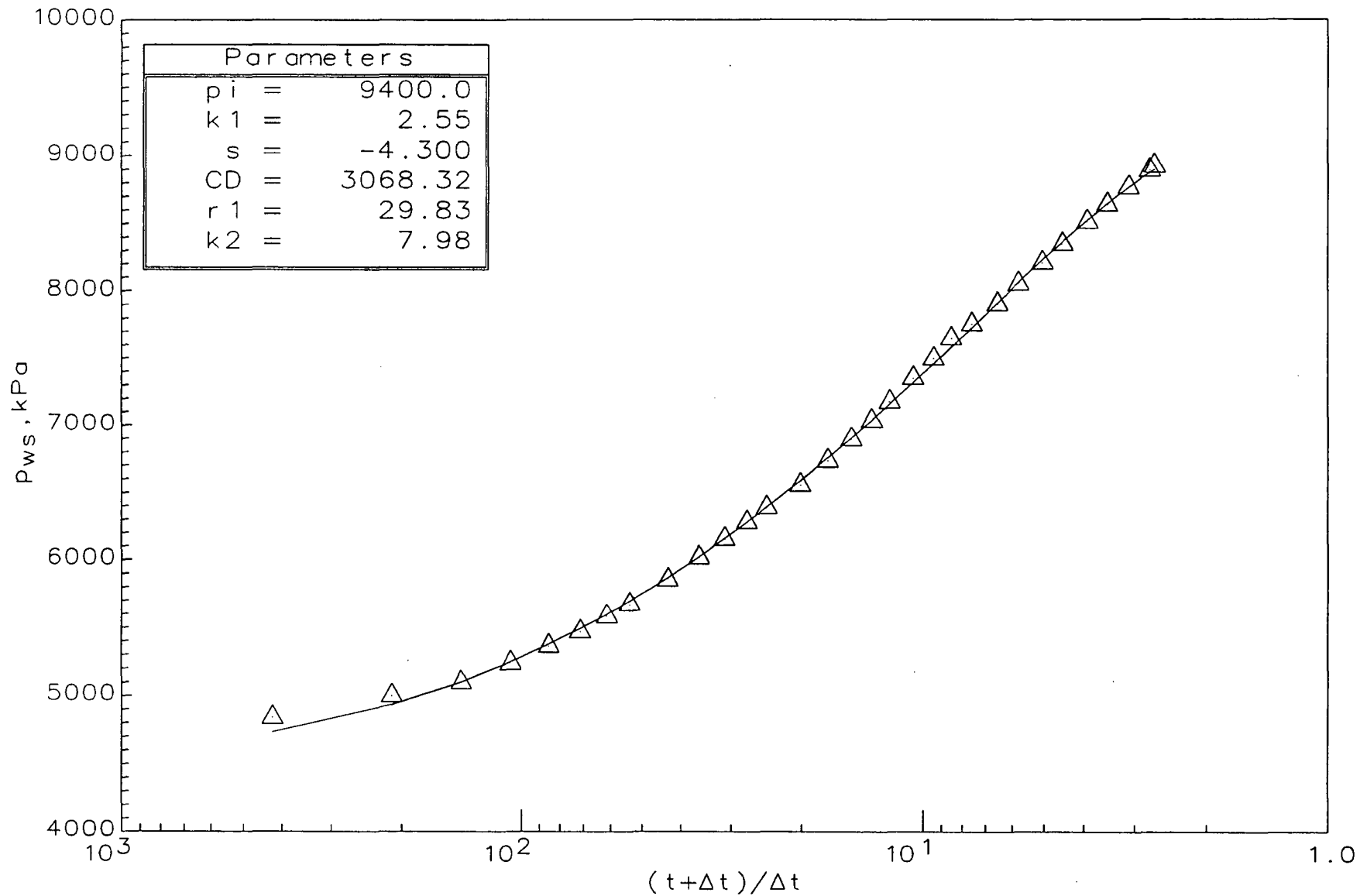
COMPOSITE MODEL

PARAMOUNT et al Cameron
C-75
Sulphur Point (1423.5-1431.5 m KB)
March 25 - 31, 1994



COMPOSITE MODEL

PARAMOUNT et al Cameron
C-75
Sulphur Point (1423.5-1431.5 m KB)
March 25 - 31, 1994



Oil Well Test - SYNTHESIZER

Model Parameters

Composite Model

PARAMOUNT et al Cameron
C-75

Sulphur Point (1423.5-1431.5 m KB)
March 25 - 31, 1994

Synthetic Initial Pressure = 9400.0 kPa

Zone 1

Transmissivity (Total) kh/mu = 101.67 mDm/mPa.s

Mobility (Total) k/mu = 9.502 mD/mPa.s

Flow Capacity (Oil) kh = 27.31 mDm

Permeability (Oil) k = 2.55 mD

Skin s = -4.300

Apparent Wellbore Storage (dim.) CAD = -

Wellbore Storage Constant (dim.) CD = 3068.32

Storage Pressure Param (dim.) CPD = -

Radius re = 29.83 m

Inter Porosity Coeff Lambda = -

Storativity Ratio Omega = -

Zone 2

Transmissivity (Total) kh/mu = 317.66 mDm/mPa.s

Mobility (Total) k/mu = 29.688 mD/mPa.s

Flow Capacity (Oil) kh = 85.34 mDm

Permeability (Oil) k = 7.98 mD

Radius re = 908.00 m

Inter Porosity Coeff Lambda = -

Storativity Ratio Omega = -

Oil Well Test - SYNTHESIZER

Composite Model

PARAMOUNT et al Cameron
C-75

Sulphur Point (1423.5-1431.5 m KB)
March 25 - 31, 1994

Production And Pressure

Final Oil Rate	qo =	18.76	m^3/d
Final Flowing Pressure	Pwfo =	4376.9	kPa
Initial Pressure	pi =	-	kPa

Fluid Properties

P V T Reference Pressure	pRef =	8920.8	kPa	<DEF>
Oil Compressibility	co =	3.921×10^{-05}	kPa^{-1}	<DEF>
Oil Formation Vol Factor	Bo =	1.15		<DEF>
Oil Viscosity	muo =	1.845	mPa.s	<DEF>
Solution Gas Oil Ratio	Rso =	40.4	m^3/m^3	<DEF>

Reservoir Parameters

Net Pay	h =	10.70	m	
Total Porosity	phit =	10.00	%	
Water Saturation	Sw =	28.60	%	
Oil Saturation	So =	71.40	%	
Gas Saturation	Sg =	0.00	%	
Wellbore Radius	rw =	0.08	m	
Formation Temperature	T =	54.00	deg C	
Formation Compressibility	cf =	7.052×10^{-07}	kPa^{-1}	<DEF>
Total Compressibility	ct =	2.877×10^{-05}	kPa^{-1}	<DEF>

Oil Well Test - SYNTHESIZER

Composite Model

PARAMOUNT et al Cameron
C-75

Sulphur Point (1423.5-1431.5 m KB)
March 25 - 31, 1994

Synthesis Results

Average Error	=	28.2	kPa
Synthetic Initial Pressure	=	9400.0	kPa
Pressure At 1 Year Shut-in	=	9394.2	kPa
Pressure Drop Due To Skin	delps =	-	kPa
Flow Efficiency	FE =	3.23	
Damage Ratio	DR =	0.31	

Extended Rates

3 - Month Constant Rate	=	13.97	$\frac{\text{m}^3}{\text{d}}$
6 - Month Constant Rate	=	13.36	$\frac{\text{m}^3}{\text{d}}$

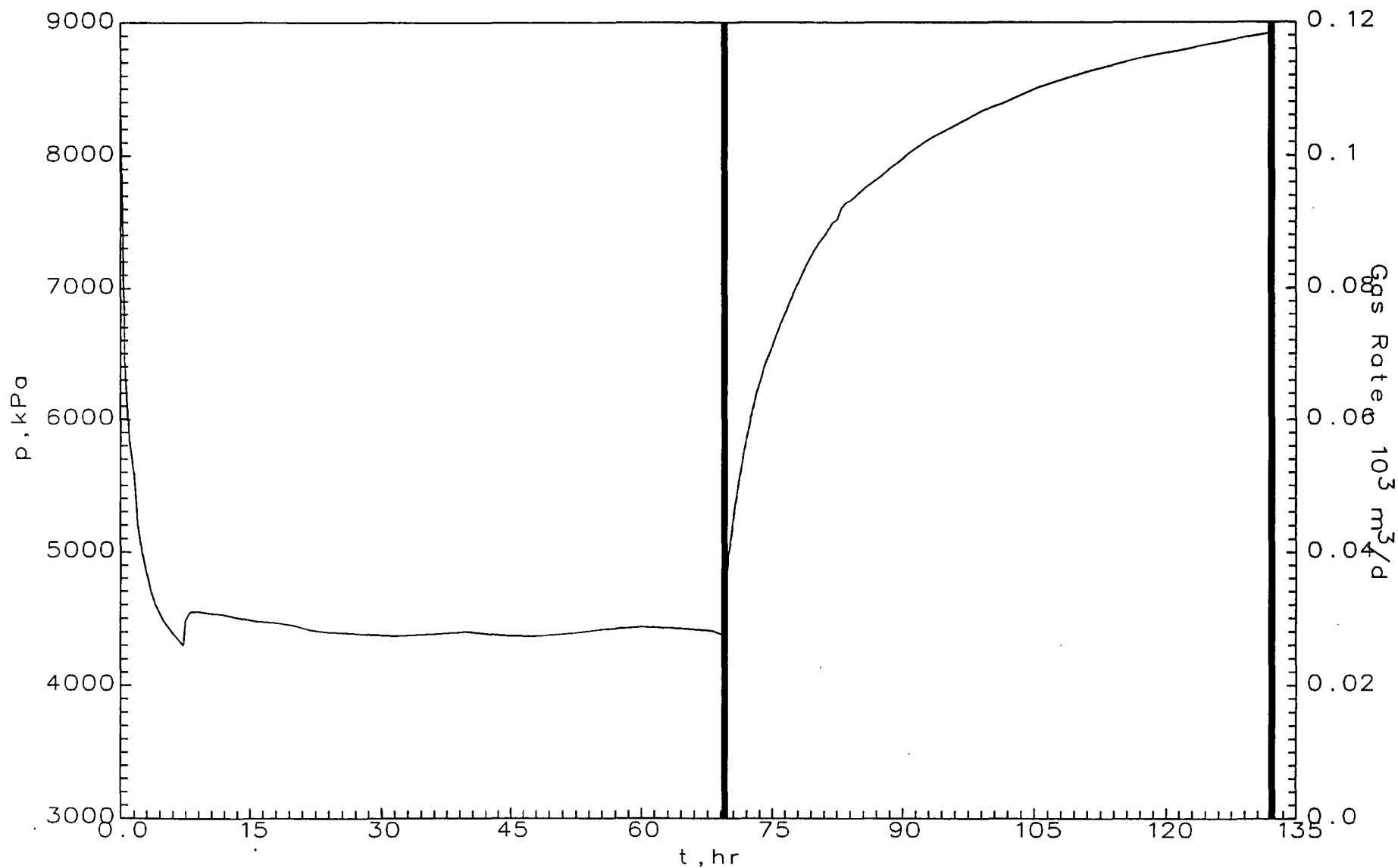
Stabilized Rate

Time To Stabilize	ts =	7669.811	hr
Stabilized Rate @ Current Skin	qs =	12.82	$\frac{\text{m}^3}{\text{d}}$
Stabilized Rate @ Skin Of 0	qs =	-	$\frac{\text{m}^3}{\text{d}}$
Stabilized Rate @ Skin Of -4	qs =	-	$\frac{\text{m}^3}{\text{d}}$

STRIP CHART

PARAMOUNT et al Cameron
C-75

Sulphur Point (1423.5 - 1431.5 m KB)
March 25 - 31, 1994



Oil Well Test - BUILDUP

Production History

PARAMOUNT et al Cameron
C-75

Sulphur Point (1423.5 - 1431.5 m KB
March 25 - 31, 1994

Time	Cumulative Pressure	Oil	Water	Gas
	Time	Rate	Rate	Rate
hr	hr	3 m /d	3 m /d	3 3 10 m /d
0.000	0.000	8276.0	0.00	0.00
0.500	0.500	6431.7	75.84	44.64
1.000	1.000	5834.7	-	-
1.500	1.500	5600.5	-	-
2.000	2.000	5195.5	-	-
2.500	2.500	4984.5	-	-
3.000	3.000	4830.5	62.40	33.60
3.500	3.500	4695.5	-	-
4.000	4.000	4600.5	-	-
5.000	5.000	4473.9	34.56	13.44
6.000	6.000	4389.5	-	-
7.000	7.000	4315.7	-	-
7.250	7.250	4298.8	-	-
7.500	7.500	4484.5	-	-
8.000	8.000	4543.6	-	-
9.000	9.000	4547.8	-	-
10.000	10.000	4537.2	-	-
11.000	11.000	4528.8	-	-
12.000	12.000	4522.5	32.64	15.36
14.000	14.000	4497.1	-	-
16.000	16.000	4473.9	-	-
18.000	18.000	4463.4	-	-
20.000	20.000	4444.4	-	-
22.000	22.000	4408.5	-	-
24.000	24.000	4393.8	31.20	8.64
28.000	28.000	4381.1	-	-
32.000	32.000	4368.5	-	-
36.000	36.000	4383.2	-	-
40.000	40.000	4402.2	-	-
44.000	44.000	4376.9	-	-
48.000	48.000	4368.5	15.84	8.16
52.000	52.000	4389.5	-	-
56.000	56.000	4421.2	-	-
60.000	60.000	4440.2	-	-
64.000	64.000	4429.6	-	-
68.000	68.000	4410.6	-	-
69.500	69.500	4376.9	18.76	9.70
69.750	69.750	4838.9	0.00	0.00
70.000	70.000	4999.3	-	-

Oil Well Test - BUILDUP

Production History

PARAMOUNT et al Cameron
C-75

Sulphur Point (1423.5 - 1431.5 m KB
March 25 - 31, 1994

Time	Cumulative	Pressure	Oil	Water	Gas
	Time		Rate	Rate	Rate
hr	hr	kPa	3 m /d	3 m /d	3 3 10 m /d
70.250	70.250	5098.4	-	-	-
70.500	70.500	5237.7	-	-	-
70.750	70.750	5362.1	-	-	-
71.000	71.000	5469.7	-	-	-
71.250	71.250	5581.5	-	-	-
71.500	71.500	5672.2	-	-	-
71.750	71.750	5773.5	-	-	-
72.000	72.000	5853.7	-	-	-
72.250	72.250	5929.6	-	-	-
72.500	72.500	6016.1	-	-	-
72.750	72.750	6081.5	-	-	-
73.000	73.000	6153.3	-	-	-
73.250	73.250	6220.8	-	-	-
73.500	73.500	6279.8	-	-	-
74.000	74.000	6387.4	-	-	-
74.500	74.500	6478.2	-	-	-
75.000	75.000	6554.1	-	-	-
75.500	75.500	6649.0	-	-	-
76.000	76.000	6733.4	-	-	-
76.500	76.500	6811.5	-	-	-
77.000	77.000	6893.8	-	-	-
77.500	77.500	6965.5	-	-	-
78.000	78.000	7033.0	-	-	-
78.500	78.500	7104.7	-	-	-
79.000	79.000	7174.4	-	-	-
79.500	79.500	7237.7	-	-	-
80.000	80.000	7294.6	-	-	-
80.500	80.500	7349.5	-	-	-
81.000	81.000	7391.7	-	-	-
81.500	81.500	7442.3	-	-	-
82.000	82.000	7495.0	-	-	-
82.500	82.500	7520.3	-	-	-
83.000	83.000	7611.1	-	-	-
83.500	83.500	7646.9	-	-	-
84.000	84.000	7661.7	-	-	-
84.500	84.500	7691.2	-	-	-
85.000	85.000	7722.9	-	-	-
85.500	85.500	7752.4	-	-	-
86.500	86.500	7796.7	-	-	-

Oil Well Test - BUILDUP

Production History

PARAMOUNT et al Cameron
C-75

Sulphur Point (1423.5 - 1431.5 m KB
March 25 - 31, 1994

Time	Cumulative	Pressure	Oil	Water	Gas
	Time		Rate	Rate	Rate
hr	hr	kPa	3 m /d	3 m /d	3 3 10 m /d
87.500	87.500	7847.4	-	-	-
88.500	88.500	7902.2	-	-	-
89.500	89.500	7948.6	-	-	-
90.500	90.500	8003.5	-	-	-
91.500	91.500	8052.0	-	-	-
92.500	92.500	8096.3	-	-	-
93.500	93.500	8138.6	-	-	-
95.500	95.500	8206.2	-	-	-
97.500	97.500	8276.0	-	-	-
99.500	99.500	8345.8	-	-	-
101.500	101.500	8392.3	-	-	-
103.500	103.500	8451.5	-	-	-
105.500	105.500	8510.7	-	-	-
107.500	107.500	8555.1	-	-	-
109.500	109.500	8597.4	-	-	-
111.500	111.500	8637.5	-	-	-
113.500	113.500	8671.4	-	-	-
115.500	115.500	8705.2	-	-	-
117.500	117.500	8736.9	-	-	-
119.500	119.500	8764.4	-	-	-
121.500	121.500	8787.6	-	-	-
123.500	123.500	8815.1	-	-	-
125.500	125.500	8840.5	-	-	-
127.500	127.500	8865.9	-	-	-
129.500	129.500	8891.2	-	-	-
132.170	132.170	8920.8	-	-	-

PARAMOUNT RESOURCES LTD.

