



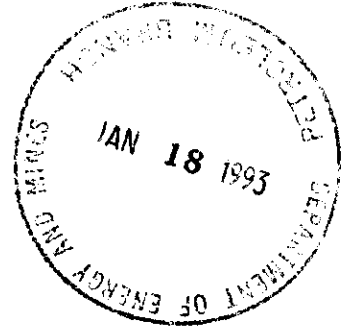
1500 SUN LIFE PLAZA III
112 - 4th AVENUE S.W.
CALGARY, ALBERTA, CANADA T2P 0H3
TELEPHONE (403) 261-0743
FAX (403) 264-5691

FILE

WASKADA

LOWER MANARANTH

A. POOL - PRESSURE SURVEYS



January 13, 1992

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

Attention: Mr. John Fox
Chief Petroleum Engineer

Dear Sir:


RE: 1992 Annual Pressure Survey
Omega Waskada 13-32-1-25 WPM
Omega Waskada 1-24-1-26 WPM
Omega Waskada 5-24-1-26 WPM
Omega Waskada 1-34-1-26 WPM
Omega Waskada 5-34-1-26 WPM

In accordance with the Pressure Maintenance rules contained in Board Order No. PM4 please find attached a copy of a recently conducted pressure test for each of the aforementioned wells. Attachment 1 contains a summary of the results obtained from the pressure surveys.

Should there be any questions or comments please contact the undersigned at (403) 261-0743.

Yours truly,

OMEGA HYDROCARBONS LTD.


K. Thomas
Production Technologist

KT/ns
c.c.: Waskada Pressure Data Binders
Wellfiles

**1992 Annual Pressure Survey
Waskada Injection Wells**

Location	Pool	Test Date	Shut In Time (Hrs)	Pressure @ MPP (kPag)	Pressure @ Datum (kPag)
13-32-1-25 WPM	LAm	10/23/92	1155	8496	8653
1-24-1-26 WPM	L.A1	12/11/92	Extended	4472	4516
5-24-1-26 WPM	LAm	12/11/92	1172	5791	5761
1-34-1-26 WPM	U.A1	12/18/92	Extended	4999	4776
5-34-1-26 WPM	LAm	07/13/92	53 days	4272	4165

GENERAL WELL INFORMATION

1-34-1-26 WPM

Test Date: 12/18/92 (Static Gradient)

GL: 463.9 m

KB: 46840 m

MPP: 936.5 mCF

Datum: 913.9 mCF

Hydrostatic Head: N/A

Shut-in Date: 01/14/88

Actual Inj. (Hrs): N/A

Actual Inj. (m3): N/A

Avg. Rate (m3/d): N/A

O = N/A

h = N/A

P* = N/A

Pws = N/A

PR = N/A

Horner analysis not possible.

Well shut in for extended time period prior to static gradient.

* Average reservoir pressure at MPP = 4,999 kPag

Average reservoir pressure at Datum = 4,776 kPag

Omega Waskada Prov. 01-34
01-34-001-26 W1M
Upper Alida

Static Gradient Test
December 18, 1992

S I C DATA

COMPANY: Omega Hydrocarbons Ltd.		WELL NAME: Omega Waskada Prov. 01-34	
ADDRESS: Calgary, Alberta		UNIQUE WELL IDENTIFIER: 01-34-001-26 W1M	
FIELD AND POOL: Waskada / Upper Alida		STATUS:	
TYPE OF TEST: Static Gradient Test		DATE OF TEST: Y 92 M 12 D 18 TO Y 92 M 12 D 18	
PRODUCING INTERVAL (m,CF): 933.5-934.5, 936.5-939.5 PERF		PRODUCING THROUGH: 60.3 mm TUBING to 941.7 m,CF	
ELEVATION: (CF) 463.9 m (KB) 468.4 m		mm CASING	
POOL DATUM (SUBSEA): -450.0		MID POINT OF PRODUCING (MPP) INTERVAL (m,CF): 936.5	
ELEMENT SERIAL NO: 045300 RANGE(GAUGE) 0 - 13790 kPag		DATUM DEPTH OF WELL FROM (m,CF): 913.9	
CALIBRATION EQUATION: 271.603(D) - 28.919		CLOCK RANGE: 3 hrs LAST CALIBRATION: 03/12/92	

S T A T I C T E S T

TUBING PRESSURE: nil	kPag	SHUT-IN DATE: Jan. 14, 1988	DURATION: Extended	hrs
CASING PRESSURE: nil	kPag	DATE ON BOTTOM: December 18, 1992 @ 1006		hrs
RUN DEPTH (m,CF): 937.0		DATE OFF BOTTOM: December 18, 1992 @ 1026		hrs
B.H. TEMP: 38 °C	R.D. PRESSURE 5003.8 kPag	MPP PRESSURE: 4998.9		kPag
SURFACE TEMP: °C	GRADIENT 9.860 kPa/m	DATUM DEPTH PRESSURE (GAUGE): 4776.0		kPag

A C O U S T I C W E L L S O U N D E R T E S T

NOT APPLICABLE

B U I L D - U P O R D R A W D O W N T E S T

NOT APPLICABLE

C H A R T R E A D I N G S A N D C A L C U L A T I O N S F O R S T A T I C T E S T

SEE NEXT PAGE

C O M M E N T S

Estimated liquid level at 427 m,CF No tubing in hole.
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SURVEYED BY: Moose Mtn	TESTED BY: Stu Hourd	COMPUTED BY: Rick Doll	CHECKED BY:
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Reporting Date: Dec 22, 1992,

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WellName: Omega Waskada Prov. 01-34 Location : 01-34-001-26 W1M
 Pool : Upper Alida Date Of Test: December 18, 1992

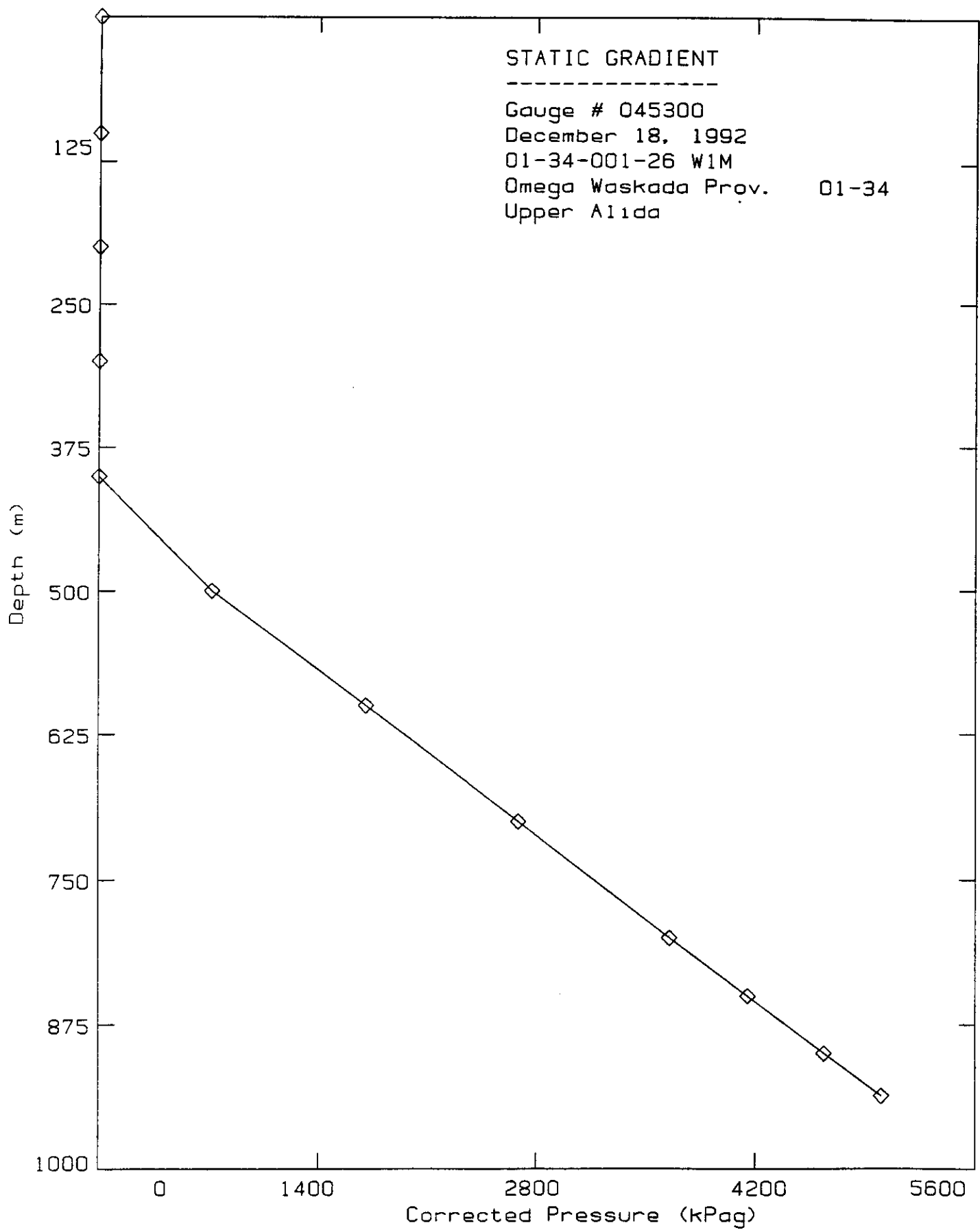
----- Upper Gauge -----
 Serial # 045301 Range 13790

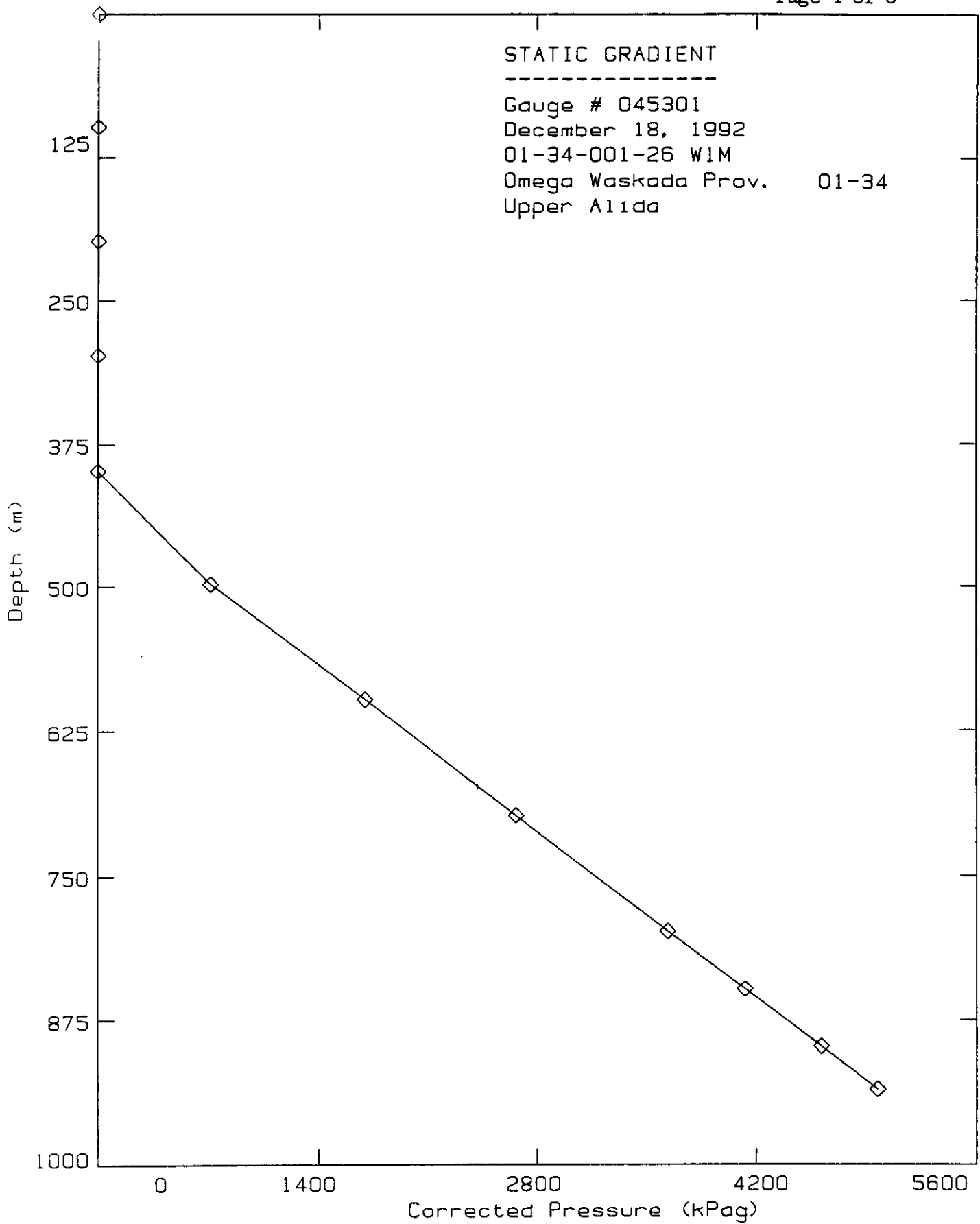
----- Lower Gauge -----
 Serial # 045300 Range 13790

Start Time	End Time	Depth	Deflect	Corrected Pressure	Grad.	Depth	Deflect	Corrected Pressure	Grad.
hh:mm	hh:mm	CF(m)	(mm)	(kPag)	(kPa/m)	CF(m)	(mm)	(kPag)	(kPa/m)
09:10	09:15	Surf	0.000	0.0		Surf	0.000	0.0	
09:16	09:21	98.0	0.000	0.0	0.000	100.0	0.000	0.0	0.000
09:21	09:26	198.0	0.000	0.0	0.000	200.0	0.000	0.0	0.000
09:26	09:31	298.0	0.000	0.0	0.000	300.0	0.001	0.0	0.000
09:31	09:36	398.0	0.000	0.0	0.000	400.0	0.004	0.0	0.000
09:36	09:41	498.0	2.582	714.4	7.144	500.0	2.675	719.2	7.192
09:41	09:46	598.0	6.123	1693.6	9.792	600.0	6.340	1704.2	9.850
09:46	09:51	698.0	9.655	2670.3	9.767	700.0	9.995	2686.5	9.823
09:51	09:56	798.0	13.150	3639.7	9.694	800.0	13.598	3655.8	9.693
09:56	10:01	848.0	14.916	4129.7	9.799	850.0	15.444	4152.5	9.933
10:01	10:06	898.0	16.678	4618.5	9.777	900.0	17.252	4638.9	9.729
10:06	10:26	935.0	17.964	4975.3	9.643	937.0	18.608	5003.8	9.860

Comments:

TBG pressure by DWG = nil
 CSG pressure by DWG = nil
 Temperature at run depth = 38 C
 Estimated liquid level at 427 m,CF
 No tubing





Reporting Date: Dec 22, 1992

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Serial No: 045300
Range: 13790
Cal Temp (air): 21
Cal Temp (bath): 72
Bath Cal Date: 12-03-92
Last Air Cal Date: 07-21-92
Curr Air Cal Date: 12-03-92
Recorder Section No:
Comment:
Owner: Moose Mountain

Press (kPag)	First (mm)	Second (mm)	Average (mm)	P - Pc (kPa)	Bath (mm)
0	0.000	0.000	0.000	28.92	0.000
2758	10.261	10.261	10.261	0.01	0.000
5516	20.511	20.511	20.511	-25.92	0.000
8274	30.678	30.678	30.678	-29.30	0.000
11032	40.760	40.760	40.760	-9.60	0.000
13790	50.747	50.747	50.747	35.90	0.000

Sum: 0.01

Previous m = 271.600
Previous A = -28.920

Present m = 271.603
Present A = -28.919

Present Press = 13768.49
Previous Press = 13768.36

Deviation = 0.13
Acc. Deviation = 34.47

Reporting Date: Dec 22, 1992

Page 6 of 6

Serial No: 045301
Range: 13790
Cal Temp (air): 21
Cal Temp (bath): 72
Bath Cal Date: 03-11-92
Last Air Cal Date: 07-21-92
Curr Air Cal Date: 12-03-92
Recorder Section No:
Comment:
Owner: Moose Mountain

Press (kPag)	First (mm)	Second (mm)	Average (mm)	P - Pc (kPa)	Bath (mm)
0	0.000	0.000	0.000	29.33	0.000
2758	9.972	9.972	9.972	-2.83	0.000
5516	19.912	19.912	19.912	-26.03	0.000
8274	29.772	29.772	29.772	-26.85	0.000
11032	39.550	39.550	39.550	-4.73	0.000
13790	49.279	49.279	49.279	31.11	0.000

Sum: 0.00

Previous m = 279.800
Previous A = -29.330

Present m = 279.799
Present A = -29.327

Present Press = 14184.47
Previous Press = 14184.51

Deviation = -0.04
Acc. Deviation = 34.47

GENERAL WELL INFORMATION

1-24-1-26 WPM

Test Date: 12/11/92 (Static Gradient)

GL: 464.0 m

KB: 468.0 m

MPP: 924.0 mCF

Datum: 929.0 mCF

Hydrostatic Head: N/A

Shut-in Date: 11/18/88

Actual Inj. (Hrs): N/A

Actual Inj. (m3): N/A

Avg. Rate (m3/d): N/A

ϕ = N/A

h = N/A

P* = N/A

Pws = N/A

PR = N/A

Horner analysis not possible.

Well shut in for extended time period prior to static gradient.

* Average reservoir pressure at MPP = 4,472 kPag

Average reservoir pressure at Datum = 4,516 kPag

Omega S. Waskada 01-24
01-24-001-26 WLM
Lower Alida

Static Gradient Test
December 11, 1992

BASIC DATA

COMPANY: Omega Hydrocarbons Ltd.	WELL NAME: Omega S. Waskada 01-24
ADDRESS: Calgary, Alberta	UNIQUE WELL IDENTIFIER: 01-24-001-26 WIM
FIELD AND POOL: Waskada / Lower Alida	STATUS:
TYPE OF TEST: Static Gradient Test	DATE OF TEST: Y 92 M 12 D 11 TO Y 92 M 12 D 11
PRODUCING INTERVAL (m,CF): ** 920.0 - 928.0 ** PERF	PRODUCING THROUGH: 60.3 mm TUBING to 938.4 m,CF
ELEVATION: (CF) 464.0 m (KB) 468.0 m	mm CASING
POOL DATUM (SUBSEA): -465.0	MID POINT OF PRODUCING (MPP) INTERVAL (m,CF): 924.0
ELEMENT SERIAL NO: 045300 RANGE(GAUGE) 0 - 13790 kPag	DATUM DEPTH OF WELL FROM (m,CF): 929.0
CALIBRATION EQUATION: 271.603(D) - 28.919	CLOCK RANGE: 3 hrs LAST CALIBRATION: 03/12/92

STATIC TEST

TUBING PRESSURE: 150 kPag	SHUT-IN DATE: Nov. 18, 1988 DURATION: Extended hrs
CASING PRESSURE: 150 kPag	DATE ON BOTTOM: December 11, 1992 @ 1342 hrs
RUN DEPTH (m,CF): 924.0	DATE OFF BOTTOM: December 11, 1992 @ 1402 hrs
B.H. TEMP: 39.0 °C R.D. PRESSURE 4471.6 kPag	MPP PRESSURE: 4471.6 kPag
SURFACE TEMP: °C GRADIENT 8.968 kPa/m	DATUM DEPTH PRESSURE (GAUGE): 4516.4 kPag

ACOUSTIC WELL SOUNDER TEST

NOT APPLICABLE

BUILD-UP OR DRAWDOWN TEST

NOT APPLICABLE

CHART READINGS AND CALCULATIONS FOR STATIC TEST

SEE NEXT PAGE

COMMENTS

<p>Appears 600.0 meter stop is an incorrect depth.</p> <p>** Perforated Interval: 920.0-922.5, 923.6-926.0, 926.5-928.0 m,CF **</p> <p>Unable to Calculate true liquid level due to incorrect depth.</p>
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SURVEYED BY: Moose Mtn	TESTED BY: Stu Hourd	COMPUTED BY: Rick Doll	CHECKED BY:
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Reporting Date: Dec 22, 1992,

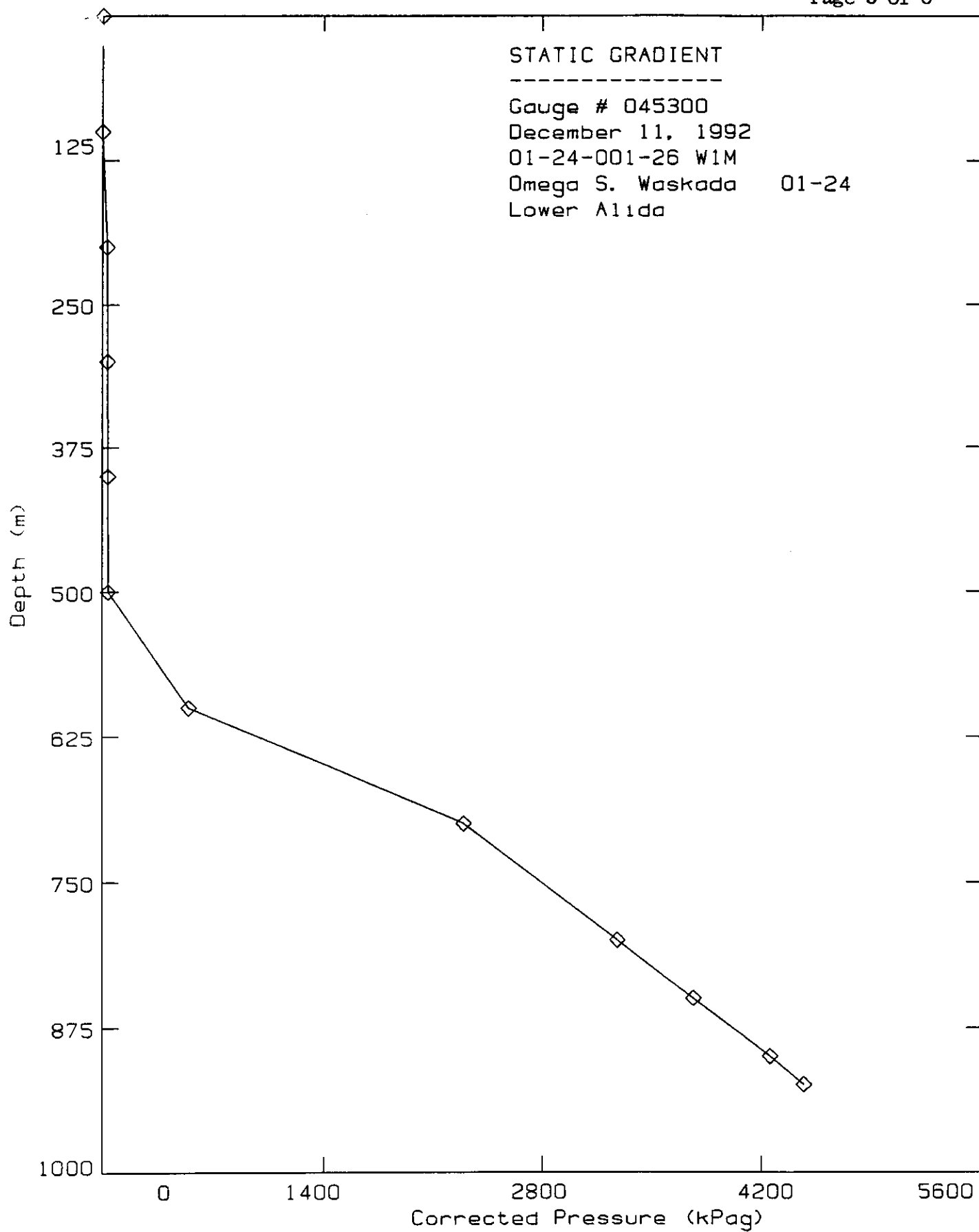
Page 2 of 6

WellName: Omega S. Waskada 01-24
Pool : Lower AlidaLocation : 01-24-001-26 W1M
Date Of Test: December 11, 1992