DAILY WELL COMPLETION AND SERVICING REPORT

DATE: 94/09/29

WELL NAME: Paramount et al Cameron C-75

DAY: 7

PROGRAM PURPOSE: Completion

PAGE: 1 of 1

PRESENT OPERATION: Flow Testing

FORMATION: SULPHUR POINT

GLE: 788.62 m KBE: 788.47 m TOTAL DEPTH: 1590 mKB PBTD: 1575 mKB est

PERFORATIONS: Sulphur Point 1423.5 - 1431.5 mKB

CSG. OD.: 177.8 mm

TBG OD: 73 mm

AFE# 24404

AFES:

SERVICE CONTRACTOR: Flint #718

TIME		PREVIOUS DAYS OPERATION	DAILY COST SUMMARY		
from	to	SISCP: 0 kpa SICP: 0 kpa SITP:	ITEM	#	\$
07:00	07:15	Safety meeting & rig walk-around. Continued ½ hr pressure readings & centrifuge cuts. Shipped out ±59 m³ produced fluids to NOS-Zama. Tubing flowing on 32/64" choke @ 725-750 kpa, producing ± 1.50 m³/hr. Average water cut 32-34%. 136.65 m³ total recovery, 119.15 m³ new fluid, ± 92.5 m³ oil & 44.15 m³ produced water.	Rig	203	\$ 5,500
			Boiler	205	0.00
			Camp	210	\$ 1,500
			Sentinal Safety	230	\$ 195
12:00		Shut in well & recorded build-up pressures. Rigged out remaining rig equipment & Telba pressure vessel. Skidded buildings off w/ track-hoe ready to move off.	Cardusty Trucking	222	\$ 1,326
			Rentals	240	\$ 0
			Supervision	225	\$ 960
			Dechant	103	\$ 1,300
19:00		Crew change & safety meeting. Continued build-up readings. Emptied all tanks & shipped to NOS-Zama, 28.4 m³. Shut in & blow-plugged wellhead.	Water Truck	218	\$ 375
	01:00		Satellite phone	216	\$ 195
			1st Aid Attendent	230	\$ 375
			Chinohaga Carriers	?	\$ 15,225
01:30		Trucks on location. Loaded out equipment & transported back to Zama base.			
	04:00				
			DAILY COST:		\$ 26,951
			PREV. COST:		\$ 162,953
			CUMM COST:		\$ 189,904
			DAILY RIG HRS:		24.0
			CUMM RIG HRS:		168.0
			TOTAL LOAD FLUID:		17.50
			FLUID RECOVERED:		136.65
			FLUID LEFT TO RECOVER:		
			NEW FLUID:		119.15
			ROADS:		Muddy, slippery
			WEATHER:		Clear; Low: -4°C; High: +8°C
			PHONE:		269-3852-32
			AREA:		
			REPORTED BY:		Tim Jones
			RECEIVED BY:		P. Beeler

BOP TESTS:

PRESSURE:

FUNCTION: n/a

Timothy W. Jones Consulting LTD. - SWAB REPORT

Page 1 of 2

Well: Paramount et al Cameron C-75

Rig: Flint #718

DATE: 94/03/28

Tank Coef: m³/cm

SITP kPa

Load Left to Recover Prior to Swabbing: Oil m³

Opening Gauge: 131.90 m³

SICP 0 kPa

Water m³

Swab No.	Time	Fluid level	Swab depth	Tank Gauge	Gauge diff	TOTAL FLUID		Water Cut	WATER		OIL		PRESSURES		COMMENTS
						this run	cum		this run	cum	this run	cum	TBG	CSG	
		m	m	cm	cm	m ³	m ³	%	m ³	m ³	m ³	m ³	kPa	kPa	
1	08:00					1.50	133.40	34	0.51	43.61	0.99	88.28	775	0	Salinity-10.6%; Ph-7
2	09:00					1.25	134.65	34	0.43	44.04	0.83	89.12	775	0	Salinity-10.6%; Ph-7
3	10:00					1.25	135.90	34	0.43	44.04	0.83	89.12	750	0	Salinity-10.6%; Ph-7
4	11:00					0.75	136.65	34	0.26	44.29	0.50	89.61	750	0	Salinity-10.6%; Ph-7
5	12:00					0.00	136.65	0	0.00	44.29	0.00	89.61	750	0	Shut in well for build-up
6	12:05												1500	0	Shut in pressures
7	12:10												1700	0	Shut in pressures
8	12:15												1800	0	Shut in pressures
9	12:30												2050	0	Shut in pressures
10	12:45												2200	0	Shut in pressures
11	13:00												2450	0	Shut in pressures
12	13:30												2800	0	Shut in pressures
13	14:00												3100	0	Shut in pressures
14	14:30												3400	0	Shut in pressures
15	15:00												3700	0	Shut in pressures
16	15:30												3850	0	Shut in pressures
17	16:00												4000	0	Shut in pressures
18	16:30												4200	0	Shut in pressures

Mark 21

Noon to Mark

28 Noon

28.5 @ 34% WC

m³/D

179 B/D

→ 118 B/D OIL

61 B/D water

Timothy W. Jones Consulting LTD. - SWAB REPORT

Page 2 of 2

Well: Paramount et al Cameron C-75

Rig: Flint #718

DATE: 94/03/28 & 29

Tank Coef: _____ m³/cm

SITP kPa

Load Left to Recover Prior to Swabbing: Oil m3

Opening Gauge: 100.90 m'

SICP 0 kPa

Water m3

[illegible]

PARAMOUNT RESOURCES LTD.

DAILY WELL COMPLETION AND SERVICING REPORT

DATE: 94/09/28

WELL NAME: Paramount et al Cameron C-75

DAY: 6

PROGRAM PURPOSE: Completion

PAGE: 1 of 1

PRESENT OPERATION: Flow Testing

FORMATION: SULPHUR POINT

GLE: 783.62 m KBE: 788.47 m TOTAL DEPTH: 1590 mKB P8TD: 1575 mKB est

PERFORATIONS: Sulphur Point 1423.5 - 1431.5 mKB

CSG. OD.: 177.8 mm

TBG OD: 73 mm

AFE#: 24404

AFES:

SERVICE CONTRACTOR: Flint # 718

TIME		PREVIOUS DAYS OPERATION	DAILY COST SUMMARY		
from	to	SISCP: 0 kpa SICP: 0 kpa SITP:	ITEM	#	\$
07:00	07:15	Safety meeting & rig walk-around. Continued ½ hr pressure readings & centrifuge cuts. Shipped out ±59 m³ produced fluids to NOS-Zama. Tubing flowing on 32/64" choke @ 800 kpa, dropped to 750 kpa, producing ± 1.50 m³/hr. Average water cut 32-34%. Changed to 1 hr readings.	Rig	203	\$ 4,000
			Boiler	205	250.00
			Camp	210	\$ 2,000
			Sentinal Safety	230	\$ 195
			Cardusty Trucking	222	\$ 2,655
			Rentals	240	\$ 355
19:00		Crew change & safety meeting. Continued flow testing. Recovery to since start of test, 132.15 m³. Pressure fluctuating from 750 to 725 kpa on 32/64"choke.	Supervision	225	\$ 810
	07:00		Dechant	103	\$ 1,300
02:30		Recovered electronic press recorders from I-74. Ran press gradient w/ 21Mpa Amerada recorder w/ 3 hr clock. 5 min flex @ surface in & out w/ 5-minute stops @ 300, 600, 900, 1200, 1250, 1300, 1350 mKB & 20minute stop @ 1421 mKB (mid-point of perfs). Set Baker 57.8mm RZG plug in 'R' profile in on-off connector. Released Cdn Wireline.	Water Truck	218	\$ 375
			Satellite phone	216	\$ 195
			1st Aid Attendant	230	\$ 375
	08:00				
			DAILY COST:		\$ 12,310
			PREV. COST:		\$ 150,643
			CUMM COST:		\$ 162,953
			DAILY RIG HRS:		24.0
		CUMM RIG HRS:		144.0	
		TOTAL LOAD FLUID:		17.50	
		FLUID RECOVERED:		131.90	
		FLUID LEFT TO RECOVER:			
		NEW FLUID:		114.40	
		ROADS:	Muddy, slippery		
		WEATHER:	Flurries; Low: -2°C ; High: +6°C		
		PHONE:	269-3852-32		
		AREA:			
		REPORTED BY:	Tim Jones		
		RECEIVED BY:	P. Besler		

BOP TESTS:

PRESSURE:

FUNCTION: OK

Timothy W. Jones Consulting LTD. - SWAB REPORT

Page 1 of 2

Well: Paramount et al Cameron C-75

Rig: Flint #718

DATE: 94/03/27

Tank Coel: m3/cm

SITP kPa

Load Left to Recover Prior to Swabbing: Oil m3

Opening Gauge: 100.90 m³

SICP 0 kPa

Water m3

Swab No.	Time	Fluid level m	Swab depth m	Tank Gauge cm	Gauge diff cm	TOTAL FLUID		Water Cut %	WATER		OIL		PRESSURES		COMMENTS
						this run m3	cum m3		this run m3	cum m3	this run m3	cum m3	TBG kPa	CSG kPa	
1	07:30					0.50	101.40	32	0.16	32.45	0.34	68.95	800	0	
2	08:00					0.75	102.15	35	0.26	32.71	0.49	69.44	800	0	Salinity-10.4%; Ph-7
3	08:30					0.75	102.90	32	0.24	32.69	0.51	69.46	800	0	
4	09:00					0.75	103.65	32	0.24	32.93	0.51	69.97	800	0	Salinity-10.4%; Ph-7
5	09:30					0.75	104.40	32	0.24	33.17	0.51	70.48	800	0	
6	10:00					0.75	105.15	32	0.24	33.41	0.51	70.99	800	0	Salinity-10.6%; Ph-7
7	10:30					0.75	106.90	32	0.24	33.65	0.51	71.50	800	0	
8	11:00					0.75	106.65	32	0.24	33.89	0.51	72.01	800	0	Salinity-10.6%; Ph-7
9	11:30					0.75	107.40	32	0.24	34.13	0.51	72.52	800	0	
10	12:00					0.75	108.15	34	0.26	34.38	0.50	73.02	800	0	Salinity-10.6%; Ph-7
11	12:30					0.75	108.90	34	0.26	34.64	0.50	73.51	750	0	Salinity-10.6%; Ph-7
12	13:00					1.00	109.90	34	0.34	34.98	0.66	74.17	750	0	Salinity-10.6%; Ph-7
13	14:00					1.00	110.90	32	0.32	35.30	0.68	74.85	775	0	Salinity-10.6%; Ph-7
14	15:00					1.00	111.90	34	0.34	35.64	0.66	75.51	775	0	Salinity-10.6%; Ph-7
15	16:00					0.50	112.40	34	0.17	35.81	0.33	75.84	775	0	Salinity-10.6%; Ph-7
16	17:00					1.00	113.40	34	0.34	36.15	0.66	76.50	750	0	Salinity-10.6%; Ph-7
17	18:00					1.00	114.40	35	0.35	36.50	0.65	77.15	750	0	Salinity-10.6%; Ph-7
18	19:00					1.75	116.15	33	0.58	37.08	1.17	78.32	725	0	Salinity-10.2%; Ph-7

PARAMOUNT RESOURCES LTD.

DAILY WELL COMPLETION AND SERVICING REPORT

DATE: 94/03/27

WELL NAME: Paramount et al Cameron C-75

DAY: 5

PROGRAM PURPOSE: Completion

PAGE: 1 of 1

PRESENT OPERATION: Flow Testing

FORMATION: SULPHUR POINT

GLE: 783.62 m KBE: 788.47 m TOTAL DEPTH: 1590 mKB PSTD: 1575 mKB est

PERFORATIONS: Sulpher Point 1423.5 - 1431.5 mKB

CSG. OD.: 177.8 mm

TBG OD: 73 mm

AFE#: 24404

AFES:

SERVICE CONTRACTOR: Flint # 718

TIME		PREVIOUS DAYS OPERATION	DAILY COST SUMMARY		
from	to	SISCP: 0 kpa SICP: 0 kpa STTP:	ITEM	#	\$
07:00	07:15	Safety meeting & rig walk-around. Continued ½ hr pressure readings & centrifuge cuts. Shipped out 51 m³ produced fluids to NOS-Zama. Tubing flowing on 32/64" choke @ 900 kpa, producing ± 2.00 m³/hr. Average water cut 35%.	Rig	203	\$ 4,000
			Boiler	206	250.00
			Camp	210	\$ 2,000
			Sentinel Safety	230	\$ 195
			Cardusty Trucking	222	\$ 2,855
			Rentals	240	\$ 355
19:00		Crew change & safety meeting. Continued flow testing. Recovery to since start of test, 100.9 m³. Pressure dropped to 800 kpa on 32/64"choke. Shipped out 58 m³ produced fluid to NOS-Zama.	Supervision	225	\$ 610
			Dechant	103	\$ 1,300
			Water Truck	218	\$ 375
			Satellite phone	216	\$ 195
			1st Aid Attendant	230	\$ 375
		DAILY COST:		\$ 12,310	
		PREV. COST:		\$ 138,333	
		CUMM COST:		\$ 150,643	
		DAILY RIG HRS:		24.0	
		CUMM RIG HRS:		120.0	
		TOTAL LOAD FLUID:		17.50	
		FLUID RECOVERED:		100.80	
		FLUID LEFT TO RECOVER:			
		NEW FLUID:		83.40	
		ROADS:	Muddy, slippery		
		WEATHER:	Clear; Low: -4°C ; High: +8°C		
		PHONE:	269-3852-32		
		AREA:			
		REPORTED BY:	Tim Jones		
		RECEIVED BY:	P. Beeler		

BOP TESTS:

PRESSURE:

FUNCTION: OK

Timothy W. Jones Consulting LTD. - SWAB REPORT

Page 1 of 3

Well: Paramount et al Cameron # C-75

Fig: Flnt #718

DATE: 94/03/26

Tank Coef: m³/cm

SITP kPa

Load Left to Recover Prior to Swabbing: Oil m³

Opening Gauge: 61.65 m³

SICP 0 kPa

Water m³

Swab No.	Time	Fluid level m	Swab depth m	Tank Gauge cm	Gauge diff cm	TOTAL FLUID		Water Cut %	WATER		OIL		PRESSURES		COMMENTS
						this run m ³	cum m ³		this run m ³	cum m ³	this run m ³	cum m ³	TBG kPa	CSG kPa	
1	07:30					1.25	62.90	30	0.38	18.87	0.88	2.58	1000	0	
2	08:00					1.00	63.90	35	0.35	19.22	0.65	3.23	1000	0	Salinity-10.6%; Ph-7
3	08:30					1.00	64.90	35	0.35	19.22	0.65	3.23	1000	0	
4	09:00					1.00	65.90	35	0.35	19.57	0.65	3.88	1000	0	Salinity-10.6%; Ph-7
5	09:30					1.00	66.90	35	0.35	19.92	0.65	4.53	1000	0	
6	10:00					1.00	67.90	35	0.35	20.27	0.65	5.18	1000	0	Salinity-10.6%; Ph-7
7	10:30					0.50	68.40	35	0.18	20.45	0.38	5.51	1000	0	
8	11:00					0.50	68.90	35	0.18	20.62	0.38	5.83	1000	0	Salinity-10.6%; Ph-7
9	11:30					0.50	69.40	35	0.18	20.80	0.38	6.16	1000	0	
10	12:00					1.50	70.90	35	0.53	21.82	0.98	7.13	900	0	Salinity-10.8%; Ph-7
11	12:30					1.50	72.40	35	0.53	21.85	0.98	8.11	900	0	
12	13:00					0.00	72.40	35	0.00	21.85	0.00	8.11	900	0	Salinity-10.6%; Ph-7
13	13:30					1.00	73.40	35	0.35	22.20	0.65	8.76	900	0	
14	14:00					1.00	74.40	35	0.35	22.55	0.65	9.41	900	0	Salinity-10.8%; Ph-7
15	14:30					0.50	74.90	35	0.18	22.72	0.38	9.73	900	0	
16	15:00					1.00	75.90	35	0.35	23.07	0.65	10.38	900	0	Salinity-10.8%; Ph-7
17	15:30					1.00	76.90	35	0.35	23.42	0.65	11.03	900	0	
18	16:00					1.00	77.90	35	0.35	23.77	0.65	11.68	900	0	Salinity-10.8%; Ph-7

Timothy W. Jones Consulting LTD. - SWAB REPORT

Page 2 of 3

Well: Paramount et al Cameron 424 C-75

Rig: Flint #718

DATE: 94/03/25 & 26

Tank Coef: _____ m³/cm

SITP _____ kPa

Load Left to Recover Prior to Swabbing: Oil _____ m³

Opening Gauge: 77.90 m³

SICP 0 kPa

Water _____ m³

Swab No.	Time	Fluid level m	Swab depth m	Tank Gauge cm	Gauge diff cm	TOTAL FLUID		Water Cut %	WATER		OIL		PRESSURES		COMMENTS
						this run m ³	cum m ³		this run m ³	cum m ³	this run m ³	cum m ³	TBG kPa	CSG kPa	
1	16:30					0.50	78.40	35	0.18	27.44	0.38	2.58	900	0	
2	17:00					0.50	78.90	30	0.15	27.59	0.35	2.93	900	0	Salinity-10.8%; Ph-7
3	17:30					1.00	79.90	35	0.35	27.79	0.65	3.23	900	0	
4	18:00					0.75	80.65	35	0.28	28.05	0.49	3.72	850	0	Salinity-10.8%; Ph-7
5	18:30					0.75	81.40	35	0.26	28.32	0.49	4.21	850	0	
6	19:00					1.50	82.90	35	0.53	28.84	0.98	5.18	800	0	Salinity-10.4%; Ph-7
7	19:30					0.50	83.40	35	0.18	29.02	0.38	5.51	850	0	
8	20:00					1.25	84.65	35	0.44	29.45	0.81	6.32	850	0	Salinity-10.8%; Ph-7
9	20:30					1.00	85.65	35	0.35	29.80	0.65	6.97	850	0	
10	21:00					0.50	86.15	32	0.16	29.96	0.34	7.31	850	0	Salinity-10.8%; Ph-7
11	21:30					0.75	86.90	33	0.25	30.21	0.50	7.81	850	0	
12	22:00					1.00	87.90	32	0.32	30.53	0.68	8.49	850	0	Salinity-10.8%; Ph-7
13	22:30					1.00	88.90	32	0.32	30.85	0.68	9.17	850	0	
14	23:00					0.00	88.90	0	0.00	30.85	0.00	9.17	850	0	Shipped to 400 bbl tank
15	23:30					1.00	89.90	33	0.33	31.18	0.67	9.84	825	0	
16	00:00					0.75	90.65	34	0.26	31.44	0.50	10.34	825	0	Salinity-10.8%; Ph-7
17	00:30					1.25	91.90	33	0.41	31.85	0.88	11.21	825	0	
18	01:00					0.50	92.40	33	0.17	32.01	0.35	11.56	825	0	Salinity-10.6%; Ph-7

Page 3 of 3

Well: Paramount et al Cameron ~~104~~ C-75

Pig: Flint #718

DATE: 94/03/26 & 27

Tank Coef. m³/cm

SITP kPa

Load Left to Recover Prior to Swabbing: Oil m3

Opening Gauge: 92.40 m'

SICP 0 kPa

Water m3

[illegible]

PARAMOUNT RESOURCES LTD.

DAILY WELL COMPLETION AND SERVICING REPORT

DATE: 94/03/28

WELL NAME: Paramount et al Cameron C-75

DAY: 4

PROGRAM PURPOSE: Completion

PAGE: 1 of 1

PRESENT OPERATION: Swabbing

FORMATION: SULPHUR POINT

GLE: 783.62 m KBE: 788.47 m TOTAL DEPTH: 1590 mKB PBTID: 1575 mKB est

PERFORATIONS: Sulpher Point 1423.5 - 1431.5 mKB

CSG. OD.: 177.8 mm

TBG OD: 73 mm

LAFF# 24404

AFES:

SERVICE CONTRACTOR: Flint # 718

TIME		PREVIOUS DAYS OPERATION			DAILY COST SUMMARY		
from	to	SISCP: 0 kpa	SICP: 0 kpa	SITP:	ITEM	#	\$
07:00	07:15	Safety meeting & rig walk-around. Solid Wireline pulled prong & plug from VR-nipple @ 1414.99 mKB. Rigged to swab. Initial fluid level @ 480 mKB. Pulled 4 swabs for recovery of 4.64 m³ load fluid-tubing flowing. Shifted returns through Telba test vessel on 2" line taking ½ hr pressure & centrifuge cuts.			Rig	203	\$ 7,900
	09:00				Boiler	205	250.00
09:16					Camp	210	\$ 2,000
09:00	10:16				Sentinel Safety	230	\$ 195
12:15					Solid Wireline	232	\$ 3,760
		Rigged up Solid Wireline. Set tandem Amerada 21 Mpa mech pressure recorders in hold down in "R"-profile in on-off connector @ 1414.99 mKB. Rigged out wireline. SITP-5500 kpa. Opened tubing to Telba on 32/64" choke continuing ½ hr readings.			Rentals	240	\$ 355
	13:30				Supervision	225	\$ 610
					Dechant	103	\$ 1,300
19:00					Water Truck	218	\$ 375
21:30					Satellite phone	216	\$ 195
		Crew change & safety meeting. Continued ½ hr readings. Choked tubing back to 32/64". Tubing pressures steadying between 1000 & 1100 kpa. Salinity 10.8 - 10.6%, Ph-5.8. Released 3 crewmen. 3-men per shift. Shipped out 29.0 m³ produced fluid to NOS-Zama. Recovered 61.65 m³ since opening well.			1st Aid Attendant	230	\$ 375
					Cardusty Trucking	222	\$ 1,300
04:00							
					DAILY COST: \$ 18,615		
					PREV. COST: \$ 119,718		
					CUMM COST: \$ 138,333		
					DAILY RIG HRS: 24.0		
					CUMM RIG HRS: 96.0		
					TOTAL LOAD FLUID: 17.50		
					FLUID RECOVERED: 61.65		
					FLUID LEFT TO RECOVER:		
					NEW FLUID: 44.15		
					ROADS: Muddy, slippery		
					WEATHER: Clear; Low: -7°C; High: +4°C		
					PHONE: 269-3852-32		
					AREA:		
					REPORTED BY: Tim Jones		
					RECEIVED BY: P. Beeler		

BOP TESTS:

PRESSURE:

FUNCTION: OK

Timothy W. Jones Consulting LTD. - SWAB REPORT

Page 1 of 3

Well: <u>Paramount et al Cameron 425 C-75</u>						Rig: <u>Flint #718</u>						DATE: <u>94/03/25</u>			
Tank Coat: <u>0.159</u> m3/cm						STTP <u>0</u> kPa						Load Left to Recover Prior to Swabbing: Oil m3			
Opening Gauge: <u>63</u> cm						SICP <u>0</u> kPa						Water <u>17.50</u> m3			

Swab No.	Time	Fluid level m	Swab depth m	Tank Gauge cm	Gauge diff cm	TOTAL FLUID		Water Cut %	WATER		OIL		PRESSURES		COMMENTS
						this run m3	cum m3		this run m3	cum m3	this run m3	cum m3	TBG kPa	CSG kPa	
1	09:25	480	780	70	7	1.11	1.11	100	1.11	1.11	0.00	0.00	vac	0	
2	09:40	480	780	75	5	0.80	1.91	100	0.80	1.91	0.00	0.00	vac	0	
3	09:50	800	870	83	8	1.27	3.18	100	1.27	3.18	0.00	0.00	TSTM	0	
4	10:05	800	900	92	9	1.43	4.61	100	1.43	4.61	0.00	0.00	TSTM	0	
5	10:45			115	23	3.66	8.40	100	3.66	8.27	0.00	0.00	600	0	Well flowing-2" line switched to Telba
6	11:00					2.00	10.40	60	1.20	9.47	0.80	0.80	800	0	
7	11:30					3.00	13.40	37	1.11	10.58	1.89	2.69	900	0	
8	12:00					3.00	16.40	25	0.75	11.33	2.25	4.94	800	0	
9	12:10					1.50	17.90	30	0.45	11.78	1.05	5.99	800	0	Rigged up wireline-run recorders
10	13:45					0.00	17.90	0	0.00	11.78	0.00	5.99	5300	0	STTP
11	14:00					0.00	17.90	0	0.00	11.78	0.00	5.99	5500	0	STTP
12	14:30					0.50	18.40	40	0.20	11.98	0.30	6.29	2500	0	32/64" Choke
13	15:00					2.50	20.90	37	0.93	12.90	1.58	7.87	1700	0	32/64" Choke
14	15:30					1.50	22.40	30	0.45	13.35	1.05	8.92	1400	0	32/64" Choke
15	16:00					2.00	24.40	35	0.70	14.05	1.30	10.22	1100	0	48/64" Choke
16	16:30					2.00	26.40	40	0.80	14.85	1.20	11.42	1300	0	48/64" Choke
17	17:00					2.00	28.40	35	0.70	15.55	1.30	12.72	1100	0	48/64" Choke
18	17:30					2.00	30.40	35	0.70	16.25	1.30	14.02	1100	0	48/64" Choke

Timothy W. Jones Consulting LTD. - SWAB REPORT

Page 2 of 3

Well: <u>Paramount et al Cameron 4-24 C-75</u>						Rig: <u>Flint #718</u>						DATE: <u>94/03/25 & 26</u>					
Tank Coef: _____ m ³ /cm						SITP _____ kPa						Load Left to Recover Prior to Swabbing: Oil _____ m ³					
Opening Gauge: <u>30.40</u> m ³						SICP <u>0</u> kPa						Water _____ m ³					
Swab No.	Time	Fluid level m	Swab depth m	Tank Gauge cm	Gauge diff cm	TOTAL FLUID		Water Cut %	WATER		OIL		PRESSURES		COMMENTS		
						this run m ³	cum m ³		this run m ³	cum m ³	this run m ³	cum m ³	TBG kPa	CSG kPa			
1	1800					2.00	32.40	35	0.70	11.34	1.30	2.58	1100	0	Salinity-11.0%; Ph-6.8		
2	1830					2.00	34.40	35	0.70	12.04	1.30	3.88	1100	0	Salinity-11.0%; Ph-6.8		
3	1900					0.25	34.65	32	0.08	11.42	0.17	2.75	1000	0	Salinity-11.0%; Ph-6.8		
4	1930					1.25	35.90	19	0.24	11.66	1.01	3.76	1000	0	Salinity-11.0%; Ph-6.8		
5	2000					2.00	37.90	32	0.64	12.30	1.38	5.12	1000	0	Salinity-11.0%; Ph-6.8		
6	2030					1.00	38.90	40	0.40	12.70	0.60	5.72	950	0	Salinity-11.0%; Ph-6.8		
7	2100					1.75	40.65	32	0.56	13.26	1.19	6.91	1000	0	Salinity-10.8%; Ph-6.4		
8	2130					1.25	41.90	32	0.40	13.66	0.85	7.76	950	0	Changed to 32/64" choke		
9	2200					1.25	43.15	25	0.31	13.97	0.94	8.70	1100	0	Salinity-10.8%; Ph-6.4		
10	2230					1.00	44.15	25	0.25	14.22	0.75	9.45	1400	0	Salinity-10.8%; Ph-6.4		
11	2300					1.00	45.15	32	0.32	14.54	0.68	10.13	1150	0	Salinity-10.4%; Ph-6.8		
12	2330					1.00	46.15	28	0.28	14.82	0.72	10.85	1800	0	Salinity-10.4%; Ph-6.8		
13	0000					1.25	47.40	28	0.35	15.17	0.90	11.75	1150		Shut in @ 06:30		
14	0030					0.75	48.15	32	0.24	15.41	0.51	12.26	1150				
15	0100					0.50	48.65	32	0.16	15.57	0.34	12.60	1150				
16	0130					0.00	48.65		0.00	15.57	0.00	12.60	1100		Missed reading		
17	0200					3.75	52.40	30	1.13	16.70	2.44	15.04	1100				
18	0230					1.25	53.65	26	0.33	17.02	0.81	15.85	1200				

Well: Paramount et al Cameron ~~139~~ C-75

Rig: Flint #718

DATE: 94/03/25 & 26

Tank Coef: m3/cm

STP kPa

Load Left to Recover Prior to Swabbing: Oil m3

Opening Gauge: 53.65 m³

SICP 0 kPa

Water m3

[illegible]

PARAMOUNT RESOURCES LTD.