----- Upper Gauge -----					----- Lower Gauge -----				
Serial # 045301 Range 13790					Serial # 045300 Range 13790				
Start Time	End Time	Depth	Deflect	Corrected Pressure	Grad.	Depth	Deflect	Corrected Pressure	Grad.
hh:mm	hh:mm	CF(m)	(mm)	(kPag)	(kPa/m)	CF(m)	(mm)	(kPag)	(kPa/m)
12:46	12:51	Surf	0.040	0.0		Surf	0.060	0.0	
12:52	12:57	98.0	0.080	0.0	0.000	100.0	0.100	0.0	0.000
12:57	13:02	198.0	0.110	30.8	0.308	200.0	0.110	29.9	0.299
13:02	13:07	298.0	0.160	44.6	0.138	300.0	0.120	32.6	0.027
13:07	13:12	398.0	0.170	47.4	0.028	400.0	0.130	35.2	0.027
13:12	13:17	498.0	0.180	50.1	0.028	500.0	0.140	37.9	0.027
13:17	13:22	598.0	1.950	539.6	4.895	600.0	2.060	553.9	5.160
13:22	13:27	698.0	8.220	2273.5	17.339	700.0	8.560	2300.9	17.469
13:27	13:32	798.0	11.780	3259.6	9.861	800.0	12.210	3282.4	9.815
13:32	13:37	848.0	13.520	3742.4	9.655	850.0	14.020	3769.4	9.740
13:37	13:42	898.0	15.280	4230.7	9.766	900.0	15.830	4256.3	9.740
13:42	14:02	922.0	16.060	4447.1	9.017	924.0	16.630	4471.6	8.968

Comments:

TBG pressure by DWG = 150 kPag
 CSG pressure by DWG = 150 kPag
 Temperature at run depth = 39 C
 Appears 600.0 meter stop is an incorrect depth.



STATIC GRADIENT

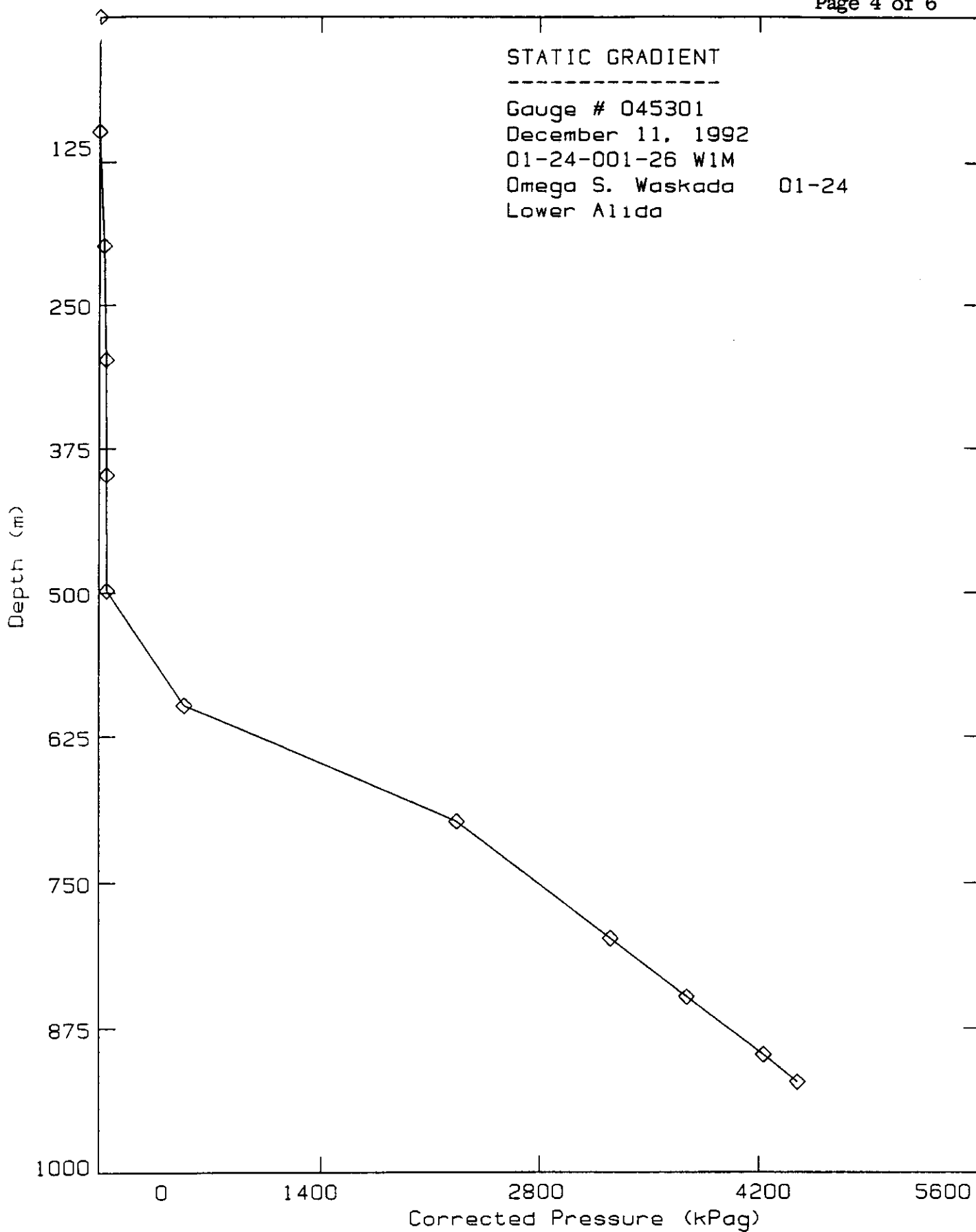
Gauge # 045301

December 11, 1992

01-24-001-26 W1M

Omega S. Waskada 01-24

Lower Alida



Reporting Date: Dec 22, 1992

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Serial No: 045300
Range: 13790
Cal Temp (air): 21
Cal Temp (bath): 72
Bath Cal Date: 12-03-92
Last Air Cal Date: 07-21-92
Curr Air Cal Date: 12-03-92
Recorder Section No:
Comment:
Owner: Moose Mountain

Press (kPag)	First (mm)	Second (mm)	Average (mm)	P - Pc (kPa)	Bath (mm)
0	0.000	0.000	0.000	28.92	0.000
2758	10.261	10.261	10.261	0.01	0.000
5516	20.511	20.511	20.511	-25.92	0.000
8274	30.678	30.678	30.678	-29.30	0.000
11032	40.760	40.760	40.760	-9.60	0.000
13790	50.747	50.747	50.747	35.90	0.000

Sum: 0.01

Previous m = 271.600
Previous A = -28.920

Present m = 271.603
Present A = -28.919

Present Press = 13768.49
Previous Press = 13768.36

Deviation = 0.13
Acc. Deviation = 34.47

Reporting Date: Dec 22, 1992

Page 6 of 6

Serial No: 045301
Range: 13790
Cal Temp (air): 21
Cal Temp (bath): 72
Bath Cal Date: 03-11-92
Last Air Cal Date: 07-21-92
Curr Air Cal Date: 12-03-92
Recorder Section No:
Comment:
Owner: Moose Mountain

Press (kPag)	First (mm)	Second (mm)	Average (mm)	P - Pc (kPa)	Bath (mm)
0	0.000	0.000	0.000	29.33	0.000
2758	9.972	9.972	9.972	-2.83	0.000
5516	19.912	19.912	19.912	-26.03	0.000
8274	29.772	29.772	29.772	-26.85	0.000
11032	39.550	39.550	39.550	-4.73	0.000
13790	49.279	49.279	49.279	31.11	0.000
Sum:				0.00	

Previous m = 279.800
Previous A = -29.330

Present m = 279.799
Present A = -29.327

Present Press = 14184.47
Previous Press = 14184.51

Deviation = -0.04
Acc. Deviation = 34.47

GENERAL WELL INFORMATION

5-34-1-26 WPM

Test Date: 07/13/92

GL: 462.1 m

KB: 466.3 m

MPP: 912.3 mKB

Datum: 902.1 mKB

Hydrostatic Head: 9,480 kPa (Assuming a gradient of 10.44 kPa/m)

Last Shut-in Date: 08/02/90

Actual Inj. (Hrs): 3,981

Actual Inj. (m3): 879.1

Avg. Rate (m3/d): 5.3

ϕ = 17.4 %

h = 7.6 m

P* = 3,338 kPa

Pws = 9,570 kPa

PR = 4,362 kPa

* Average reservoir pressure at MPP = 4,362 kPa (4272 kPag)

Average reservoir pressure at Datum = 4,255 kPa (4165 kPag)

WATER PRESSURE FALLOFF ANALYSIS - HORNER

OMEGA WASKADA
5-34-1-26 WPM

LOWER AMARANTH INJECTOR
SEPTEMBER 1992

INJECTION AND TIMES

Cumulative Injection	=	879.5 m ³
Actual Flow Time	=	3981.00 hr
Horner Flow Time	=	3982.64 hr
Final Flow Rate qo	=	0.0 m ³ /d
Final Flow Rate qg	=	0.000 10 m ^{3 3} /d
Final Flow Rate qw	=	5.3 m ³ /d

RESERVOIR PARAMETERS

Wellbore Radius rw	=	0.100 m	Reservoir Temp TR	=	313 K
Net Pay h	=	7.6 m	Water Saturation Sw	=	1.000
Total Porosity phit	=	0.174	Oil Saturation So	=	0.000

FLUID PROPERTIES

Compress. cg	=	0.00012146 1/kPa	Viscosity uw	=	0.649 mPa.s
Compress. co	=	0.00003144 1/kPa	Vol. Fac. Bg	=	0.0094617
Compress. cw	=	0.00000044 1/kPa	Vol. Fac. Bo	=	1.144
Compress. cf	=	0.00000056 1/kPa	Vol. Fac. Bw	=	1.002
Compress. ct	=	0.00000100 1/kPa	Sol. Gas Rsw	=	0.0 m ^{3 3} /m

PRESSURES

Horner Extrap. p*	=	3338 kPa
Initial Reservoir pi	=	--- kPa
Final Flowing pwfo	=	16810 kPa
1 Hour Shut-in pws1	=	15358 kPa
Average Test pav	=	9570 kPa

WATER PRESSURE FALLOFF ANALYSIS - HORNER

OMEGA WASKADA
5-34-1-26 WPM

LOWER AMARANTH INJECTOR
SEPTEMBER 1992

SEMILOG STRAIGHT LINE RESULTS

Slope	m	=	3339 kPa
Transmissivity	[kh/ult	=	3.37 mD.m/mPa.s
	[kh/ulw	=	3.37 mD.m/mPa.s
Mobility	[k/ult	=	0.44 mD/mPa.s
	[k/ulw	=	0.44 mD/mPa.s
Flow Capacity	[kh]w	=	2.19 mD.m
Permeability	kw	=	0.29 mD
Skin Factor	s	=	-3.3
Pressure Drop Due to Skin		=	--- kPa
Flow Efficiency	FE	=	1.77
Damage Ratio	DR	=	0.56
Injectivity Index	PI	=	0.00042579 m ³ /d/kPa
Radius of Inv.	rinv	=	382 m

AVERAGE PRESSURE CALCULATION

Drainage Area	A	=	64 ha
Shape/Well Configuration		=	R1A
Average Reserv. Pressure	pR	=	4362 kPa