DAILY WELL COMPLETION AND SERVICING REPORT

DATE: 94/03/25

WELL NAME: Paramount et al Cameron C-75

DAY: 3

PROGRAM PURPOSE: Completion

PAGE: 1 of 1

PRESENT OPERATION: Swabbing

FORMATION: SULPHUR POINT

GLE: 789.62 m KBE: 788.47 m TOTAL DEPTH: 1590 mKB PSTD: 1576 mKB est

PERFORATIONS: Sulphur Point 1428.5 - 1431.5 mKB

CSG. OD.: 177.8 mm

TBG OD: 73 mm

AFE#: 24404

AFE\$:

SERVICE CONTRACTOR: Fint # 718

TIME		PREVIOUS DAYS OPERATION	DAILY COST SUMMARY		
from	to	SISCP: 0 kpa SICP: 0 kpa SITP:	ITEM	I	\$
07:00	07:15	Safety meeting & rig walk-around. Continued R/H w/ selective acid tools & 73mm EUE tubing. Landed cup tools @ 1418 mKB. Press tested above parts then below @ 1436.5 mKB OK. Located casing collars w/ mech CCL OK. Relanded @ 1416 mKB. Rigged up Noweco C&A unit for acid wash & squeeze. Held pre-job safety meeting. Pressure tested surface lines to 21 Mpa. Circulated 1 m ³ 15% HCL pickle acid down tubing to bottom @ 0.16 m ³ /min & back to surface @ 0.25 m ³ /min into tank truck for disposal @ NOS. Spotted tools w/ open by-pass below parts @ 1436.5 mKB. Circulated 8.5 m ³ 15% HCL Noweco #1 acid blend to tubing bottom. Washed 0.5 m ³ acid past parts in 5-100L stages @ 5 min intervals. Held 4 Mpa back pressure on first 3 washes. Last two washes pressure decreased to 0. Closed by-pass. Positioned selective cups across 1431.5 - 1430.5 mKB. Started acid squeeze w/ 1 m ³ /vert m. Formation breakdown on 1st interval @ 9 Mpa. Continued 1m squeezes to top of parts. Average rate @ pressure: 0.17 m ³ /min @ 7.5 Mpa. Overdisplaced by 0.5 m ³ . Raised tools into blank casing & pressure tested cup integrity to 7 Mpa OK. Set RGP compression packer @ 1416 mKB & opened by-pass. Backwashed 8.5 m ³ 3% KCL water down casing. Closed by-pass & press tested packer to 14 Mpa OK. Rigged out Noweco. Rigged to swab. Initial fluid level @ surface (fluid control valve set). Pulled 4 swabs, recovered 6.4 m ³ fluid-tubing flowing.	Rig	203	\$ 7,900
08:30			Boiler	205	250.00
			Camp	210	\$ 2,600
09:00			Sentinal Safety	230	\$ 195
10:00			Noweco	268	\$ 25,300
			Rentals	240	\$ 1,200
	10:50		Supervision	225	\$ 610
11:30			Dechant	103	\$ 1,800
			Water Truck	218	\$ 375
			Satellite phone	216	\$ 195
			1st Aid Attendant	230	\$ 375
			Trucking	222	\$ 4,485
			Trucking	219	\$ 2,660
			Cardium Tools	238	\$ 11,940
19:00		Crew change. Safety meeting. Continued flowing on 2" line to Talba pressure tank taking 15 min pressure readings. Recovered total 18.65 m ³ fluid. Shut in tubing. Killed well, 5.0 m ³ 8% KCL water. Unset test packer. POOH w/ tubing in derrick, laid down acid tools. R/H w/ production string as follows: 60.3mm EUE re-entry guide, 3.05m 60.3mm EUE pup jt, Cardium DGP 114.3mm x 60.3mm dual grip packer, on-off connector, 1 jt-73mm tubing, Baker 58.6mm F-nipple, 148 jts tubing to surface. Landed tubing @ 1419.19 mKB. Pressure tested packer OK. Slickline set plug in tubing. Unlatched tubing from on-off connector & circulated annulus to 1% inhibited fresh water w/ Noweco 500. Re-latched tubing. Press tested tubing & casing OK. 10 mins ea OK. Removed BOPs, installed wellhead. Crew change.	DAILY COST: \$ 59,385		
			PREV. COST: \$ 60,333		
	23:30		CUMM COST: \$ 119,718		
0:00			DAILY RIG HRS: 24.0		
			CUMM RIG HRS: 72.0		
	02:00		TOTAL LOAD FLUID: 12.75		
			FLUID RECOVERED: 18.65		
			FLUID LEFT TO RECOVER: 10.20		
			NEW FLUID:		
	07:00		ROADS: Muddy, slippery		
			WEATHER: Clear; Low: -10°C; High: +2°C		
			PHONE: 289-3852-32		
			AREA:		
			REPORTED BY: Tim Jones		
	07:00		RECEIVED BY: P. Beeler		

BOP TESTS:

PRESSURE:

FUNCTION: OK

Page 1 of 1

DATE: 9/03/24

Load Left to Recover Prior to Swabbing: Oil _____ m2

Water 12.75 m3

[illegible]

PARAMOUNT RESOURCES LTD.

DAILY WELL COMPLETION AND SERVICING REPORT

DATE: 04/03/24

WELL NAME: Paramount et al Camaraca 25

PAY: 2

PROGRAM PURPOSE: Completion

PAGE: 1 of 1

PRESENT OPERATION: Selective acid squeeze

FORMATION: SULPHUR POINT

SL: 544.49 ... KDC: 700.47 m TOTAL DEPTH: 1590 mKB PSTD: 1675 mKB est

PERFORATIONS: Not perforated mKB

CSG. OD: 172.8 mm

TBG OD: 73 mm

AFE#: 24404

AFES:

SERVICE CONTRACTOR: Flint # 718

TIME		PREVIOUS DAYS OPERATION	DAILY COST SUMMARY		
from	to	SISCP: 0 kpa SiCP: 0 kpa SHT:	ITEM	#	\$
07:00	07:15	Safety meeting & rig walk-around. Waited ½ hr for hotshot. Riggged in power swivel. Started drilling run liner top @ 1048.39 mKB. Drilled 5 minutes backwashing @ 0.3 m³/min & dropped through cement. Riggged out swivel & continued RIH w/ 73mm EUE tubing. Tagged PSTD @ 1571.97 mKB. Backwashed well to clean fresh water 20 mins. POOH, stood tubing, laid down drill collars. RIH w/ 98.4mm bit, scraper for 114.3mm casing & 166 jts 73mm EUE tubing. Mixed 30 m³ 3% KCL water & circulated well to same, 24.2 m³.	Rig	203	\$ 7,900
08:30			Boiler	205	250.00
			Camp	210	\$ 2,400
	11:30		Sentinel Safety	230	\$ 195
			Phoenix Wireline	260	\$ 14,471
	14:30	Crew change & safety meeting. Continued circulating. POOH w/ tubing in derrick, laid down bit & scraper. Riggged up Phoenix Wireline to run CBLVDL GR. CCL log Correlated to Schlumberger CNL log 94/03/16. Ran main pass & 7 Mpa pressure pass from PSTD to liner top. Showed probable cement top in liner @ 1124 mKB. Good cement bond across zone of interest. Cooper Wellhead re-packed off between primary & secondary seals w/ wax compound. Held 21 Mpa OK. Filled casing 1.8 m³. Pressure tested casing & liner top to 21 Mpa. Held OK 10 mins. RIH w/ 86mm ERHSC loaded 97 shots. 34gm charges @ 90° phase to perf Sulphur Point interval: 1423.5 - 1431.5 mKB. Logged on depth to Phoenix CBL log 94/03/23. Guns fired OK. Slight blow after firing - TSTM. POOH, all shots fired. Riggged out wireline. P/U Cardium 114.3mm AWT selective acid tools as per program & Baker 58.7mm F-nipple. 155 jts 73mm tubing to surface. Crew change.	Rentals	240	\$ 5,493
15:00			Supervision	225	\$ 610
			Dechant	103	\$ 1,300
	18:00		Water Truck	218	\$ 375
			Satellite phone	218	\$ 195
19:00		Crew change & safety meeting. Continued circulating. POOH w/ tubing in derrick, laid down bit & scraper. Riggged up Phoenix Wireline to run CBLVDL GR. CCL log Correlated to Schlumberger CNL log 94/03/16. Ran main pass & 7 Mpa pressure pass from PSTD to liner top. Showed probable cement top in liner @ 1124 mKB. Good cement bond across zone of interest. Cooper Wellhead re-packed off between primary & secondary seals w/ wax compound. Held 21 Mpa OK. Filled casing 1.8 m³. Pressure tested casing & liner top to 21 Mpa. Held OK 10 mins. RIH w/ 86mm ERHSC loaded 97 shots. 34gm charges @ 90° phase to perf Sulphur Point interval: 1423.5 - 1431.5 mKB. Logged on depth to Phoenix CBL log 94/03/23. Guns fired OK. Slight blow after firing - TSTM. POOH, all shots fired. Riggged out wireline. P/U Cardium 114.3mm AWT selective acid tools as per program & Baker 58.7mm F-nipple. 155 jts 73mm tubing to surface. Crew change.	1st Aid Attendant	230	\$ 375
19:30			Cooper Industries	234	\$ 2,700
18:00		Crew change & safety meeting. Continued circulating. POOH w/ tubing in derrick, laid down bit & scraper. Riggged up Phoenix Wireline to run CBLVDL GR. CCL log Correlated to Schlumberger CNL log 94/03/16. Ran main pass & 7 Mpa pressure pass from PSTD to liner top. Showed probable cement top in liner @ 1124 mKB. Good cement bond across zone of interest. Cooper Wellhead re-packed off between primary & secondary seals w/ wax compound. Held 21 Mpa OK. Filled casing 1.8 m³. Pressure tested casing & liner top to 21 Mpa. Held OK 10 mins. RIH w/ 86mm ERHSC loaded 97 shots. 34gm charges @ 90° phase to perf Sulphur Point interval: 1423.5 - 1431.5 mKB. Logged on depth to Phoenix CBL log 94/03/23. Guns fired OK. Slight blow after firing - TSTM. POOH, all shots fired. Riggged out wireline. P/U Cardium 114.3mm AWT selective acid tools as per program & Baker 58.7mm F-nipple. 155 jts 73mm tubing to surface. Crew change.	DAILY COST:		\$ 36,204
	03:30		PREV. COST:		\$ 23,929
			CUMM COST:		\$ 60,133
04:00			DAILY RIG HRS:		24.0
			CUMM RIG HRS:		49.0
	05:30	Crew change & safety meeting. Continued circulating. POOH w/ tubing in derrick, laid down bit & scraper. Riggged up Phoenix Wireline to run CBLVDL GR. CCL log Correlated to Schlumberger CNL log 94/03/16. Ran main pass & 7 Mpa pressure pass from PSTD to liner top. Showed probable cement top in liner @ 1124 mKB. Good cement bond across zone of interest. Cooper Wellhead re-packed off between primary & secondary seals w/ wax compound. Held 21 Mpa OK. Filled casing 1.8 m³. Pressure tested casing & liner top to 21 Mpa. Held OK 10 mins. RIH w/ 86mm ERHSC loaded 97 shots. 34gm charges @ 90° phase to perf Sulphur Point interval: 1423.5 - 1431.5 mKB. Logged on depth to Phoenix CBL log 94/03/23. Guns fired OK. Slight blow after firing - TSTM. POOH, all shots fired. Riggged out wireline. P/U Cardium 114.3mm AWT selective acid tools as per program & Baker 58.7mm F-nipple. 155 jts 73mm tubing to surface. Crew change.	TOTAL LOAD FLUID:		
			FLUID RECOVERED:		
			FLUID LEFT TO RECOVER:		
			NEW FLUID:		
	07:00		ROADS:		Muddy, slippery
		Crew change & safety meeting. Continued circulating. POOH w/ tubing in derrick, laid down bit & scraper. Riggged up Phoenix Wireline to run CBLVDL GR. CCL log Correlated to Schlumberger CNL log 94/03/16. Ran main pass & 7 Mpa pressure pass from PSTD to liner top. Showed probable cement top in liner @ 1124 mKB. Good cement bond across zone of interest. Cooper Wellhead re-packed off between primary & secondary seals w/ wax compound. Held 21 Mpa OK. Filled casing 1.8 m³. Pressure tested casing & liner top to 21 Mpa. Held OK 10 mins. RIH w/ 86mm ERHSC loaded 97 shots. 34gm charges @ 90° phase to perf Sulphur Point interval: 1423.5 - 1431.5 mKB. Logged on depth to Phoenix CBL log 94/03/23. Guns fired OK. Slight blow after firing - TSTM. POOH, all shots fired. Riggged out wireline. P/U Cardium 114.3mm AWT selective acid tools as per program & Baker 58.7mm F-nipple. 155 jts 73mm tubing to surface. Crew change.	WEATHER:		Clear; Low: -17°C; High: -8°C
			PHONE:		269-3862-32
			AREA:		
			REPORTED BY:		Tim Jones
			RECEIVED BY:		P. Beeler

BOP TESTS:

PRESSURE:

FUNCTION: OK

PARAMOUNT RESOURCES LTD

PARA ET AL CAMERON

C-75

MARCH 25-31/94

Test by SOLID WIRELINE SERVICES

Interpretation by SOLID WIRELINE SERVICES

SOLID WIRELINE SERVICES

SUMMARY

Company: PARAMOUNT RESOURCES LTD
Date of test: MARCH 25-31/94

Well name: PARA ET AL CAMERON
Location: C-75

MAR 25-13:30
MAR 25-14:30
MAR 28-12:00
MAR 31-02:40

ON BOTTOM
START FLOW
WELL SHUT-IN
OFF BOTTOM

Gradient value of Kpag/m used to extrapolate to midpoint.

Remarks: THIS WELL IS IN THE NORTHWEST TERRITORIES.

Test by:D.B.

Interpretation by SOLID WIRELINE SERVICES

SOLID WIRELINE SERVICES

Subsurface Pressure Measurements

Company: PARAMOUNT RESOURCES LTD
 Address: CALGARY, ALBERTA
 Field & Pool: SULPHUR POINT
 Prod. Int. CF: 1418.6 to 1426.6
 Elev. (CF) 783.6 (KB) 788.5
 Pool datum:

Well name: PARA ET AL CAMERON
 Location: C-75
 Status: GAS
 Prod. through: TUBING
 Mid-point prod.int. CF: 1422.6
 Datum depth of well CF:

Type of test: SINGLE POINT
 Tubing pres: 7785
 Casing pres:
 Temperature at run depth:

Date of test: MARCH 25-31/94
 Shut in time: MAR 28/94 @ 1200 HRS
 On/off btm.: 25/3@1330-31/3@0240 HRS
 Surface temperature:

Note: All units in metric, depth in metres cf; pressure in KPAG

TOP RECORDER

Element serial#: 7177N
 Pressure Range: 0 to 22063
 Cal. equation: 438.91 * defl 5.23
 Latest calibration: 3/3/94
 Clock range: 180 HOUR
 Run depth (CF): 1412

BOTTOM RECORDER

Element serial#: 29047N
 Pressure Range: 0 to 21375
 Cal. equation: 424.11 * defl -20.31
 Latest calibration: 3/3/94
 Clock range: 180 HOUR
 Run depth (CF): 1414

COMMENT REAL TIME	DELTA TIME HOURS	DEFL mm	TOP RECORDER		DEFL mm	BOTTOM RECORDER	
			PRESSURE RUNDEPTH	PRESSURE MIDPNT		PRESSURE RUNDEPTH	PRESSURE MIDPNT
MAR 25-13:30	0.00	17.700	7768.3		18.400	7767.9	
ON BOTTOM	0.50	18.265	8015.4		19.030	8033.8	
14:30	1.00	18.580	8154.2		19.375	8179.7	
MAR 25-14:30	0.00	18.580	8154.2		19.375	8179.7	
START FLOW	0.50	14.400	6325.7		15.005	6335.4	
15:30	1.00	13.050	5735.5		13.590	5738.4	
16:00	1.50	12.465	5479.8		13.035	5504.2	
16:30	2.00	11.665	5130.1		12.075	5099.2	
17:00	2.50	11.165	4911.5		11.575	4888.2	
17:30	3.00	10.810	4756.3		11.210	4734.2	
18:00	3.50	10.545	4640.4		10.890	4599.2	
18:30	4.00	10.300	4533.3		10.665	4504.2	
19:30	5.00	9.972	4389.9		10.365	4377.6	
20:30	6.00	9.738	4287.7		10.165	4293.2	
21:30	7.00	9.570	4214.2		9.990	4219.4	
21:45	7.25	9.535	4198.9		9.950	4202.5	
22:00	7.50	9.865	4343.2		10.390	4388.2	
22:30	8.00	10.040	4419.7		10.530	4447.3	
23:30	9.00	10.065	4430.6		10.540	4451.5	
00:30	10.00	10.070	4432.8		10.515	4440.9	
01:30	11.00	10.035	4417.5		10.495	4432.5	
02:30	12.00	10.025	4413.1		10.480	4426.2	
04:30	14.00	9.975	4391.3		10.420	4400.8	
06:30	16.00	9.905	4360.7		10.365	4377.6	
08:30	18.00	9.885	4351.9		10.340	4367.1	

SOLID WIRELINE SERVICES

Company: PARAMOUNT RESOURCES LTD
Date of test: MARCH 25-31/94

Well name: PARA ET AL CAMERON
Location: C-75

TOP RECORDER
Element serial#: 7177N
Run depth (CF): 1412

BOTTOM RECORDER
Element serial#: 29047N
Run depth (CF): 1414

COMMENT REAL TIME	DELTA TIME HOURS	DEFL mm	PRESSURE RUNDEPTH	PRESSURE MIDPNT	DEFL mm	PRESSURE RUNDEPTH	PRESSURE MIDPNT
10:30	20.00	9.850	4336.6		10.295	4348.1	
12:30	22.00	9.775	4303.8		10.210	4312.2	
14:30	24.00	9.735	4286.3		10.175	4297.5	
18:30	28.00	9.720	4279.8		10.145	4284.8	
22:30	32.00	9.675	4260.1		10.115	4272.2	
02:30	36.00	9.725	4282.0		10.150	4286.9	
06:30	40.00	9.775	4303.8		10.195	4305.9	
10:30	44.00	9.735	4286.3		10.135	4280.6	
14:30	48.00	9.680	4262.3		10.115	4272.2	
18:30	52.00	9.728	4283.3		10.165	4293.2	
22:30	56.00	9.785	4308.2		10.240	4324.9	
02:30	60.00	9.842	4333.1		10.285	4343.9	
06:30	64.00	9.820	4323.5		10.260	4333.3	
10:30	68.00	9.820	4323.5		10.215	4314.3	
12:00	69.50	9.710	4275.4		10.135	4280.6	
MAR 28-12:00	0.00	9.710	4275.4		10.135	4280.6	
WELL SHUT-IN	0.25	10.625	4675.4		11.230	4742.6	
12:30	0.50	11.075	4872.1		11.610	4903.0	
12:45	0.75	11.300	4970.5		11.845	5002.1	
13:00	1.00	11.615	5108.2		12.175	5141.4	
13:15	1.25	11.915	5239.3		12.470	5265.8	
13:30	1.50	12.160	5346.4		12.725	5373.4	
13:45	1.75	12.410	5455.7		12.990	5485.2	
14:00	2.00	12.650	5560.7		13.205	5575.9	
14:15	2.25	12.855	5650.3		13.445	5677.2	
14:30	2.50	13.040	5731.1		13.635	5757.4	
14:45	2.75	13.230	5814.2		13.815	5833.3	
15:00	3.00	13.410	5892.9		14.020	5919.8	
15:15	3.25	13.560	5958.5		14.175	5985.2	
15:30	3.50	13.695	6017.5		14.345	6057.0	
15:45	3.75	13.850	6085.2		14.505	6124.5	
16:00	4.00	14.000	6150.8		14.645	6183.5	
16:30	4.50	14.235	6253.6		14.900	6291.1	
17:00	5.00	14.455	6349.7		15.115	6381.9	
17:30	5.50	14.625	6424.0		15.295	6457.8	
18:00	6.00	14.780	6491.8		15.520	6552.7	
18:30	6.50	15.015	6594.5		15.720	6637.1	
19:00	7.00	15.205	6677.6		15.905	6715.2	
19:30	7.50	15.390	6758.5		16.100	6797.5	
20:00	8.00	15.565	6835.0		16.270	6869.2	
20:30	8.50	15.740	6911.5		16.430	6936.7	
21:00	9.00	15.910	6985.8		16.600	7008.4	
21:30	9.50	16.065	7053.6		16.765	7078.1	
22:00	10.00	16.210	7116.9		16.915	7141.4	
22:30	10.50	16.345	7176.0		17.050	7198.3	
23:00	11.00	16.465	7228.4		17.180	7253.2	
23:30	11.50	16.570	7274.3		17.280	7295.4	

SOLID WIRELINE SERVICES

Company: PARAMOUNT RESOURCES LTD
Date of test: MARCH 25-31/94

Well name: PARA ET AL CAMERON
Location: C-75

TOP RECORDER
Element serial#: 7177N
Run depth (CF): 1412

BOTTOM RECORDER
Element serial#: 29047N
Run depth (CF): 1414

COMMENT REAL TIME	DELTA TIME HOURS	DEFL mm	PRESSURE RUNDEPTH	PRESSURE MIDPNT	DEFL mm	PRESSURE RUNDEPTH	PRESSURE MIDPNT
00:00	12.00	16.690	7326.8		17.400	7346.0	
00:30	12.50	16.798	7374.0		17.525	7398.7	
01:00	13.00	16.910	7423.0		17.585	7424.0	
01:30	13.50	17.115	7512.6		17.800	7514.8	
02:00	14.00	17.205	7551.9		17.885	7550.6	
02:30	14.50	17.240	7567.2		17.920	7565.4	
03:00	15.00	17.295	7591.3		17.990	7594.9	
03:30	15.50	17.370	7624.0		18.065	7626.6	
04:00	16.00	17.430	7650.3		18.135	7656.1	
05:00	17.00	17.525	7691.8		18.240	7700.4	
06:00	18.00	17.645	7744.3		18.360	7751.1	
07:00	19.00	17.750	7790.2		18.490	7805.9	
08:00	20.00	17.880	7847.0		18.600	7852.3	
09:00	21.00	17.985	7892.9		18.730	7907.2	
10:00	22.00	18.110	7947.5		18.845	7955.7	
11:00	23.00	18.210	7991.3		18.950	8000.0	
12:00	24.00	18.305	8033.0		19.050	8042.3	
14:00	26.00	18.465	8103.5		19.210	8109.9	
16:00	28.00	18.630	8176.2		19.375	8179.7	
18:00	30.00	18.775	8240.1		19.540	8249.5	
20:00	32.00	18.930	8308.4		19.650	8296.0	
22:00	34.00	19.060	8365.6		19.790	8355.2	
00:00	36.00	19.175	8416.3		19.930	8414.4	
02:00	38.00	19.280	8462.6		20.035	8458.8	
04:00	40.00	19.365	8500.0		20.135	8501.1	
06:00	42.00	19.440	8533.0		20.230	8541.2	
08:00	44.00	19.530	8572.7		20.310	8575.1	
10:00	46.00	19.610	8607.9		20.390	8608.9	
12:00	48.00	19.685	8641.0		20.465	8640.6	
14:00	50.00	19.765	8676.2		20.530	8668.1	
16:00	52.00	19.828	8704.0		20.585	8691.3	
18:00	54.00	19.880	8726.9		20.650	8718.8	
20:00	56.00	19.930	8748.9		20.710	8744.2	
22:00	58.00	19.995	8777.5		20.770	8769.6	
MAR 31-02:40	60.00	20.040	8797.4		20.830	8794.9	
OFF BOTTOM	62.67	20.100	8823.8		20.900	8824.5	

Gradient value of Kpag/m used to extrapolate to midpoint.

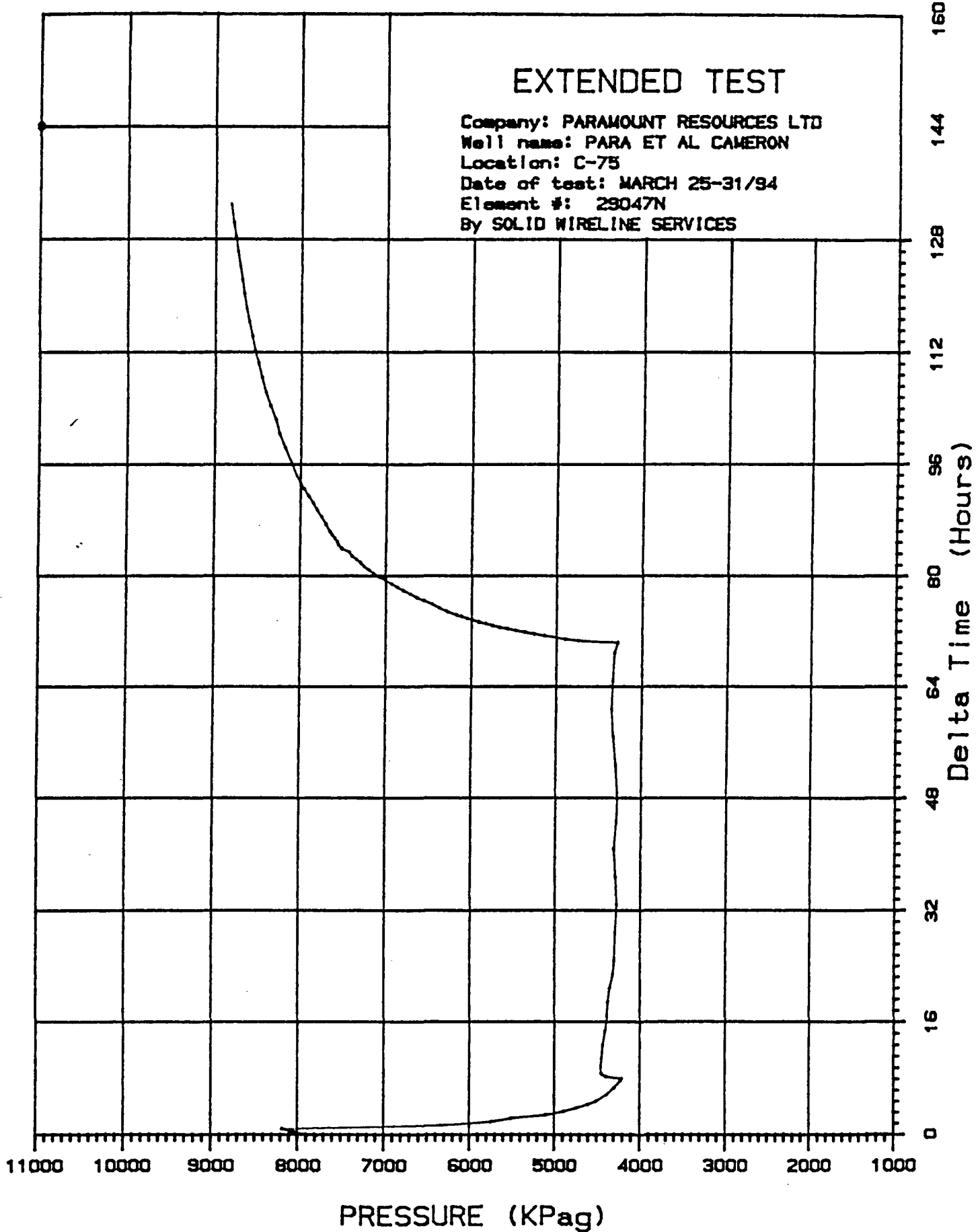
Remarks: THIS WELL IS IN THE NORTHWEST TERRITORIES.

Test by: D.B.

Interpretation by SOLID WIRELINE SERVICES

EXTENDED TEST

Company: PARAMOUNT RESOURCES LTD
Well name: PARA ET AL CAMERON
Location: C-75
Date of test: MARCH 25-31/94
Element #: 29047N
By SOLID WIRELINE SERVICES





OIL ANALYSIS

CONTAINER IDENTIFICATION

PB 1A

LABORATORY NUMBER

017120A

OPERATOR NAME

PARAMOUNT RESOURCES LTD.

UNIQUE WELL IDENTIFIER

WELL NAME

KB m ELEVATIONS GRD m

PARA et al CAMERON C75 60 10'N 117 15'W

788.47

783.62

FIELD OR AREA

POOL OR ZONE

NAME OF SAMPLER

COMPANY

CAMERON

SULPHUR POINT

SAME

TEST TYPE

NO

TEST RECOVERY

DST

2

SAMPLING POINT

AMT & TYPE OF CUSHION

MUD RESISTIVITY/ Ω m

TOP

@ 25° C

TEST INTERVAL OR PERFS

1423.30-1439.00

mKB S₀ 1431.5

1423.5-1431.5

SEPARATOR

TREATER

RESERVOIR

SOURCE

SAMPLED

RECEIVED

GAUGE PRESSURE kPa

TEMPERATURE °C

DATE SAMPLED (Y-M-D)

DATE RECEIVED (Y-M-D)

DATE REPORTED (Y-M-D)

ANALYST

OTHER INFORMATION

94-03-14

94-03-15

94-03-18

A,C,S NCO

SAMPLE PROPERTIES

B.S. & W. (VOLUME FRACTION)

COLOUR OF CLEAN OIL

WATER

SEDIMENT

TOTAL

DARK BROWN

0.048

0.004

0.052

COLOUR NUMBER ASTM D-155

D8 A.S.T.M.

DENSITY

RELATIVE

ABSOLUTE $\rho/\text{kg}\cdot\text{m}^{-3}$

AS RECEIVED

AFTER CLEANING

AS RECEIVED

AFTER CLEANING

API GRAVITY @ 15° C

33.29

TOTAL SULPHUR
(MASS FRACTION)TOTAL SALT $\text{g}\cdot\text{m}^{-3}$

POUR POINT / °C

U.S.B.M.

A.S.T.M.