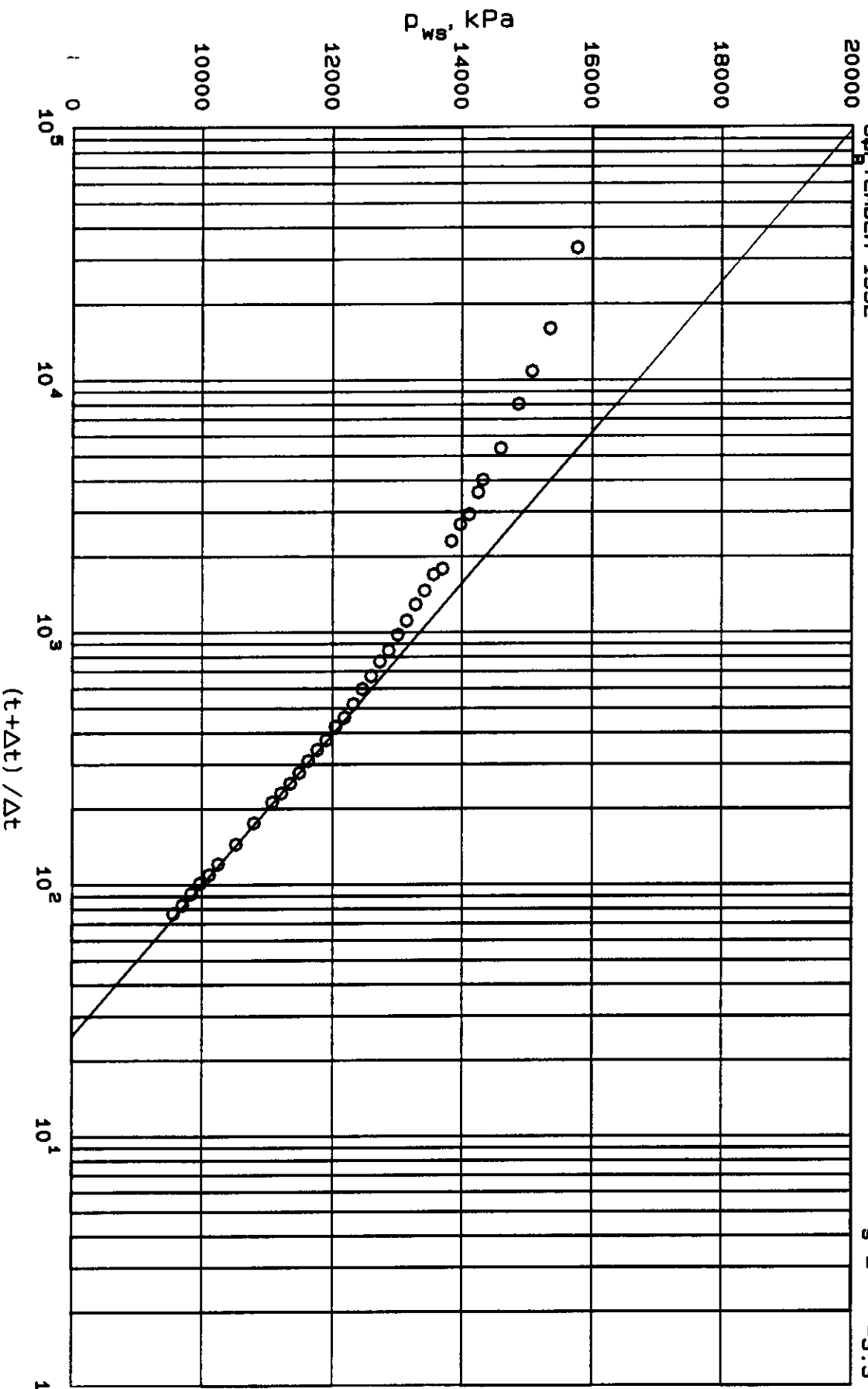
STABILIZED RATE PREDICTIONS

Time to Stabilization	ts	=	6992 hr
Stabilized Rate	qs	=	5.2 m ³ /d
Productivity Index	PI	=	0.00041865 m ³ /d/kPa

HORNER PRESSURE FALLOFF PLOT

OMEGA WASKADA
5-34-1-26 WPM
LOWER AMARANTH INJECTOR
SEPTEMBER 1992

$m = 3339 \text{ kPa}$
 $P_R = 4362 \text{ kPa}$
 $[kh/\mu]_e = 3.37 \text{ MD.m/mPa.s}$
 $s = -3.3$



PRESSURE FALLOFF DATA
IN TERMS OF PRESSURE

OMEGA WASKADA
5-34-1-26 WPM

LOWER AMARANTH INJECTOR
SEPTEMBER 1992

Shut-in time hr	Horner time	Equiv time hr	Super time	Super Equiv time hr	Gauge Press RRD kPa	pws MPP kPa	del p kPa
0.00	---	---	---	---	7240	16810	---
0.12	33189.70	0.12	---	---	6206	15776	1034
0.25	15931.60	0.25	---	---	5792	15362	1448
0.37	10764.90	0.37	---	---	5516	15086	1724
0.50	7966.28	0.50	---	---	5309	14879	1931
0.75	5311.19	0.75	---	---	5033	14603	2207
1.00	3983.64	1.00	---	---	4758	14328	2482
1.12	3556.93	1.12	---	---	4689	14259	2551
1.37	2908.04	1.37	---	---	4551	14121	2689
1.50	2656.09	1.50	---	---	4413	13983	2827
1.75	2276.80	1.75	---	---	4275	13845	2965
2.25	1771.06	2.25	---	---	4137	13707	3103
2.37	1681.44	2.37	---	---	3999	13569	3241
2.75	1449.23	2.75	---	---	3861	13431	3379
3.12	1277.49	3.12	---	---	3723	13293	3517
3.62	1101.18	3.62	---	---	3585	13155	3654
4.12	967.66	4.12	---	---	3448	13018	3792
4.75	839.45	4.74	---	---	3310	12880	3930
5.25	759.60	5.24	---	---	3172	12742	4068
6.00	664.77	5.99	---	---	3034	12604	4206
6.75	591.02	6.74	---	---	2896	12466	4344
7.75	514.89	7.73	---	---	2758	12328	4482
8.75	456.16	8.73	---	---	2620	12190	4620
9.50	420.23	9.48	---	---	2482	12052	4758
10.75	371.48	10.72	---	---	2344	11914	4896
11.75	339.95	11.72	---	---	2206	11776	5033
13.00	307.36	12.96	---	---	2069	11639	5171
14.50	275.66	14.45	---	---	1931	11501	5309
16.00	249.92	15.94	---	---	1793	11363	5447
17.50	228.58	17.42	---	---	1655	11225	5585
19.00	210.61	18.91	---	---	1517	11087	5723
23.00	174.16	22.87	---	---	1241	10811	5999
28.00	143.24	27.80	---	---	965	10535	6275
33.50	119.88	33.22	---	---	690	10260	6550
37.00	108.64	36.66	---	---	552	10122	6688
40.00	100.57	39.60	---	---	414	9984	6826
44.00	91.51	43.52	---	---	276	9846	6964
49.00	82.28	48.40	---	---	138	9708	7102
53.00	76.14	52.30	---	---	0	9570	7240

WELL 5-34-1-26 WPM

DAY NO	DATE	TIME	DELTA TIME	PRESS (PSI)	PRESS (KPA)
0	07/13	14.00	0.00	1050	7239.8
0		14.12	0.12	900	6205.5
0		14.25	0.25	840	5791.8
0		14.37	0.37	800	5516.0
0		14.50	0.50	770	5309.2
0		14.75	0.75	730	5033.3
0		15.00	1.00	690	4757.5
0		15.12	1.12	680	4688.6
0		15.37	1.37	660	4550.7
0		15.50	1.50	640	4412.8
0		15.75	1.75	620	4274.9
0		16.25	2.25	600	4137.0
0		16.37	2.37	580	3999.1
0		16.75	2.75	560	3861.2
0		17.12	3.12	540	3723.3
0		17.62	3.62	520	3585.4
0		18.12	4.12	500	3447.5
0		18.75	4.75	480	3309.6
0		19.25	5.25	460	3171.7
0		20.00	6.00	440	3033.8
0		20.75	6.75	420	2895.9
0		21.75	7.75	400	2758.0
0		22.75	8.75	380	2620.1
0		23.50	9.50	360	2482.2
1	07/14	0.75	10.75	340	2344.3
1		1.75	11.75	320	2206.4
1		3.00	13.00	300	2068.5
1		4.50	14.50	280	1930.6
1		6.00	16.00	260	1792.7
1		7.50	17.50	240	1654.8
1		9.00	19.00	220	1516.9
1		13.00	23.00	180	1241.1
1		18.00	28.00	140	965.3
1		23.50	33.50	100	689.5
2	07/15	3.00	37.00	80	551.6
2		6.00	40.00	60	413.7
2		10.00	44.00	40	275.8
2		15.00	49.00	20	137.9
2		19.00	53.00	0	0.0

GENERAL WELL INFORMATION

5-24-1-26 WPM

Test Date: 10/23/92 - 12/11/92 (Static Gradient)

GL: 465.1 m

KB: 469.2 m

MPP: 912.6 mKB

Datum: 909.6 mKB

Hydrostatic Head: N/A

Last Shut-in Date: 12/19/90

Actual Inj. (Hrs): 8,744

Actual Inj. (m3): 26,792.7

Avg. Rate (m3/d): 73.5

O = 0.212

h = 6.0 m

P* = N/A

Pws = N/A

PR = N/A

Horner analysis not possible.

Well Shut in for 1,172.23 hrs prior to static gradient.

- * Average reservoir pressure at MPP = 5,791 kPag
- Average reservoir pressure at Datum = 5,761 kPag

Omega Waskada 05-24
05-24-001-26 W1M
Lower Amaranth

Static Gradient Test
December 11, 1992

P S I C D A T A

COMPANY: Omega Hydrocarbons Ltd.		WELL NAME: Omega Waskada 05-24	
ADDRESS: Calgary, Alberta		UNIQUE WELL IDENTIFIER: 05-24-001-26 W1M	
FIELD AND POOL: Waskada / Lower Amaranth		STATUS:	
TYPE OF TEST: Static Gradient Test		DATE OF TEST: Y 92 M 12 D 11 TO Y 92 M 12 D 11	
PRODUCING INTERVAL (m,CF): 903.12 - 913.82 PERF		PRODUCING THROUGH: 60.3 mm TUBING to 898.50 m,CF	
ELEVATION: (CF) 465.1 m (KB) 469.3 m		114.3 mm CASING to 951.80 m,CF	
POOL DATUM (SUBSEA): -440.0		MID POINT OF PRODUCING (MPP) INTERVAL (m,CF): 908.5	
ELEMENT SERIAL NO: 045300 RANGE(GAUGE) 0 - 13790 kPag		DATUM DEPTH OF WELL FROM (m,CF): 905.1	
CALIBRATION EQUATION: 271.603(D) - 28.919		CLOCK RANGE: 3 hrs LAST CALIBRATION: 03/12/92	

S T A T I C T E S T

TUBING PRESSURE: vacuum	kPag	SHUT-IN DATE: Oct. 23, 1992 @ 1600 DURATION: 1172.233	hrs
CASING PRESSURE: nil	kPag	DATE ON BOTTOM: December 11, 1992 @ 1154	hrs
RUN DEPTH (m,CF): 908.0		DATE OFF BOTTOM: December 11, 1992 @ 1214	hrs
B.H. TEMP: 39.0 °C R.D. PRESSURE 5787.0	kPag	MPP PRESSURE: 5791.4	kPag
SURFACE TEMP: °C GRADIENT 8.816	kPa/m	DATUM DEPTH PRESSURE (GAUGE): 5761.4	kPag

A C O U S T I C W E L L S O U N D E R T E S T

NOT APPLICABLE

B U I L D - U P O R D R A W D O W N T E S T

NOT APPLICABLE

C H A R T R E A D I N G S A N D C A L C U L A T I O N S F O R S T A T I C T E S T

SEE NEXT PAGE

C O M M E N T S

Estimated liquidi level at 336 m,CF Casing possibly frozen up.

SURVEYED BY: Moose Mtn	TESTED BY: Stu Hourd	COMPUTED BY: Rick Doll	CHECKED BY:
------------------------	----------------------	------------------------	-------------

Reporting Date: Dec 22, 1992,

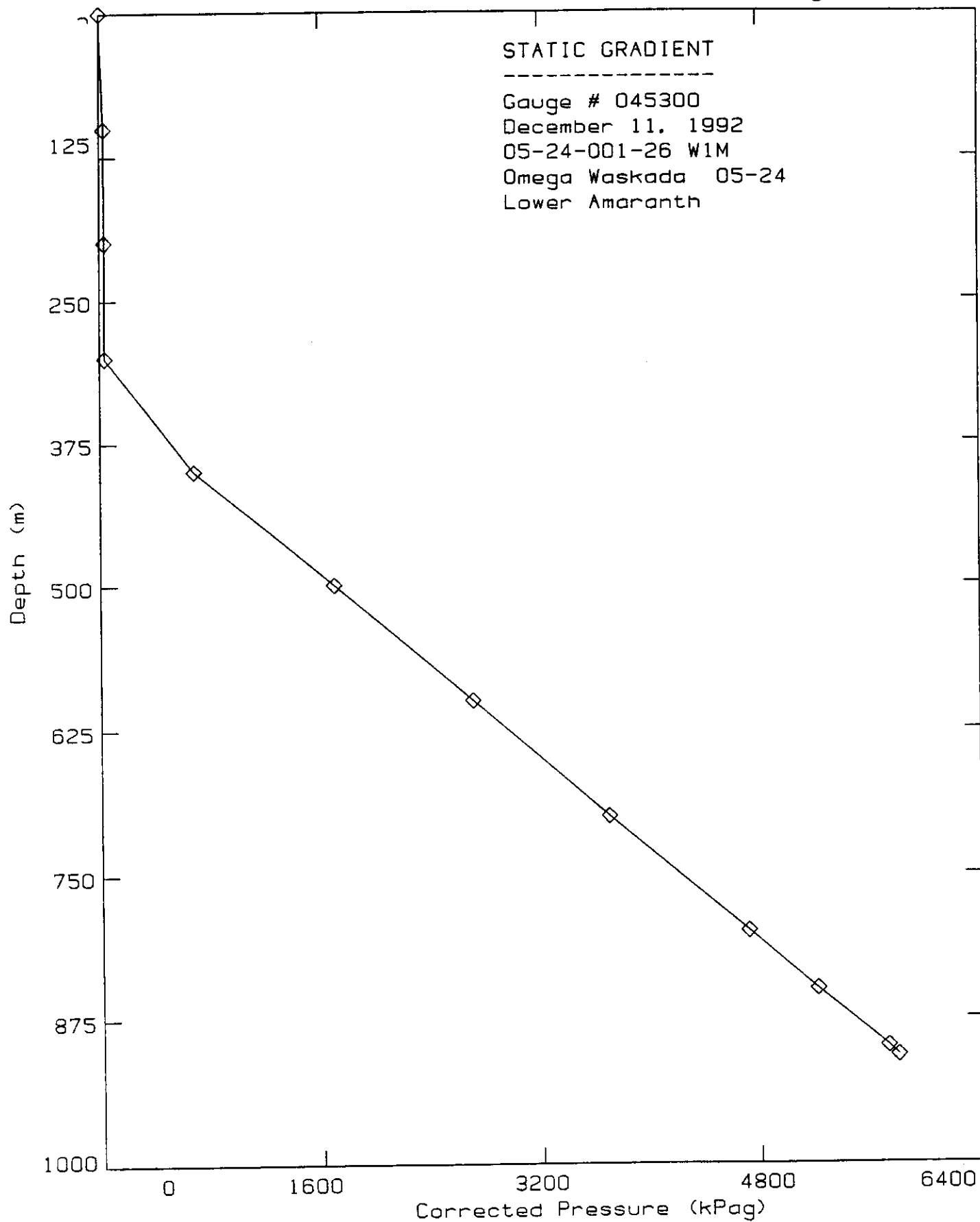
Page 2 of 6

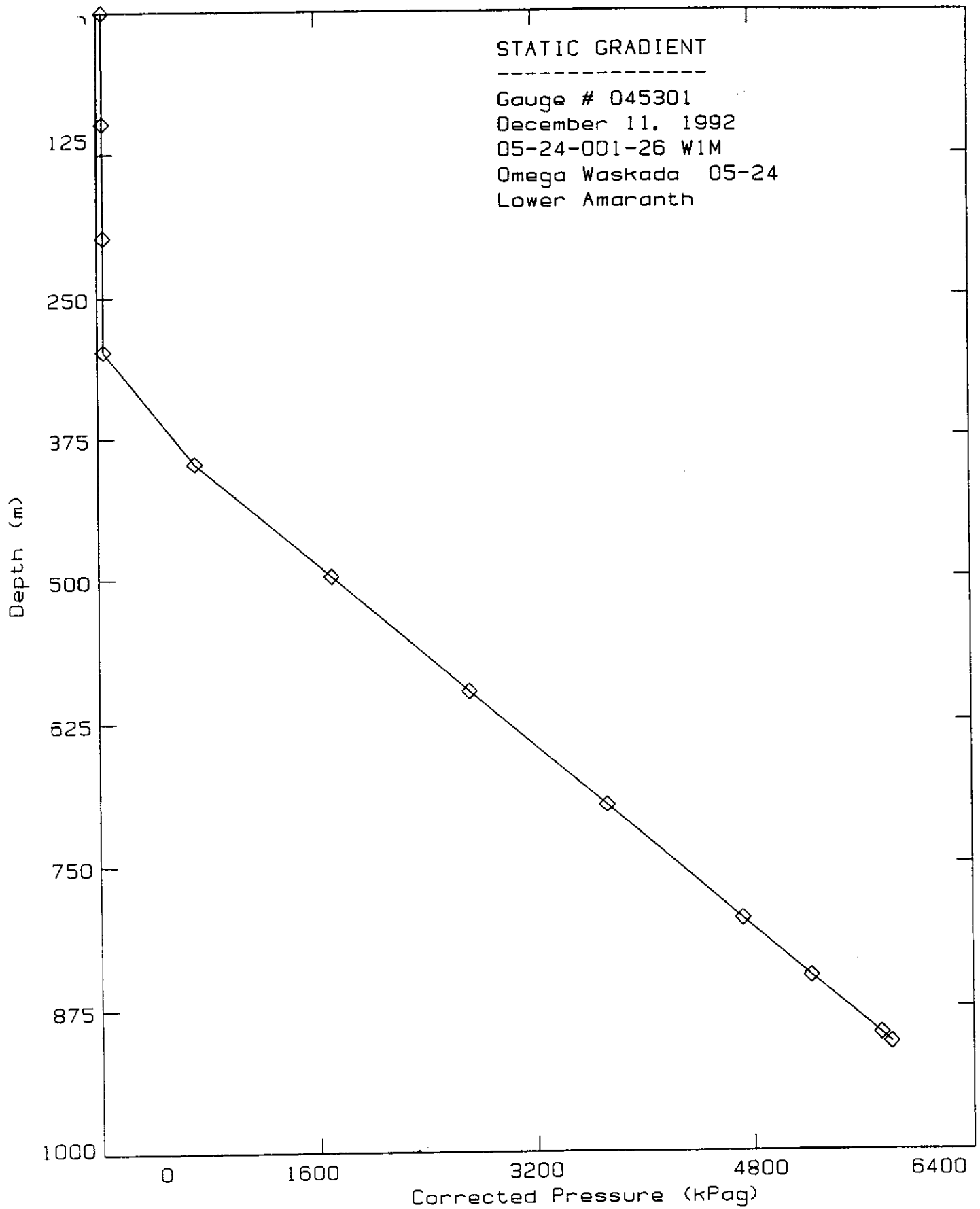
WellName: Omega Waskada 05-24
Pool : Lower AmaranthLocation : 05-24-001-26 W1M
Date Of Test: December 11, 1992----- Upper Gauge -----
Serial # 045301 Range 13790
---------- Lower Gauge -----
Serial # 045300 Range 13790

Start Time	End Time	Depth	Deflect	Corrected Pressure	Grad.	Depth	Deflect	Corrected Pressure	Grad.
hh:mm	hh:mm	CF(m)	(mm)	(kPag)	(kPa/m)	CF(m)	(mm)	(kPag)	(kPa/m)
10:57	11:02	Surf	0.130	36.3		Surf	0.100	0.0	
11:02	11:07	98.0	0.140	39.1	0.028	100.0	0.110	29.9	0.299
11:08	11:13	198.0	0.150	41.8	0.028	200.0	0.120	32.6	0.027
11:13	11:18	298.0	0.160	44.6	0.028	300.0	0.130	35.2	0.027
11:18	11:23	398.0	2.540	702.7	6.582	400.0	2.540	682.9	6.477
11:24	11:29	498.0	6.180	1709.3	10.066	500.0	6.320	1698.8	10.159
11:29	11:34	598.0	9.820	2715.9	10.066	600.0	10.060	2704.0	10.051
11:34	11:39	698.0	13.470	3728.5	10.125	700.0	13.800	3710.2	10.062
11:39	11:44	798.0	17.060	4724.5	9.960	800.0	17.550	4719.1	10.089
11:44	11:49	848.0	18.850	5221.1	9.933	850.0	19.400	5216.9	9.955
11:49	11:54	898.0	20.670	5728.0	10.138	900.0	21.250	5716.4	9.992
11:54	12:14	906.0	20.930	5800.7	9.091	908.0	21.510	5787.0	8.816

Comments:

TBG pressure by DWG = Vacuum
 CSG pressure by DWG = Nil
 Temperature at run depth = 39 C
 Estimated liquid level at 336 m,CF
 Casing possibly frozen up.





Reporting Date: Dec 22, 1992

Page 5 of 6

Serial No: 045300
Range: 13790
Cal Temp (air): 21
Cal Temp (bath): 72
Bath Cal Date: 12-03-92
Last Air Cal Date: 07-21-92
Curr Air Cal Date: 12-03-92
Recorder Section No:
Comment:
Owner: Moose Mountain

Press (kPag)	First (mm)	Second (mm)	Average (mm)	P - Pc (kPa)	Bath (mm)
0	0.000	0.000	0.000	28.92	0.000
2758	10.261	10.261	10.261	0.01	0.000
5516	20.511	20.511	20.511	-25.92	0.000
8274	30.678	30.678	30.678	-29.30	0.000
11032	40.760	40.760	40.760	-9.60	0.000
13790	50.747	50.747	50.747	35.90	0.000

Sum: 0.01

Previous m = 271.600
Previous A = -28.920

Present m = 271.603
Present A = -28.919

Present Press = 13768.49
Previous Press = 13768.36

Deviation = 0.13
Acc. Deviation = 34.47

Reporting Date: Dec 22, 1992

Page 6 of 6

Serial No: 045301
Range: 13790
Cal Temp (air): 21
Cal Temp (bath): 72
Bath Cal Date: 03-11-92
Last Air Cal Date: 07-21-92
Curr Air Cal Date: 12-03-92
Recorder Section No:
Comment:
Owner: Moose Mountain

Press (kPag)	First (mm)	Second (mm)	Average (mm)	P - Pc (kPa)	Bath (mm)
0	0.000	0.000	0.000	29.33	0.000
2758	9.972	9.972	9.972	-2.83	0.000
5516	19.912	19.912	19.912	-26.03	0.000
8274	29.772	29.772	29.772	-26.85	0.000
11032	39.550	39.550	39.550	-4.73	0.000
13790	49.279	49.279	49.279	31.11	0.000
Sum:				0.00	

Previous m = 279.800
Previous A = -29.330

Present m = 279.799
Present A = -29.327

Present Press = 14184.47
Previous Press = 14184.51

Deviation = -0.04
Acc. Deviation = 34.47

GENERAL WELL INFORMATION

13-32-1-25 WPM

Test Date: 10/23/92 - 12/10/92

GL: 470.85 m

KB: 475.05 m

MPP: 900.00 mKB

Datum: 915.05 mKB

Hydrostatic Head: 9,353 kPa (Assuming a gradient of 10.44 kPa/m)