0.00834

0

RVP/kPa

CARBON RESIDUE
(MASS FRACTION)

CONRADSON

RAMSBOTTOM

VISCOSITY

TEMP / °C	ABSOLUTE $\text{mPa}\cdot\text{s}$	KINEMATIC $\text{mm}^2\cdot\text{s}^{-1}$
25	8.29	9.74
38	5.65	6.70
50	4.10	4.90

VOLUME FRACTION	TEMP. / °C
0.05	137.3
0.10	173.8
0.15	204.2
0.20	229.5
0.25	246.7
0.30	268.0
0.35	286.2
0.40	305.5
0.45	322.7
0.50	343.0
0.55	356.1
0.60	375.4
0.65	387.5
0.70	398.7
0.75	405.8
0.80	
0.85	
0.90	
0.95	
1.00	
F.B.P.	405.8
CRACKED	

DISTILLATION

METHOD

A.S.T.M.-D86*

INITIAL BOILING POINT

88.7

ABS BAROM PRESS/kPa

ROOM TEMP / °C

86.8

22.0

DISTILLATION SUMMARY

(VOLUME FRACTION)

200° C
NAPHTHA275° C
KEROSENE350° C
LIGHT GAS OIL

0.14

0.32

0.53

RECOVERED

RESIDUE

DISTILLATION LOSS

0.82

0.16

0.02

CHARACTERIZATION
FACTOR

12.0

REMARKS

* THE DISTILLATION TEMPERATURES HAVE
BEEN CORRECTED TO 101.3 KPA(ABS).SAMPLE CONTAINED 40.5% FREE WATER
BY VOLUME. BS&W PERFORMED ON OIL
PORTION ONLY.



OIL ANALYSIS

CONTAINER IDENTIFICATION

PB 5A

LABORATORY NUMBER

017120B

OPERATOR NAME

PARAMOUNT RESOURCES LTD.

UNIQUE WELL IDENTIFIER

WELL NAME

KB m ELEVATIONS GRD m

PARA et al CAMERON C75 60 10'N 117 15'W

788.47

783.62

FIELD OR AREA

POOL OR ZONE

NAME OF SAMPLER

COMPANY

CAMERON

SULPHUR POINT

SAME

TEST TYPE

NO

TEST RECOVERY

DST

2

SAMPLING POINT

AMT & TYPE OF CUSHION

MUD RESISTIVITY/ Ω m

SURFACE

@ 25° C

TEST INTERVAL OR PERFS

1423.30-1439.00

mKB

SEPARATOR

TREATER

RESERVOIR

SOURCE

SAMPLED

RECEIVED

GAUGE PRESSURE kPa

TEMPERATURE °C

DATE SAMPLED (Y-M-D)

DATE RECEIVED (Y-M-D)

DATE REPORTED (Y-M-D)

ANALYST

OTHER INFORMATION

94-03-14

94-03-15

94-03-18

A,C,S NCO

FLOWING START

SAMPLE PROPERTIES

B.S. & W. (VOLUME FRACTION)

COLOUR OF CLEAN OIL

WATER

SEDIMENT

TOTAL

DARK BROWN

0.035

TRACE

0.035

COLOUR NUMBER ASTM D-155

D8 A.S.T.M.

DENSITY

RELATIVE

ABSOLUTE $\rho/\text{kg}\cdot\text{m}^{-3}$

AS RECEIVED

AFTER CLEANING

AS RECEIVED

AFTER CLEANING

API GRAVITY @ 15° C

32.64

TOTAL SULPHUR
(MASS FRACTION)

0.00851

TOTAL SALT $\text{g}\cdot\text{m}^{-3}$

POUR POINT / °C

U.S.B.M.

A.S.T.M.

-3

RVPM/kPa

CARBON RESIDUE
(MASS FRACTION)

CONRADSON

RAMSBOTTOM

DISTILLATION

METHOD

INITIAL
BOILING POINT

ABS BAROM PRESS/kPa

ROOM TEMP/°C

DISTILLATION SUMMARY
(VOLUME FRACTION)200° C
NAPHTHA275° C
KEROSENE350° C
LIGHT GAS OIL

RECOVERED

RESIDUE

DISTILLATION
LOSSCHARACTERIZATION
FACTOR

12.0

VOLUME FRACTION	TEMP. / °C
0.05	
0.10	
0.15	
0.20	
0.25	
0.30	
0.35	
0.40	
0.45	
0.50	
0.55	
0.60	
0.65	
0.70	
0.75	
0.80	
0.85	
0.90	
0.95	
1.00	
F.B.P.	
CRACKED	

REMARKS

SAMPLE CONTAINED 51.5% FREE WATER BY VOLUME. BS&W PERFORMED ON OIL PORTION ONLY. INSUFFICIENT SAMPLE FOR FURTHER ANALYSIS.

VISCOSITY		
TEMP / °C	ABSOLUTE $\text{mPa}\cdot\text{s}$	KINEMATIC $\text{mm}^2\cdot\text{s}^{-1}$
25	9.21	10.77
38	5.93	7.00
50	4.17	4.97



OIL ANALYSIS

CONTAINER IDENTIFICATION

PB 7

LABORATORY NUMBER

017120C

OPERATOR NAME

PARAMOUNT RESOURCES LTD.

UNIQUE WELL IDENTIFIER

WELL NAME

PARA et al CAMERON C75 60 10'N 117 15'W

KB m ELEVATIONS GRD m

788.47

783.62

FIELD OR AREA

CAMERON

POOL OR ZONE

SULPHUR POINT

NAME OF SAMPLER

COMPANY

SAME

TEST TYPE

DST

NO

2

TEST RECOVERY

SAMPLING POINT

SURFACE

AMT & TYPE OF CUSHION

MUD RESISTIVITY/ Ω m

@ 25° C

TEST INTERVAL OR PERFS

1423.30-1439.00
mKB

SEPARATOR

TREATER

RESERVOIR

SOURCE

SAMPLED

RECEIVED

GAUGE PRESSURE kPa

TEMPERATURE ° C

DATE SAMPLED (Y-M-D)

94-03-14

DATE RECEIVED (Y-M-D)

94-03-15

DATE REPORTED (Y-M-D)

94-03-18

ANALYST

A,C,S NCO

OTHER INFORMATION

DRILL PIPE 588m

SAMPLE PROPERTIES

B.S. & W. (VOLUME FRACTION)

COLOUR OF CLEAN OIL

DARK BROWN

WATER

0.060

SEDIMENT

0.006

TOTAL

0.066

COLOUR NUMBER ASTM D-155

D8 A.S.T.M.

DENSITY

RELATIVE

AS RECEIVED

AFTER CLEANING

0.8618

ABSOLUTE $\rho/\text{kg}\cdot\text{m}^{-3}$

AS RECEIVED

AFTER CLEANING

861.0

API GRAVITY @ 15° C

32.70

TOTAL SULPHUR
(MASS FRACTION)

0.00800

TOTAL SALT $\text{g}\cdot\text{m}^{-3}$

POUR POINT / ° C

U.S.B.M.

A.S.T.M.

3

RVP/kPa

CARBON RESIDUE
(MASS FRACTION)

CONRADSON

RAMSBOTTOM

VISCOSITY

TEMP / ° C	ABSOLUTE/mPa·s	KINEMATIC/ $\text{mm}^2\cdot\text{s}^{-1}$
25	9.51	11.13
38	6.25	7.38
50	4.47	5.33

DISTILLATION

METHOD

A.S.T.M.-D86*

INITIAL
BOILING POINT

100.8

ABS BAROM PRESS/kPa

86.8

ROOM TEMP / ° C

22.0

DISTILLATION SUMMARY

(VOLUME FRACTION)

200° C
NAPHTHA

0.14

275° C
KEROSENE

0.32

350° C
LIGHT GAS OIL

0.55

RECOVERED

0.82

RESIDUE

0.16

DISTILLATION
LOSS

0.02

CHARACTERIZATION
FACTOR

12.0

VOLUME FRACTION	TEMP. / ° C
0.05	146.4
0.10	180.9
0.15	210.2
0.20	233.5
0.25	252.8
0.30	272.0
0.35	288.2
0.40	306.5
0.45	319.7
0.50	336.9
0.55	353.1
0.60	370.3
0.65	384.5
0.70	394.6
0.75	402.7
0.80	405.8
0.85	
0.90	
0.95	
1.00	
F B P	405.8
CRACKED	

* THE DISTILLATION TEMPERATURES HAVE
REMARKS BEEN CORRECTED TO 101.3 KPA(ABS).



WATER ANALYSIS

CONTAINER IDENTIFICATION

LABORATORY NUMBER

PB 2A

W17120A

OPERATOR NAME

PARAMOUNT RESOURCES LTD.

UNIQUE WELL IDENTIFIER

WELL NAME

ELEVATIONS
KB m GRD m

PARA et al CAMERON C75 60 10'N 117 15'W

788.47

783.62

FIELD OR AREA

POOL OR ZONE

NAME OF SAMPLER

COMPANY

CAMERON

SULPHUR POINT

SAME

TEST TYPE

NO

TEST RECOVERY

DST

2

SAMPLING POINT

AMT & TYPE OF CUSHION

MUD RESISTIVITY/Ω m

MIDDLE

TYPE OF PRODUCTION

PUMPING

FLOWING

GAS LIFT

SWAB

PRODUCTION RATES

WATER

m³/d

OIL

m³/d

GAS

10³ m³/d

SEPARATOR

TREATER

RESERVOIR

SOURCE

SAMPLED

RECEIVED

GAUGE PRESSURE kPa

TEMPERATURE °C

DATE SAMPLED (Y-M-D)

DATE RECEIVED (Y-M-D)

DATE REPORTED (Y-M-D)

ANALYST

OTHER INFORMATION

94-03-14

94-03-15

94-03-16

HU

NCO

ION	mg/L	MASS FRACTION	mmol/L
Na	27800.0	0.277	1210.0
K	874.0	0.009	22.4
Ca	6250.0	0.062	156.0
Mg	1500.0	0.015	61.7
Ba	N.A.	N.A.	N.A.
Sr	N.A.	N.A.	N.A.
Fe	2.5	TRC*	TRC+

ION	mg/L	MASS FRACTION	mmol/L
Cl	62500.0	0.622	1760.0
Br	N.A.	N.A.	N.A.
I	N.A.	N.A.	N.A.
HCO ₃	862.0	0.009	14.1
SO ₄	713.0	0.007	7.4
CO ₃	NIL	NIL	NIL
OH	NIL	NIL	NIL
H ₂ S	N.D.	N.D.	N.D.

DISSOLVED

TOTAL SOLIDS mg/L

EVAPORATED AT 110° C

EVAPORATED AT 180° C

AT IGNITION

CALCULATED

RELATIVE DENSITY

REFRACTIVE INDEX

1.075 @ 25° C

N.A. @ 25° C

OBSERVED pH

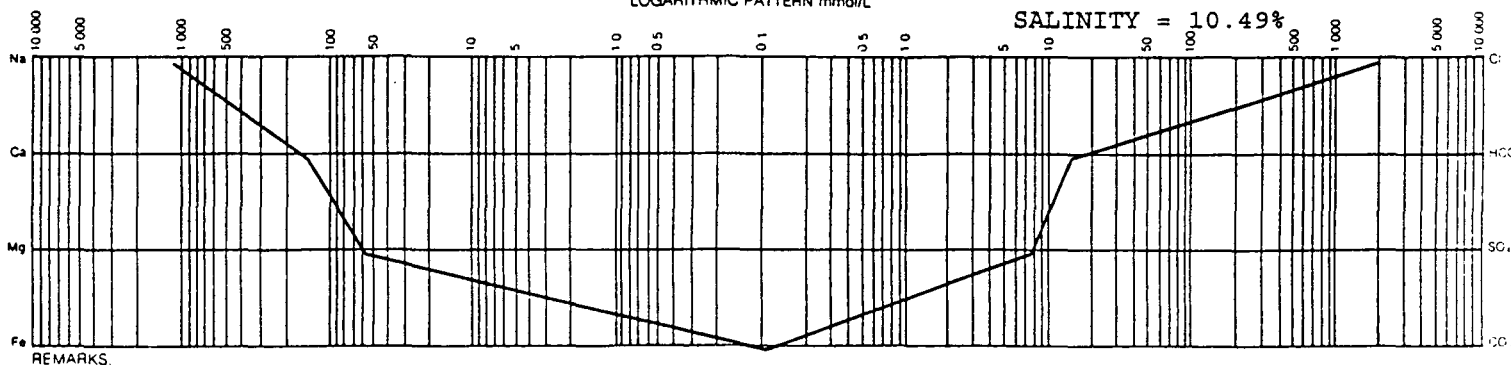
RESISTIVITY/Ω·m

7.24 @ 25° C

0.08 @ 25° C

LOGARITHMIC PATTERN mmol/L

SALINITY = 10.49%



REMARKS

TRC+= LESS THAN 0.1 N.D.= NOT DETECTED NIL= 0.0 TRC*= LESS THAN 0.001 N.A.= NOT ANALYZED



WATER ANALYSIS

CONTAINER IDENTIFICATION PB 4B		LABORATORY NUMBER W17120B	
OPERATOR NAME PARAMOUNT RESOURCES LTD.			
UNIQUE WELL IDENTIFIER CAMERON	WELL NAME PARA et al CAMERON C75 60 10'N 117 15'W		ELEVATIONS KB m 788.47 GRD m 783.62
FIELD OR AREA CAMERON	POOL OR ZONE SULPHUR POINT	NAME OF SAMPLER SAME	COMPANY SAME
TEST TYPE DST	NO 2	TEST RECOVERY	
SAMPLING POINT BOTTOM		AMT & TYPE OF CUSHION	
TEST INTERVAL OR PERFS 1423.30-1439.00 mKB		MUD RESISTIVITY/Ω m @ 25° C	
TYPE OF PRODUCTION ☐ PUMPING ☐ FLOWING ☐ GAS LIFT ☐ SWAB			
PRODUCTION RATES WATER m ³ /d OIL m ³ /d GAS 10 ³ m ³ /d			
SEPARATOR		TREATER	RESERVOIR
GAUGE PRESSURE kPa		SOURCE	SAMPLED
TEMPERATURE ° C		RECEIVED	
DATE SAMPLED (Y-M-D) 94-03-14	DATE RECEIVED (Y-M-D) 94-03-15	DATE REPORTED (Y-M-D) 94-03-16	ANALYST HU NCO
OTHER INFORMATION			

ION	mg/L	MASS FRACTION	mmol/L
Na	20000.0	0.270	869.0
K	629.0	0.008	16.1
Ca	4620.0	0.062	115.0
Mg	1110.0	0.015	45.7
Ba	N.A.	N.A.	N.A.
Sr	N.A.	N.A.	N.A.
Fe	2.3	TRC*	TRC+

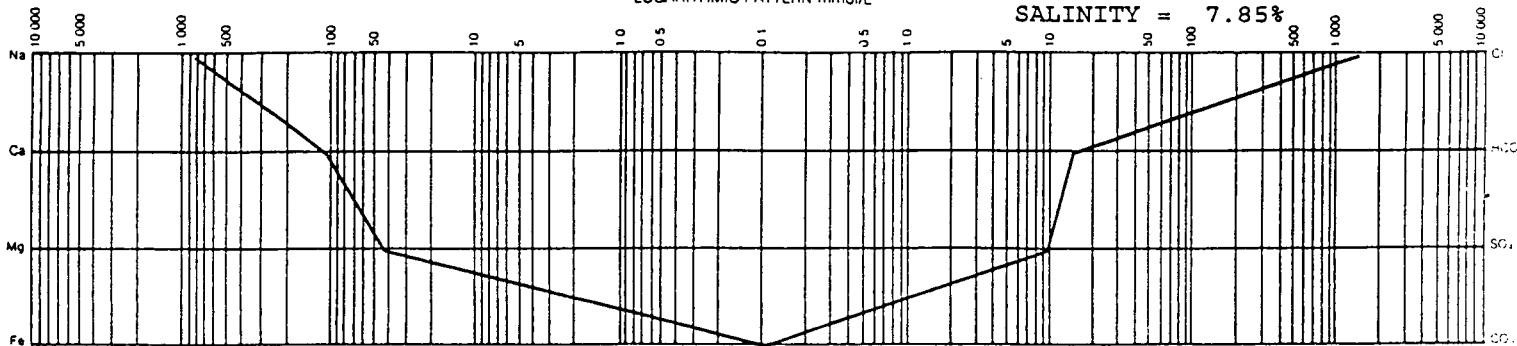
ION	mg/L	MASS FRACTION	mmol/L
Cl	46000.0	0.620	1300.0
Br	N.A.	N.A.	N.A.
I	N.A.	N.A.	N.A.
HCO ₃	877.0	0.012	14.3
SO ₄	906.0	0.012	9.4
CO ₃	NIL	NIL	NIL
OH	NIL	NIL	NIL
H ₂ S	N.D.	N.D.	N.D.