Last Shut-in Date: 10/08/91

Actual Inj. (Hrs): 7632

Actual Inj. (m3): 1258.6

Avg. Rate (m3/d): 4.0

ϕ = 15.4 %

h = 10.10 m

P* = 7,452 kPa

Pws = 9,443 kPa

PR = 8,586 kPa

- * Average reservoir pressure at MPP = 8,586 kPa (8,496 kPag)
Average reservoir pressure at Datum = 8,743 kPa (8,653 kPag)

PRESSURE FAILOFF DATA
IN TERMS OF PRESSURE

OMEGA WASKADA
13-32-1-25 WPM

LOWER AMARANTH INJECTOR
DECEMBER 1992

Shut-in time hr	Horner time	Equiv time hr	Super time	Super Equiv time hr	Gauge Press RRD kPa	pws MPP kPa	del p kPa
0.00	---	---	---	---	6619	16062	---
0.30	25427.30	0.30	---	---	6343	15786	276
1.00	7628.88	1.00	---	---	6206	15649	414
1.25	6103.30	1.25	---	---	6068	15511	552
1.75	4359.79	1.75	---	---	5930	15373	690
2.25	3391.17	2.25	---	---	5792	15235	827
3.00	2543.63	3.00	---	---	5516	14959	1103
3.75	2035.10	3.75	---	---	5378	14821	1241
4.50	1696.08	4.50	---	---	5240	14683	1379
5.25	1453.93	5.25	---	---	5102	14545	1517
6.00	1272.31	6.00	---	---	4964	14407	1655
7.00	1090.76	6.99	---	---	4827	14270	1793
9.00	848.54	8.99	---	---	4689	14132	1931
10.00	763.79	9.99	---	---	4551	13994	2069
13.00	587.76	12.98	---	---	4413	13856	2206
15.75	485.31	15.72	---	---	4137	13580	2492
17.00	449.70	16.96	---	---	3999	13442	2629
20.00	332.65	22.93	---	---	3585	13028	3034
22.00	239.37	21.87	---	---	3310	12753	3310
41.00	187.05	40.78	---	---	3034	12477	3585
54.00	142.26	53.62	---	---	2753	12201	3861
75.00	109.97	69.36	---	---	2482	11925	4137
91.00	84.82	89.93	---	---	2206	11649	4413
125.00	64.57	118.14	---	---	1931	11374	4689
165.00	47.22	161.51	---	---	1655	11098	4964
225.00	35.21	216.67	---	---	1379	10822	5240
285.00	27.59	276.59	---	---	1103	10546	5516
425.00	13.95	482.57	---	---	965	10408	5654
645.00	12.88	592.16	---	---	552	9995	6068
1005.00	3.62	884.88	---	---	276	9719	6343
1555.00	7.63	1863.11	---	---	0	9443	6619

WATER PRESSURE FALLOFF ANALYSIS - HORNER

OMEGA WASKADA
13-32- WPM

LOWER AMARANTH INJECTOR
DECEMBER 1992

INJECTION AND TIMES

Cumulative Injection = 1258.6 m³
Actual Flow Time = 7632.00 hr
Horner Flow Time = 7627.88 hr
Final Flow Rate qo = 0.0 m³/d
Final Flow Rate qg = 0.000 10 m³/d
Final Flow Rate qw = 4.0 m³/d

RESERVOIR PARAMETERS

Well bore Radius rw = 0.100 m Reservoir Temp TR = 313 K
Net Pay h = 19.1 m Water Saturation Sw = 1.000
Total Porosity phit = 0.154 Oil Saturation So = 0.000

FLUID PROPERTIES

Compress. cg = 0.00012204 1/kPa Viscosity μ_w = 0.649 mPa.s
Compress. ci = 0.00003211 1/kPa Vol. Fac. Bg = 0.0096091
Compress. cw = 0.00000044 1/kPa Vol. Fac. Bo = 1.143
Compress. cf = 0.00000059 1/kPa Vol. Fac. Bw = 1.002
Compress. ct = 0.00000103 1/kPa Sol. Gas Rsw = 0.0 m³/m

PRESSURES

Horner Extrap. p* = 7452 kPa
Initial Reservoir pi = --- kPa
Final Flowing pwf = 16062 kPa
1 Hour Shut-in pws1 = 16585 kPa
Average Test pwa = 1443 kPa

OMEGA WASKADA
17-02- WPM

LOWER AMASINTH INJECTOR
DECEMBER 1992

SEMILOG STRAIGHT LINE RESULTS

Slope m = 2332 kPa
Transmissivity {kh/ult = 3.61 mD.m/mPa.s
 {kh/ulw = 3.61 mD.m/mPa.s
Mobility {k/ult = 0.36 mD/mPa.s
 {k/ulw = 0.36 mD/mPa.s
Flow Capacity {khlw = 2.34 mD.m
Permeability kw = 0.23 mD
Skin Factor s = -4.0
Pressure Drop Due to Skin = --- kPa
Flow Efficiency FE = 2.08
Damage Ratio DR = 0.48
Injectivity Index FI = 0.00052969 m³/d/kPa
Radius of Inv. rinv = 497 m

AVERAGE PRESSURE CALCULATION

Drainage Area A = 64 ha
Shape/Well Configuration = R1A
Average Reserv. Pressure pR = 8586 kPa

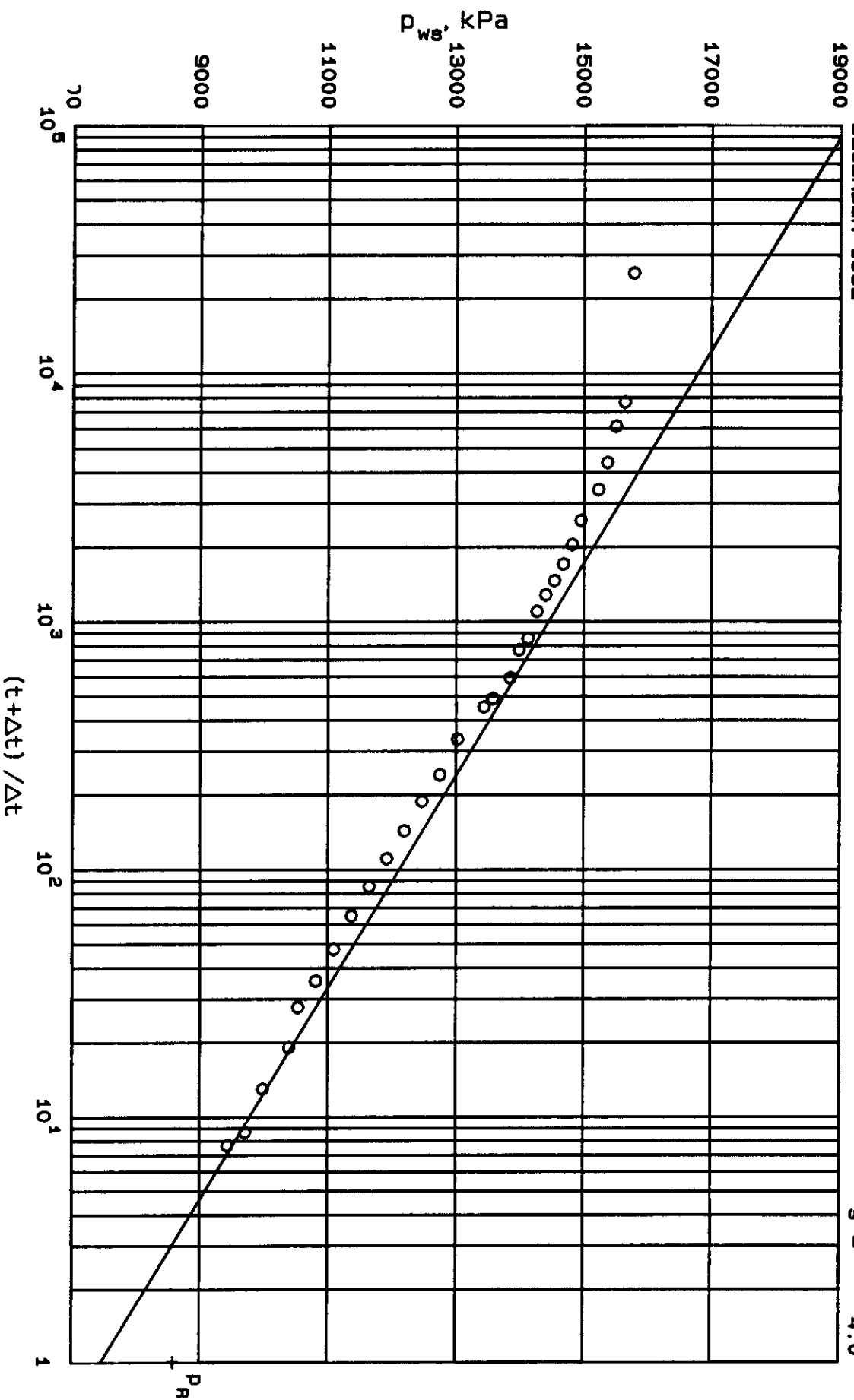
STABILIZED RATE PREDICTIONS

Time to Stabilization ts = 7912 hr
Stabilized Rate qs = 3.9 m³/d
Productivity Index PI = 0.00052729 m³/d/kPa

HORNER PRESSURE FALLOFF PLOT

OMEGA MASKADA
13-32-1-25 WPM
LOWER AMARANTH INJECTOR
DECEMBER 1992

$m = 2332 \text{ kPa}$
 $P_R = 8586 \text{ kPa}$
 $s = 3.61 \text{ MD.m/mPa.s}$
 -4.0



WELL 13-32-1-25 WPM

DAY NO	DATE	TIME	DELTA TIME	PRESS (PSI)	PRESS (KPA)
0	10/23	18.00	0.00	960	6619.2
0		18.30	0.30	920	6343.4
0		19.00	1.00	900	6205.5
0		19.25	1.25	880	6067.6
0		19.75	1.75	860	5929.7
0		20.25	2.25	840	5791.8
0		21.00	3.00	800	5516.0
0		21.75	3.75	780	5378.1
0		22.50	4.50	760	5240.2
0		23.25	5.25	740	5102.3
0		24.00	6.00	720	4964.4
1	10/24	1.00	7.00	700	4826.5
1		3.00	9.00	680	4688.6
1		4.00	10.00	660	4550.7
1		7.00	13.00	640	4412.8
1		9.75	15.75	600	4137.0
1		11.00	17.00	580	3999.1
1		17.00	23.00	520	3585.4
2	10/25	2.00	32.00	480	3309.6
2		11.00	41.00	440	3033.8
2		24.00	54.00	400	2758.0
3	10/26	16.00	70.00	360	2482.2
4	10/27	13.00	91.00	320	2206.4
5	10/28	18.00	120.00	280	1930.6
7	10/30	15.00	165.00	240	1654.8
10	11/02	1.00	223.00	200	1379.0
12	11/04	17.00	287.00	160	1103.2
18	11/10	11.00	425.00	140	965.3
27	11/19	12.00	642.00	80	551.6
42	12/04	11.00	1001.00	40	275.8
48	12/10	21.00	1155.00	0	0.0

Last Shot in 10/08/91

1-j Hrs - 7632

1-j m3 - 1258.6

Hydrostatic - 9.353 kpa

ϕ = 15.4%

h = 10.10m



1000 SUN LIFE PLAZA III
112 - 4TH AVENUE S.W.
CALGARY, ALBERTA, CANADA T2P 0H3
TELEPHONE (403) 261-0743
FAX (403) 264-5691

FILE

WASKADA LOWER
AMIRANTH A Pool
PRESSURE SURVEYS

November 26, 1992

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

Attention: Mr. John Fox
Chief Petroleum Engineer



Dear Sir:

RE: 1992 Annual Pressure Survey
Omega Waskada 13-34-1-26 WPM
Omega Waskada 15-2-2-26 WPM
Omega Waskada 13-3-2-26 WPM
Omega Waskada 7-4-2-26 WPM

In accordance with the Pressure Maintenance rules contained in Board Order No. PM4 please find attached a copy of a recently conducted pressure test for each of the aforementioned wells. Attachment 1 contains a summary of the results obtained from the pressure surveys.