DISSOLVED TOTAL SOLIDS

EVAPORATED AT 110° C	EVAPORATED AT 180° C
AT IGNITION	CALCULATED
	74100.0
RELATIVE DENSITY @ 25° C	REFRACTIVE INDEX @ 25° C
1.058	N.A.
OBSERVED pH @ 25° C	RESISTIVITY/Ω cm @ 25° C
7.36	0.09

THE '30 MINUTE' API MUD FILTRATE LOSS IS 43 mL. THE ABOVE RESULTS PERTAIN TO THE WATER EXTRACTED FROM THE MUD SALINITY = 7.85%

LOGARITHMIC PATTERN mmol/L



TRC+= LESS THAN 0.1 N.D.= NOT DETECTED NIL= 0.0 TRC*= LESS THAN 0.001 N.A.= NOT ANALYZED



WATER ANALYSIS

CONTAINER IDENTIFICATION PB 6C		LABORATORY NUMBER W17120C	
OPERATOR NAME PARAMOUNT RESOURCES LTD.			
UNIQUE WELL IDENTIFIER PARA et al CAMERON C75 60 10'N 117 15'W	WELL NAME		ELEVATIONS KB m 788.47 GRD m 783.62
FIELD OR AREA CAMERON	POOL OR ZONE SULPHUR POINT	NAME OF SAMPLER	COMPANY SAME
TEST TYPE DST	NO 2	TEST RECOVERY	
SAMPLING POINT SURFACE		AMT & TYPE OF CUSHION	MUD RESISTIVITY/Ω m @ 25° C
TEST INTERVAL OR PERFS 1423.30-1439.00 mKB		TYPE OF PRODUCTION ☐ PUMPING ☐ FLOWING ☐ GAS LIFT ☐ SWAB	
PRODUCTION RATES WATER m ³ /d OIL m ³ /d GAS 10 ³ m ³ /d		SEPARATOR TREATER RESERVOIR SOURCE SAMPLED RECEIVED 	
DATE SAMPLED (Y-M-D) 94-03-14	DATE RECEIVED (Y-M-D) 94-03-15	DATE REPORTED (Y-M-D) 94-03-16	ANALYST HU NCO
		OTHER INFORMATION FLOWING END	

ION	mg/L	MASS FRACTION	mmol/L
Na	15800.0	0.275	689.0
K	452.0	0.008	11.6
Ca	3620.0	0.063	90.3
Mg	892.0	0.016	36.7
Ba	N.A.	N.A.	N.A.
Sr	N.A.	N.A.	N.A.
Fe	28.9	0.001	0.5

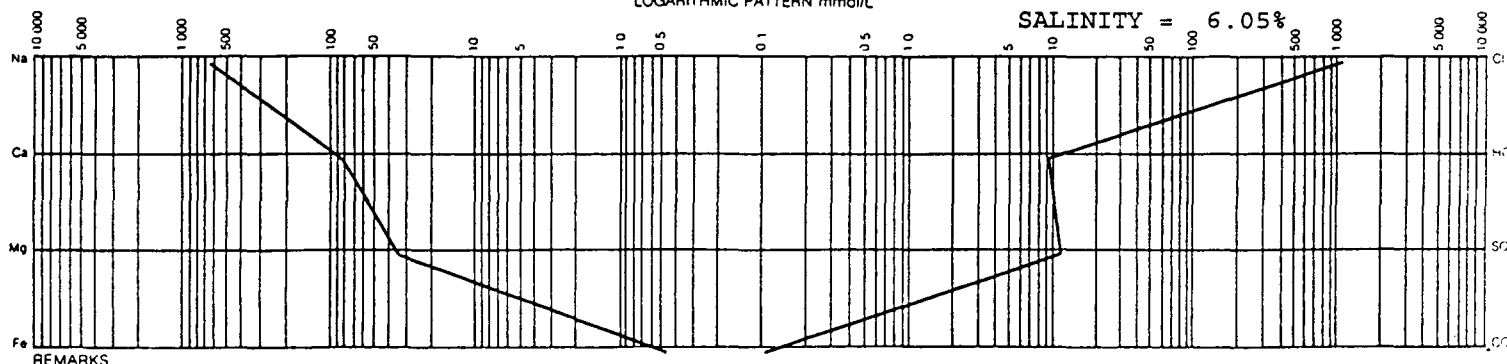
ION	mg/L	MASS FRACTION	mmol/L
Cl	35000.0	0.610	987.0
Br	N.A.	N.A.	N.A.
I	N.A.	N.A.	N.A.
HCO ₃	549.0	0.010	9.0
SO ₄	1050.0	0.018	11.0
CO ₃	NIL	NIL	NIL
OH	NIL	NIL	NIL
H ₂ S	N.D.	N.D.	N.D.

DISSOLVED

TOTAL SOLIDS mg/L	
EVAPORATED AT 110° C	EVAPORATED AT 180° C
AT IGNITION	CALCULATED
	57400.0
RELATIVE DENSITY	REFRACTIVE INDEX
1.044 @ 25° C	N.A. @ 25° C
OBSERVED pH	RESISTIVITY/ΩHm @m
7.33 @ 25° C	0.11 @ 25° C

THE '30 MINUTE' API MUD FILTRATE LOSS IS 27 mL. THE ABOVE RESULTS PERTAIN TO THE WATER EXTRACTED FROM THE MUD SALINITY = 6.05%

LOGARITHMIC PATTERN mmol/L



TRC+= LESS THAN 0.1 N.D.= NOT DETECTED NIL= 0.0 TRC*= LESS THAN 0.001 N.A.= NOT ANALYZED



WATER ANALYSIS

CONTAINER IDENTIFICATION PB 5B		LABORATORY NUMBER W17120D	
OPERATOR NAME PARAMOUNT RESOURCES LTD.			
UNIQUE WELL IDENTIFIER CAMERON	WELL NAME PARA et al CAMERON C75 60 10'N 117 15'W		ELEVATIONS KB m 788.47 GRD m 783.62
FIELD OR AREA CAMERON	POOL OR ZONE SULPHUR POINT	NAME OF SAMPLER SAME	COMPANY SAME
TEST TYPE DST	NO 2	TEST RECOVERY	
SAMPLING POINT SURFACE		AMT & TYPE OF CUSHION	
TEST INTERVAL OR PERFS 1423.30-1439.00 mKB		MUD RESISTIVITY/Ω m @ 25° C	
TYPE OF PRODUCTION ☐ PUMPING ☐ FLOWING ☐ GAS LIFT ☐ SWAB			
PRODUCTION RATES WATER m ³ /d OIL m ³ /d GAS 10 ³ m ³ /d			
SEPARATOR		TREATER	RESERVOIR
GAUGE PRESSURE kPa		SOURCE	SAMPLED
TEMPERATURE ° C		RECEIVED	
DATE SAMPLED (Y-M-D) 94-03-14	DATE RECEIVED (Y-M-D) 94-03-15	DATE REPORTED (Y-M-D) 94-03-21	ANALYST RT NCO
OTHER INFORMATION FLOWING START			

ION	mg/L	MASS FRACTION	mmol/L
Na	22600.0	0.305	983.0
K	216.0	0.003	5.5
Ca	4620.0	0.062	115.0
Mg	899.0	0.012	37.0
Ba	N.A.	N.A.	N.A.
Sr	N.A.	N.A.	N.A.
Fe	8.0	TRC*	0.1

ION	mg/L	MASS FRACTION	mmol/L
Cl	44000.0	0.594	1240.0
Br	N.A.	N.A.	N.A.
I	N.A.	N.A.	N.A.
HCO ₃	700.0	0.009	11.5
SO ₄	1030.0	0.014	10.7
CO ₃	NIL	NIL	NIL
OH	NIL	NIL	NIL
H ₂ S	N.D.	N.D.	N.D.

DISSOLVED

TOTAL SOLIDS mg/L

EVAPORATED AT 110° C

EVAPORATED AT 180° C

AT IGNITION

CALCULATED

RELATIVE DENSITY

REFRACTIVE INDEX

1.071 @ 25° C

N.A. @ 25° C

OBSERVED pH

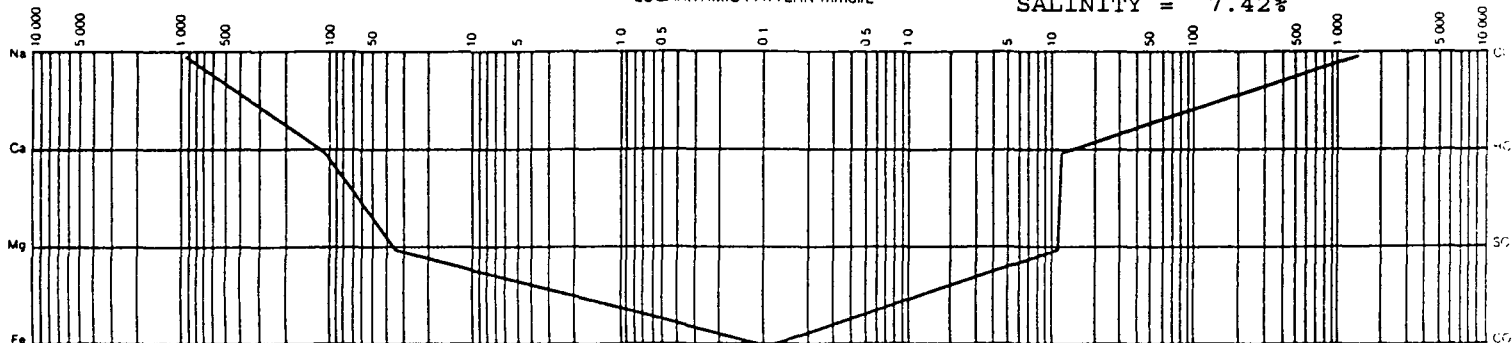
RESISTIVITY/CMH *m

6.81 @ 25° C

0.08 @ 25° C

LOGARITHMIC PATTERN mmol/L

SALINITY = 7.42%



REMARKS: TRC+= LESS THAN 0.1 N.D.= NOT DETECTED NIL= 0.0 TRC*= LESS THAN 0.001 N.A.= NOT ANALYZED

EQUATIONS
USED
IN
F.A.S.T.[™] OIL
(Metric Units)

BASIC TIME FUNCTIONS

Flow Time

$$t$$

Shut-In Time

$$\Delta t$$

Horner Time

$$\frac{t + \Delta t}{\Delta t}$$

Superposition Time

$$t_n = \sum_{j=1}^n \frac{q_j - q_{j-1}}{q_n} \log(t - t_{j-1})$$

$$\Delta t_n = \sum_{j=1}^n \frac{q_j}{q_n} \log \frac{t_n + \Delta t - t_{j-1}}{t_n + \Delta t - t_j}$$

Equivalent Time

$$\Delta t_e = \frac{t \cdot \Delta t}{t + \Delta t}$$

Root Time

$$\sqrt{t}$$

$$\sqrt{\Delta t}$$

Tandem Root Time

$$\sqrt{t + \Delta t} - \sqrt{\Delta t}$$

BASIC TIME FUNCTIONS (cont'd)

Quad Root Time

$$\sqrt[4]{t}$$

$$\sqrt[4]{\Delta t}$$

Tandem Quad Root Time

$$\sqrt[4]{t+\Delta t} - \sqrt[4]{\Delta t}$$

- Note:
1. Complex time functions like "super-linear-equivalent time" and many others are simply derived from the above.
 2. Subscripts not shown above, but used for linear and bi-linear functions are 'l' and 'b', respectively.

TYPE CURVES - DIMENSIONLESS VARIABLES

$$\Delta p_D = \frac{(kh/\mu)_i \Delta p}{1842 q_i B_i}$$

$$t_D = \frac{3.6E-6 (k/\mu)_i t}{\phi c r_w^2}$$

$$\frac{t_D}{C_D} = 2.262E-5 \left(\frac{kh}{\mu}\right)_i \frac{t}{C}$$

$$C_D e^{2s} = \frac{0.1592 C e^{2s}}{\phi c h r_w^2}$$

$$t_{DA} = \frac{3.6E-6 (k/\mu)_i t}{\phi c A}$$

$$t_{Dxf} = \frac{3.6E-6 (k/\mu)_i t}{\phi c x_f^2}$$

$$(k_f w)_D = \frac{k_f w}{k x_f}$$

Note: t represents the time function used for the typecurve data plot.

SEMILOG ANALYSIS

Transmissivity $\left(\frac{kh}{\mu}\right)_i = \frac{2121 q_i B_i}{m}$

Permeability $k = \frac{2121 q_o B_o \mu_o}{mh}$

Skin Factor $s' = 1.151 \left[\frac{p_{ws} - p_{wfo}}{m} - \log \frac{t \Delta t}{t + \Delta t} - \log \left(\frac{(k/\mu)_i}{\phi_i c_i r_w^2} \right) + 5.09 \right]$

Pressure Drop due to Skin $\Delta p_s = 0.869 ms'$

Flow Efficiency $FE = \frac{\bar{p}_R - p_{wfo} - 0.869 ms'}{\bar{p}_R - p_{wfo}}$

Damage Ratio $DR = \frac{1}{FE}$

Radius of Investigation $r_{inv} = \sqrt{\frac{(k/\mu)_i t}{69444 \phi_i c_i}}$

Time to Stabilization $t_s = \frac{\phi c A}{3.6E-6 (k/\mu)_i} (t_{DA})_{pss}$

SEMILOG ANALYSIS (cont 'd)

Stabilized Rate

$$q_s = \frac{P_i - P_{wfo}}{\frac{2121 B_o}{(k/\mu)_o h} \left(\log\left(\frac{4A}{1.781 r_w^2 C_A}\right) + \frac{4\pi(t_{DA})_{pss}}{2.303} + \frac{2s'}{2.303} \right)}$$