Should there be any questions or comments please contact the undersigned at (403) 261-0743.

Yours truly,

OMEGA HYDROCARBONS LTD.


K. Thomas
Production Technologist

KT/ns

c.c.: Waskada Pressure Data Binders
Wellfiles

NOV 27 1992

**1992 Annual Pressure Survey
Waskada Lower Amaranth Injection Wells**

Location	Pool	Test Date	Shut In Time (Hrs)	Pressure @ MPP (kPag)	Pressure @ Datum (kPag)
13-34-1-26 WPM	LAm	92/07/16	2356.5	8939	9893
15-2-2-26 WPM	LAm	92/07/27	2076.5	9314	9291
13-3-2-26 WPM	LAm	92/07/15	284.5	9078	9104
7-4-2-26 WPM	LAm	92/07/13	2459.3	12835	12695

GENERAL WELL INFORMATION

15-2-2-26 WPM

Test Date: 92/07/27

GL: 464.7m

KB: 468.9 m

MPP: 911.0 mKB

Datum: 908.9 mKB

Hydrostatic Head: 9,467 kpa (Assuming a gradient of 10.44 kpa/m)

Last Shut-in Date: 90/08/10 Last Test

Actual Inj. (Hrs): 5982 hrs.

Actual Inj. (m³): 2286.9

Avg. Rate (m³/d): 9.18

\emptyset = 14.2%

h = 7.8 m

P* = 8560 kPa

Pws = 10247 kPa

PR = 10805 kPa (overcorrected)

Average reservoir pressure at MPP = $0.5(10247-8560)+8560 = 9403.5$ kPa (9313.5 kPag)

Average reservoir pressure at Datum = 9381 kPa (9291 kPag)

PRESSURE FALLOFF DATA
IN TERMS OF PRESSURE

OMEGA WASKADA
15-2-2-26 WPM

LOWER AMARANTH INJECTOR
SEPTEMBER 1992

Shut-in time hr	Horner time	Equiv time hr	Super time	Super Equiv time hr	Gauge Press RRD kPa	pws MPP kPa	del p kPa
0.00	---	---	---	---	7929	17486	---
0.25	23916.30	0.25	---	---	7860	17417	69
1.25	4784.06	1.25	---	---	7722	17279	207
2.50	2392.53	2.50	---	---	7585	17142	345
4.00	1495.71	4.00	---	---	7447	17004	483
5.75	1040.80	5.74	---	---	7309	16866	620
7.50	798.18	7.49	---	---	7171	16728	758
9.25	647.36	9.24	---	---	7033	16590	896
11.25	532.45	11.23	---	---	6895	16452	1034
13.50	443.88	13.47	---	---	6757	16314	1172
16.25	368.93	16.21	---	---	6619	16176	1310
21.25	282.36	21.17	---	---	6481	16038	1448
25.25	237.79	25.14	---	---	6343	15900	1586
29.50	203.67	29.36	---	---	6206	15763	1724
32.25	180.81	32.07	---	---	6068	15625	1862
38.50	156.29	38.25	---	---	5930	15487	1999
47.75	126.21	47.37	---	---	5792	15349	2137
52.00	115.98	51.55	---	---	5654	15211	2275
57.75	104.53	57.20	---	---	5516	15073	2413
63.25	95.32	62.59	---	---	5378	14935	2551
72.50	83.47	71.63	---	---	5240	14797	2689
80.50	75.27	79.43	---	---	5102	14659	2827
88.50	68.56	87.21	---	---	4964	14521	2965
98.50	61.79	96.90	---	---	4827	14384	3103
107.50	56.62	105.60	---	---	4689	14246	3241
118.50	51.45	116.20	---	---	4551	14108	3378
129.00	47.35	126.23	---	---	4413	13970	3516
139.50	43.86	136.32	---	---	4275	13832	3654
152.50	39.95	149.66	---	---	4137	13694	3792
166.50	36.91	161.99	---	---	3999	13556	3930
184.50	33.41	178.98	---	---	3861	13418	4068
204.50	30.24	197.74	---	---	3723	13280	4206
222.50	27.75	215.45	---	---	3585	13142	4344
248.50	25.06	238.58	---	---	3448	13005	4482
274.50	22.78	262.45	---	---	3310	12867	4620
300.50	20.90	286.12	---	---	3034	12591	4895
328.50	19.29	311.39	---	---	2896	12453	5033
396.50	16.08	371.34	---	---	2758	12315	5171
453.50	14.19	421.53	---	---	2620	12177	5309
495.50	13.07	457.58	---	---	2482	12039	5447
543.50	12.00	498.21	---	---	2344	11901	5585

Shut-in time hr	Horner time	Equiv time hr	Super time	Super Equiv time hr	Gauge Press RRD kPa	pws MPP kPa	del p kPa
608.50	10.83	552.29	---	---	2206	11763	5723
655.50	10.12	590.73	---	---	2069	11626	5861
717.50	9.33	640.62	---	---	1931	11488	5999
804.50	8.43	709.09	---	---	1793	11350	6137
880.50	7.79	767.47	---	---	1655	11212	6274
980.50	7.10	842.36	---	---	1517	11074	6412
1116.50	6.35	940.81	---	---	1379	10936	6550
1223.50	5.89	1015.66	---	---	1241	10798	6688
1368.50	5.37	1113.61	---	---	1103	10660	6826
1553.50	4.85	1233.10	---	---	965	10522	6964
1652.50	4.62	1294.66	---	---	896	10453	7033
1799.50	4.32	1383.19	---	---	827	10384	7102
1928.50	4.10	1458.16	---	---	758	10315	7171
2076.50	3.88	1541.22	---	---	690	10247	7240

WATER PRESSURE FALLOFF ANALYSIS - HORNER

OMEGA WASKADA
15-2-2-26 WPM

LOWER AMARANTH INJECTOR
SEPTEMBER 1992

INJECTION AND TIMES

Cumulative Injection	=	2286.9 m ³
Actual Flow Time	=	5982.00 hr
Horner Flow Time	=	5978.82 hr
Final Flow Rate qo	=	0.0 m ³ /d
Final Flow Rate qg	=	0.000 10 m ³ /d
Final Flow Rate qw	=	9.2 m ³ /d

RESERVOIR PARAMETERS

Wellbore Radius rw	=	0.100 m	Reservoir Temp TR	=	313 K
Net Pay h	=	7.0 m	Water Saturation Sw	=	1.000
Total Porosity phit	=	0.142	Oil Saturation So	=	0.000

FLUID PROPERTIES

Compress. cg	=	0.00011361 1/kPa	Viscosity uw	=	0.649 mPa.s
Compress. co	=	0.00002920 1/kPa	Vol. Fac. Bg	=	0.0087435
Compress. cw	=	0.00000044 1/kPa	Vol. Fac. Bo	=	1.153
Compress. cf	=	0.00000061 1/kPa	Vol. Fac. Bw	=	1.002
Compress. ct	=	0.00000105 1/kPa	Sol. Gas Rsw	=	0.0 m ³ /m ³

PRESSURES

Horner Extrap. p*	=	3560 kPa
Initial Reservoir pi	=	--- kPa
Final Flowing pwfo	=	17486 kPa
1 Hour Shut-in pws1	=	19376 kPa
Average Test pav	=	10247 kPa

WATER PRESSURE FALLOFF ANALYSIS - HORNER

OMEGA WASKADA
15-2-2-26 WPM

LOWER AMARANTH INJECTOR
SEPTEMBER 1992

SEMILOG STRAIGHT LINE RESULTS

Slope	m	=	2864 kPa
Transmissivity	[kh/ult	=	6.81 mD.m/mPa.s
	[kh/ulw	=	6.81 mD.m/mPa.s
Mobility	[k/ult	=	0.87 mD/mPa.s
	[k/ulw	=	0.87 mD/mPa.s
Flow Capacity	[khlw	=	4.42 mD.m
Permeability	kw	=	0.57 mD
Skin Factor	s	=	-5.0
Pressure Drop Due to Skin		=	--- kPa
Flow Efficiency	FE	=	2.86
Damage Ratio	DR	=	0.35
Injectivity Index	PI	=	0.00137400 m ³ /d/kPa
Radius of Inv.	r _{inv}	=	710 m

AVERAGE PRESSURE CALCULATION

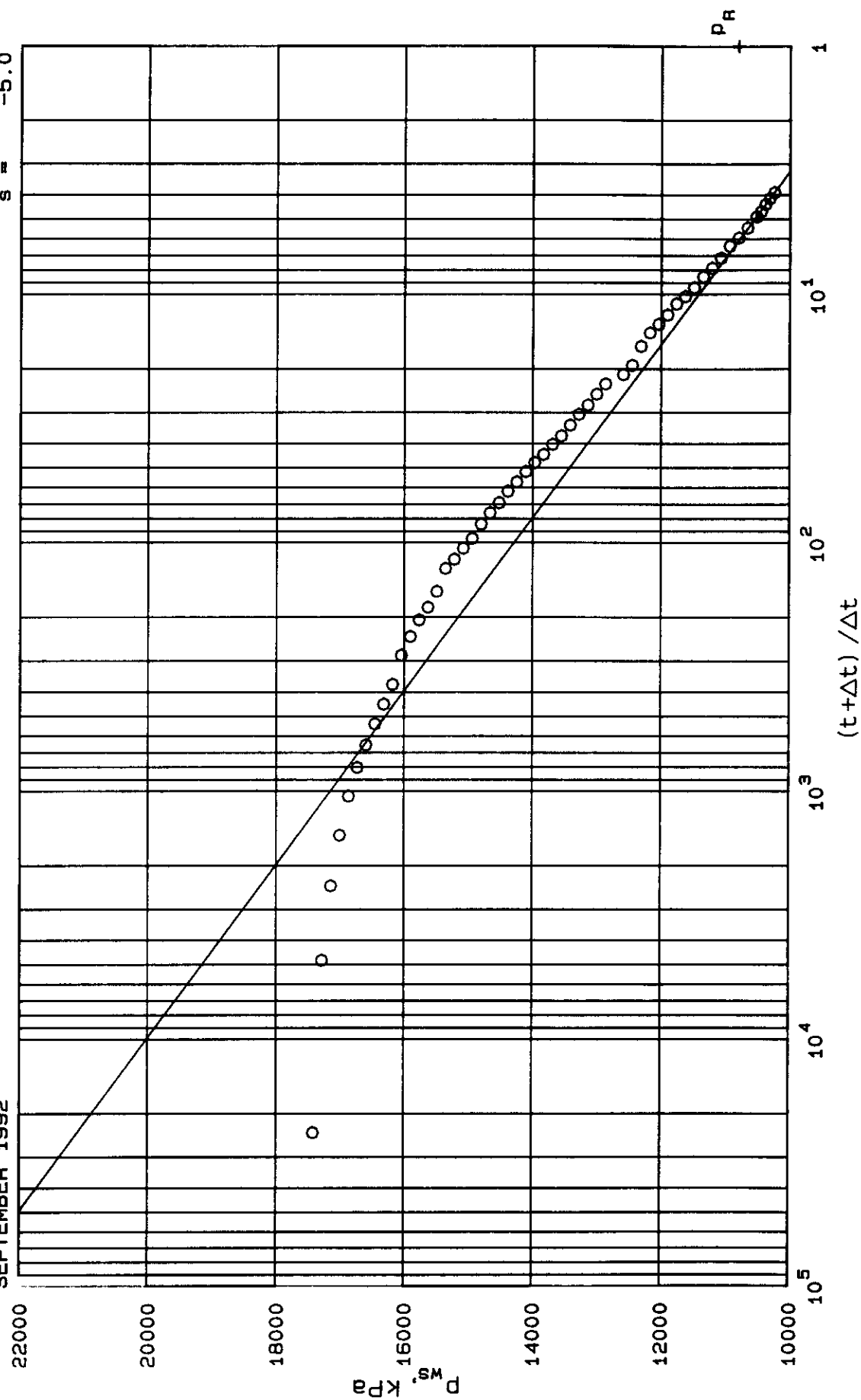
Drainage Area	A	=	64 ha
Shape Well Configuration		=	R1A
Average Reserv. Pressure	p _R	=	10305 kPa