Productivity Index

$$PI = \frac{q}{\bar{P}_R - P_{wfo}}$$

MBH Average Pressure

$$\bar{P}_R = P^* - \frac{m}{2.303} \text{ (MBH function)}$$

DIETZ Average Pressure

$$(\Delta t)_{\bar{P}_R} = \frac{\phi c_i A}{3.6E-6 C_A (k/\mu)_i}$$

LINEAR ANALYSIS

Fracture half-length

$$x_f = \frac{6.195 q_i B_i}{mh(\phi ck/\mu)_i^{1/2}}$$

Channel width

$$W = \frac{12.390 q_i B_i}{mh(\phi ck/\mu)_i^{1/2}}$$

Skin Factor

$$s = \ln \frac{2 r_w}{x_f}$$

HORIZONTAL WELL ANALYSIS

Note: Horizontal well length in x - direction

VERTICAL RADIAL ANALYSIS

Permeability

$$\sqrt{k_y k_z} = \frac{2121 q_o B_o \mu_o}{mL}$$

INTERMEDIATE-LINEAR ANALYSIS

Permeability

$$k_y = \frac{\mu_o}{(\phi c)_i} \left[\frac{12.390 q_o B_o}{Lmh} \right]^2$$

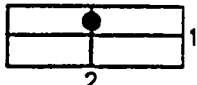
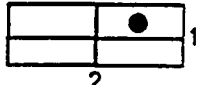
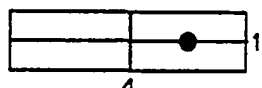
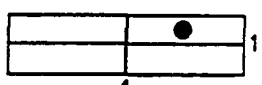
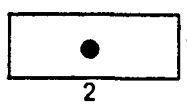
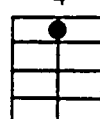
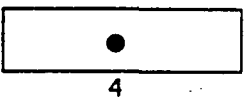
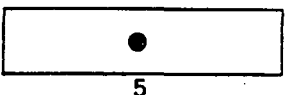
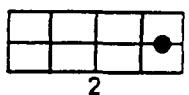
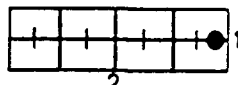
Effective Wellbore Length

$$L_e = \frac{12.390 q_i B_i}{mh (\phi c k_y / \mu)_i^{1/2}}$$

HORIZONTAL-RADIAL ANALYSIS

Permeability

$$\sqrt{k_x k_y} = \frac{2121 q_o B_o \mu_o}{mh}$$

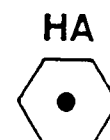
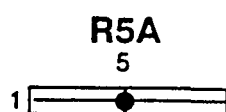
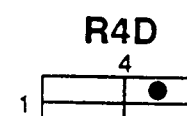
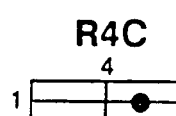
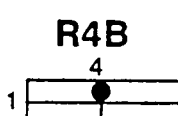
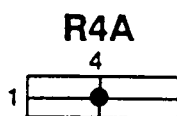
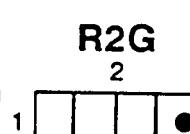
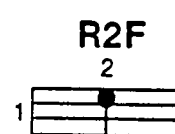
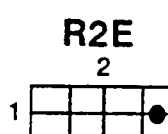
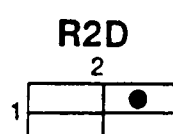
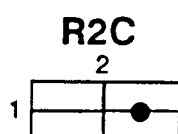
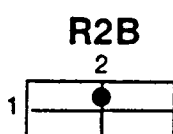
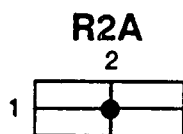
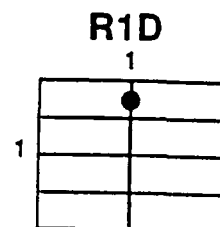
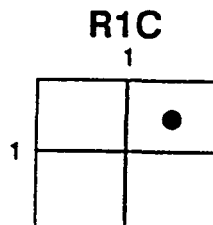
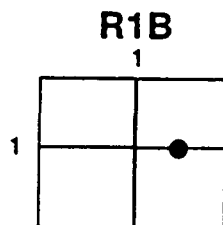
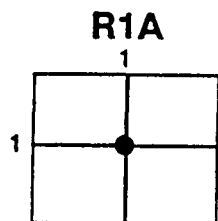
	<u>lnC_A</u>	<u>C_A</u>	<u>STABILIZED CONDITIONS FOR t_{DA} ></u>		<u>lnC_A</u>	<u>C_A</u>	<u>STABILIZED CONDITIONS FOR t_{DA} ></u>
IN BOUNDED RESERVOIRS							
	3.45	31.6	0.1		2.38	10.8	0.3
	3.43	30.9	0.1		1.58	4.86	1.0
	3.45	31.6	0.1		0.73	2.07	0.8
	3.32	27.6	0.2		1.00	2.72	0.8
	3.30	27.1	0.2		-1.46	0.232	2.5
	3.09	21.9	0.4		-2.16	0.115	3.0
	3.12	22.6	0.2		1.22	3.39	0.6
	1.68	5.38	0.7		1.14	3.13	0.3
	0.86	2.36	0.7		-0.50	0.607	1.0
	2.56	12.9	0.6		-2.20	0.111	1.2
	1.52	4.57	0.5		-2.32	0.098	0.9
IN WATER DRIVE RESERVOIRS							
	2.95	19.1	0.1				
IN RESERVOIRS OF UNKNOWN PRODUCTION CHARACTER							
	3.22	25	0.1				

PSEUDO-STEADY STATE SHAPE FACTORS FOR VARIOUS RESERVOIRS

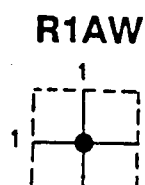
FROM DIETZ (1965)

MBH AVERAGE PRESSURE CALCULATIONS SHAPE CODES

NO FLOW OUTER BOUNDARY



CONSTANT PRESSURE OUTER BOUNDARY



NOMENCLATURE

<u>Symbol</u>	<u>Description</u>	<u>Metric (SI)</u>	<u>Field</u>
a	LIT flow equation coefficient	-	-
A	drainage area	m ²	ft ²
AOF	absolute open flow potential (gas)	10 ³ m ³ /d	MMcfd
b	LIT flow equation coefficient	-	-
B	formation volume factor	-	-
c	compressibility	kpa ⁻¹	psi ⁻¹
c _{ws}	compressibility of wellbore fluids	kpa ⁻¹	psi ⁻¹
C	wellbore storage/unloading constant	m ³ /kPa	bbl/psi
C	simplified flow equation coefficient	-	-
C _A	shape factor	-	-
C _{oD}	apparent wellbore storage constant	-	-
C _D	dimensionless wellbore storage constant	-	-
C _{pD}	storage pressure parameter	-	-
DR	damage ratio	-	-
F	wellbore capacity (McKinley)	m ³ /kPa	ft ³ /psi
FE	flow efficiency	-	-
G	relative density (gas)	-	-
GOR	gas-oil ratio	m ³ /m ³	ft ³ /bbl
h	net pay	m	ft
k	permeability	mD	md
k _(x,y,z)	permeability in the x,y,z direction	mD	md
k _f	fracture permeability	mD	md
k _f w	fracture conductivity	mD.m	md.ft
kh	flow capacity	mD.m	md.ft
k/μ	mobility	-	-
kh/μ	transmissivity	-	-

<u>Symbol</u>	<u>Description</u>	<u>Metric (SI)</u>	<u>Field</u>
L	length of horizontal well	m	ft
L _e	effective length of horizontal well	m	ft
m	slope of transient plots	-	-
n	simplified flow equation coefficient	-	-
p	pressure	kPa	psia
p _{bp}	bubble point pressure	kPa	psia
p _c	gas pseudo-critical pressure	kPa	psia
p _i	initial pressure	kPa	psia
p _R	average reservoir pressure	kPa	psia
p _{tf}	flowing wellhead pressure	kPa	psia
p _{ts}	shut-in wellhead pressure	kPa	psia
p _{wf}	flowing sandface pressure	kPa	psia
P _{wfo}	final flowing pressure	kPa	psia
p _{ws}	shut-in sandface pressure	kPa	psia
p*	extrapolated pressure	kPa	psia
Δp _D	dimensionless pressure	-	-
Δp	pressure drop	kPa	psi
PI	productivity index	m ³ /d/kPa	bbl/d/psi
q	flow rate - gas	10 ³ m ³ /d	MMcf/d
	- liquid	m ³ /d	bbl/d
q _j	j th flow rate	m ³ /d	bbl/d
q _n	n th flow rate	m ³ /d	bbl/d
q _s	stabilized rate - gas	10 ³ m ³ /d	MMcf/d
	- liquid	m ³ /d	bbl/d
r _e	external radius	m	ft
r _{inv}	radius of investigation	m	ft
r _w	wellbore radius	m	ft
R _g	solution gas ratio	m ³ /m ³	ft ³ /bbl

<u>Symbol</u>	<u>Description</u>	<u>Metric (SI)</u>	<u>Field</u>
s	skin factor	-	-
s'	apparent skin factor	-	-
S	saturation (oil, gas, water)	-	-
t	time	hr	hr
t_D	dimensionless time	hr	hr
t_a	pseudo-time	hr	hr
t_{DA}	dimensionless time (based on drainage area)	hr	hr
t_{Dxf}	dimensionless time (based on fracture 1/2 length)	hr	hr
t_n	n^{th} flow period, or superposition time	-	-
Δt	shut-in time	hr	hr
Δt_a	shut-in pseudo-time	hr	hr
Δt_e	equivalent time	hr	hr
$(t_{DA})_{pss}$	dimensionless time at pseudo-steady state	-	-
t_s	time to stabilization	hr	hr
T	temperature	K	$^{\circ}\text{R}$
T_c	gas pseudo-critical temperature	K	$^{\circ}\text{R}$
V_{ws}	wellbore volume - gas - liquid	m^3 m^3	ft^3 bbl
W	channel width	m	ft
w	fracture width	m	ft
x_e	length of reservoir	m	ft
x_f	fracture half-length	m	ft
x_o	x -location of observation well	m	ft
x_w	x- location of centre of active well	m	ft
y_o	width of reservoir	m	ft
y_o	y- location of observation well	m	ft
y_w	y- location of centre of active well	m	ft
Z	gas compressibility factor	-	-
z_w	z-location of centre of active well	m	ft

<u>Symbol</u>	<u>Description</u>	<u>Metric (SI)</u>	<u>Field</u>
α	wellbore storage/unloading constant	m^3/kPa	bbl/psi
μ	viscosity - gas - liquid	$\mu\text{Pa}\cdot\text{s}$ $\text{mPa}\cdot\text{s}$	cp cp
λ	inter-porosity flow coefficient	-	-
T	transmissivity (McKinley)	$\text{mD}\cdot\text{m}/\text{mPa}\cdot\text{s}$	md.ft/cp
ϕ	porosity	-	-
ψ	pseudo-pressure	$\text{kPa}^2/\mu\text{Pa}\cdot\text{s}$	psia^2/cp
ω	storativity ratio	-	-

Subscripts

D	dimensionless
DA	dimensionless based on area
Dxf	dimensionless based on fracture half -length
f	formation or flowing
g	gas
i	initial
o	oil
R	reservoir
s	shut-in, skin, stabilized or storage
t	total, transient, or wellhead (tubing head)
w	water or wellbore (sandface)
ref	evaluated at reference pressure

Superscripts

-	average
---	---------

UNITS CONVERSION AND PREFIXES

<u>METRIC (SI) UNIT</u>	<u>FIELD UNIT</u>	<u>DIVIDED BY</u>
$10^3 \text{m}^3/\text{d}$	MMcfd	2.817 399 E+01
kPa	psia	6.894 757 E+00
mD	md	9.869 233 E-01
mD.m	md.ft	3.008 142 E-01
m	ft	3.048 E-01
m^3	bbl (35 Imp gal) (42 US gal)	1.589 873 E-01
Pa.s	cp	1.0 E+03
°C	°F	$(^\circ\text{F}-32)/5/9$ E+00
K	°R	5/9 E+00
m^2	section (640 acres)	2.589 988 E+06
ha	section (640 acres)	2.589 988 E+02
m^3	gallon (Imp)	4.546 09 E-03
m^3	gallon (US)	3.785 412 E-03
$\text{m}^3/10^3 \text{m}^3$	bbl/MMcf	5.643 052 E-03

Standard conditions: Metric (SI) 15°C, 101.325 kPa
Field 60°F, 14.65 psia

SPECIFIC REFERENCES

Phase Redistribution

Fair, W.B., Jr: "Pressure Buildup Analysis with Wellbore Phase Redistribution Effects"; Soc. Pet. Eng. J. (April 1981) pp. 259-270.

Composite Reservoir

Olarewaju, J.S. and Lee, W.J.: "An Analytical Model for Composite Reservoirs Produced at Either Constant Bottomhole Pressure or Constant Rate"; SPE 16763 (1987).

Multi-Layered Reservoir

Mavor, M.J. and Walkup, G.W. Jr.: "Application of the Parallel Resistance Concept to Well Test Analysis of Multilayered Reservoirs"; SPE 15117 (1986).

Finite Conductivity Fracture

Lee, S.T. and Brockenbrough, J.: "A New Analytic Solution For Finite Conductivity Vertical Fractures With Real Time and Laplace Space Parameter Estimation"; SPEFE (Feb. 1986) p. 75, SPE 12013.

Horizontal Wells

Thompson, L.G. and Manrique, J.L.: "Efficient Algorithms for Computing the Bounded Reservoir Horizontal Well Pressure Response"; SPE 21827 (1991).

Ozkan, E. and Raghavan, R.: "New Solutions for Well-Test-Analysis Problems: Part 1- Analytical Considerations"; SPEFE (Sep. 1991) p. 359.

Ozkan, E. and Raghavan, R.: "New Solutions for Well-Test-Analysis Problems: Part 2- Computational Considerations and Applications"; SPEFE (Sep. 1991) p. 369.

GENERAL REFERENCES

Gas Well Testing - Theory and Practice - ERCB Fourth Edition, 1979 - Guide G-3.

Pressure Buildup and Flow Tests in Wells - C.S. Matthews and D.G. Russell, SPE Monograph, Vol. I, 1967.

Advances In Well Test Analysis - R.C. Earlougher, Jr., SPE Monograph, Vol. V, 1977.

Well Testing - John Lee, SPE Textbook Series, Vol. I, 1982.

Gas Well Test Analysis Under Water-Drive Conditions - H.J. Ramey Jr., A. Kumar and M.S. Gulati, American Gas Association, 1973.

Modern Well Test Analysis, A Computer-Aided Approach - R. Horne, Stanford University, 1990.

Well Testing in Heterogeneous Formations, T.D. Streltsova, John Wiley & Sons, 1988.

Pressure Transient Analysis - J.F. Stanislaw and C.S. Kabir, Prentice-Hall, Inc., 1990.

Well Test Analysis - M.A. Sabet, Gulf Publishing Company, 1991.

PROPERTIES CORRELATIONS REFERENCES

Gas Properties: ERCB GUIDE G-3. "Gas Well Testing - Theory and Practice" Appendix A, Fourth Edition, 1979.

Oil Properties: Beggs, H.D. and Robinson, J.R., "Estimating the Viscosity of Crude Oil Systems", JPT Forum, September 1975, pp. 1140-1141.

Vazquez, M.E. and Beggs, H.D., "Correlations for Fluid Physical Property Prediction" Journal of Petroleum Technology, June 1980, pp. 968-970.

Water Properties: Craft, B.C. and M.F. Hawkins, "Applied Petroleum Reservoir Engineering", Prentice-Hall, 1959, p. 131.

Meehan, D.N. "A Correlation for Water Compressibility", Petroleum Engineer, November 1980, pp. 125-126.

Meehan, D.N. "Estimating Water Viscosity at Reservoir Conditions", Petroleum Engineer, July 1980, pp. 117-118.

Numbere, D., W.E. Brigham and M.B. Standing, "Correlations for Physical Properties of Petroleum Reservoir Brines", Petroleum Research Institute, Stanford University, November 1977, pp. 8-16.

Rock Properties: Craft, B.C. and M.F. Hawkins, "Applied Petroleum Reservoir Engineering", Prentice-Hall, 1959, p. 132.

REPORT DISTRIBUTION

"Five" (5) Copies of the Report to:

PARAMOUNT Resources Ltd.
CALGARY, ALBERTA

ATTENTION: JOHN GEE