STABILIZED RATE PREDICTIONS

Time to Stabilization	t _s	=	3040 hr
Stabilized Rate	q _s	=	9.2 m ³ /d
Productivity Index	PI	=	0.00137256 m ³ /d/kPa

OMEGA WASKADA
15-2-2-26 WPM
LOWER AMARANTH INJECTOR
SEPTEMBER 1992

m = 2864 kPa
p_R = 10805 kPa
6.81 mD.m/MPa.s
s = -5.0



GENERAL WELL INFORMATION

13-3-2-26 WPM
Test Date: 92/07/15

GL: 460.9 m
KB: 465.4 m
MPP: 911.5 mKB
Datum: 905.4 mKB
Hydrostatic Head: 9469 kpa (Assuming a gradient of 10.44 kpa/m)
Last Shut-in Date: 90/10/16 Last Test Date
Actual Inj. (Hrs): 4584 hrs.
Actual Inj. (m³): 3692.3
Avg. Rate (m³/d): 19.33

$\phi = 15.2\%$
 $h = 5.6 \text{ m}$

$P^* = 8776 \text{ kPa}$
 $P_{ws} = 9559 \text{ kPa}$
 $PR = 9899 \text{ kPa (Overcorrected)}$

Average reservoir pressure at MPP = $0.5(9559-8776)+8776=9168 \text{ kPa (9078 kPag)}$
Average reservoir pressure at Datum = $9104 \text{ kPa (9104 kPag)}$

PRESSURE FALLOFF DATA
IN TERMS OF PRESSURE

OMEGA WASKADA
13-3-2-26 WPM

LOWER AMARANTH INJECTOR
SEPTEMBER 1992

Shut-in time hr	Horner time	Equiv time hr	Super time	Super Equiv time hr	Gauge Press RRD kPa	pws MPP kPa	del p kPa
0.00	---	---	---	---	3861	13420	---
0.50	9169.67	0.50	---	---	3654	13213	207
0.62	7395.69	0.62	---	---	3448	13007	414
1.00	4585.34	1.00	---	---	3103	12662	758
1.12	4094.16	1.12	---	---	3034	12593	827
1.37	3347.23	1.37	---	---	2896	12455	965
1.62	2830.84	1.62	---	---	2758	12317	1103
2.00	2293.17	2.00	---	---	2551	12110	1310
2.37	1935.82	2.37	---	---	2482	12041	1379
2.75	1668.63	2.75	---	---	2344	11903	1517
3.25	1411.56	3.25	---	---	2206	11765	1655
4.00	1147.88	4.00	---	---	2069	11628	1793
4.75	966.12	4.75	---	---	1931	11490	1931
5.50	824.52	5.49	---	---	1793	11352	2069
6.75	680.16	6.74	---	---	1655	11214	2206
8.00	574.84	7.99	---	---	1517	11076	2344
10.00	459.43	9.98	---	---	1379	10938	2482
12.50	367.75	12.47	---	---	1241	10800	2620
15.75	292.07	15.70	---	---	1103	10662	2758
19.00	230.82	19.91	---	---	965	10524	2896
24.75	186.13	24.62	---	---	827	10386	3034
37.50	123.25	37.20	---	---	690	10249	3172
50.00	81.78	49.95	---	---	552	10111	3310
71.50	45.12	70.46	---	---	414	9973	3448
101.50	26.17	99.30	---	---	276	9835	3585
133.50	15.34	129.72	---	---	207	9766	3654
160.50	10.56	155.07	---	---	138	9697	3723
218.50	51.98	208.56	---	---	50	9628	3792
284.50	17.11	267.88	---	---	0	9559	3861

WATER PRESSURE FALLOFF ANALYSIS - HORNER

OMEGA WASKADA
13-3-2-26 WPM

LOWER AMARANTH INJECTOR
SEPTEMBER 1992

INJECTION AND TIMES

Cumulative Injection = 3692.3 m³
Actual Flow Time = 4584.00 hr
Horner Flow Time = 4584.34 hr
Final Flow Rate qo = 0.0 m³/d
Final Flow Rate qg = 0.000 10 m³/d
Final Flow Rate qw = 19.3 m³/d

RESERVOIR PARAMETERS

Wellbore Radius rw = 0.100 m Reservoir Temp TR = 313 K
Net Pay h = 5.6 m Water Saturation Sw = 1.000
Total Porosity phit = 0.152 Oil Saturation So = 0.000

FLUID PROPERTIES

Compress. c_g = 0.00012159 1/kPa Viscosity μ_w = 0.649 mPa.s
Compress. c_o = 0.00003150 1/kPa Vol. Fac. B_g = 0.0094743
Compress. c_w = 0.00000044 1/kPa Vol. Fac. B_o = 1.144
Compress. c_f = 0.00000059 1/kPa Vol. Fac. B_w = 1.002
Compress. c_t = 0.00000104 1/kPa Sol. Gas R_{sw} = 0.0 m³/m

PRESSURES

Horner Extrap. p* = 8776 kPa
Initial Reservoir pi = --- kPa
Final Flowing pwfo = 13420 kPa
1 Hour Shut-in pws1 = 11100 kPa
Average Test pav = 9559 kPa

WATER PRESSURE FALLOFF ANALYSIS - CORNER

OMEGA ALBERTA
13-3-2-26 WPM

LOWER AMARANTH INJECTOR
SEPTEMBER 1992

SEMILOG STRAIGHT LINE RESULTS

Slope m = 635 kPa

Transmissivity $[kh/ut]$ = 64.72 mD.m/mPa.s

$[kh/ulw]$ = 64.72 mD.m/mPa.s

Mobility $[k/ut]$ = 11.56 mD/mPa.s

$[k/ulw]$ = 11.56 mD/mPa.s

Flow Capacity $[kh]w$ = 42.03 mD.m

Permeability kw = 7.51 mD

Skin Factor s = -1.3

Pressure Drop Due to Skin = --- kPa

Flow Efficiency FE = 1.20

Damage Ratio DR = 0.93

Productivity Index PI = 0.00548905 m³/d/kPa

Radius of Inv. r_{inv} = 2201 m

AVERAGE PRESSURE CALCULATION

Drainage Area A = 64 ha

Shape/Well Configuration = R1A

Average Reserv. Pressure p_R = 9899 kPa

STABILIZED RATE PREDICTIONS

Time to Stabilization t_s = 242 hr

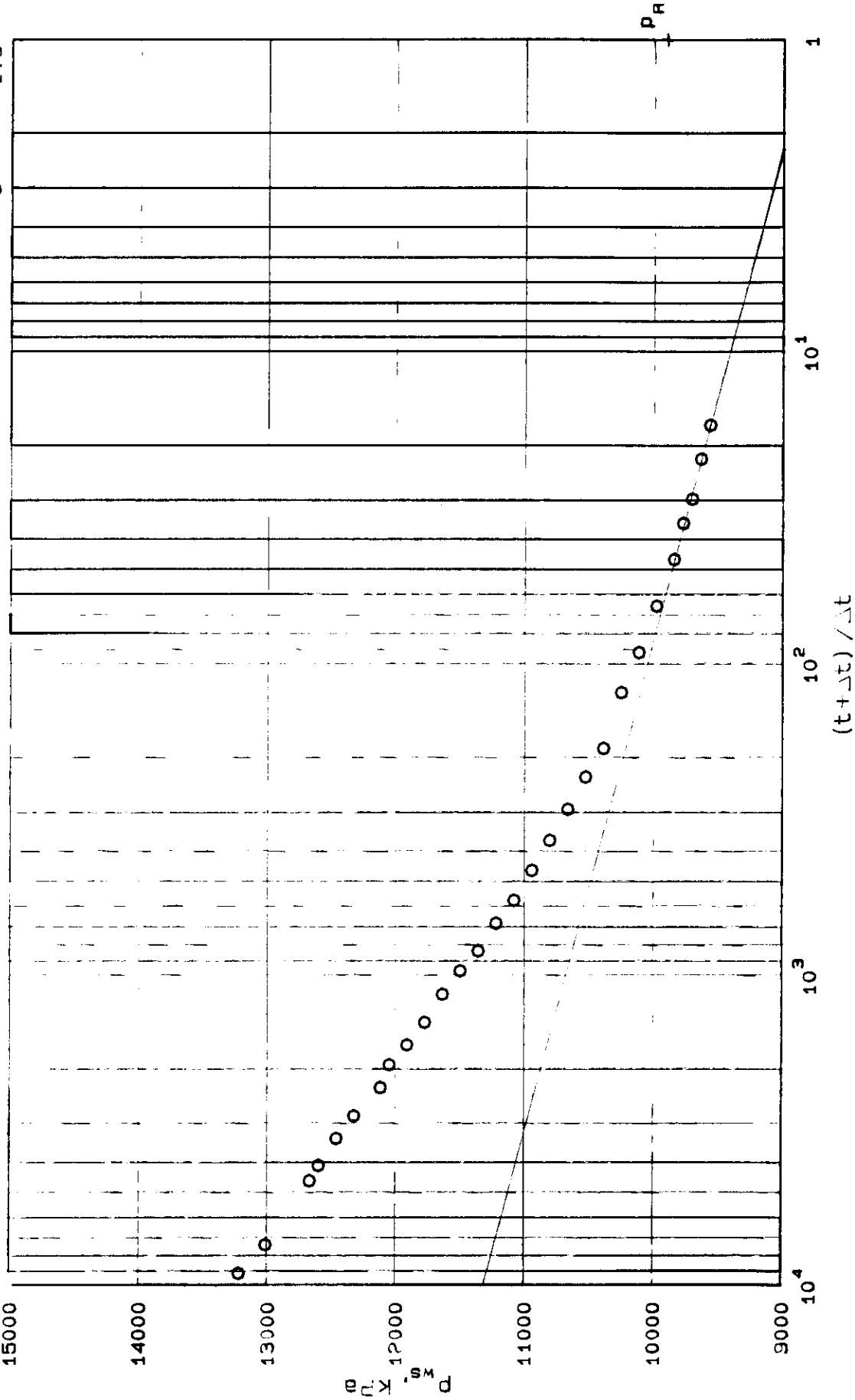
Stabilized Rate q_s = 19.3 m³/d

Productivity Index PI = 0.00548538 m³/d/kPa

INITIAL PRESSURE LOSS PLANT

OMEGA WASKADA
13-3-2-26 WPM
LOWER AMARANTH INJECTOR
SEPTEMBER 1992

$m = 635 \text{ kPa}$
 $p_R = 9899 \text{ kPa}$
 $[kh/\omega]_t = 64.72 \text{ mD.m/MPa.s}$
 $s = -1.3$



GENERAL WELL INFORMATION

7-4-2-26 WPM

Test Date: 92/07/13

GL: 458.4m

KB: 462.6 m

MPP: 916.0 mKB

Datum: 902.6 mKB

Hydrostatic Head: 9519 kpa (Assuming a gradient of 10.44 kpa/m)

Last Shut-in Date: 90/07/05 Last Test Date

Actual Inj. (Hrs): 12552 hrs.

Actual Inj. (m³): 4421.2

Avg. Rate (m³/d): 8.45

ϕ = 12.0% (D & S average)

h = 7.3 m

P* = 9356 kPa

Pws = 11884 kPa

PR = 12925 kPa

Average reservoir pressure at MPP = 12925 kPa (12835 kPag)

Average reservoir pressure at Datum = 12785 kPa (12695 kPag)

WATER PRESSURE FALLOFF ANALYSIS - HORNER

OMEGA WASKADA
7-4-2-26 WPM

LOWER AMARANTH INJECTOR
SEPTEMBER 1992

INJECTION AND TIMES

```

Cumulative Injection      =      4421.2 m3
Actual Flow Time          =      12552.00 hr
Horner Flow Time          =      12557.30 hr
Final Flow Rate   qo      =      0.0 m3 /d
Final Flow Rate   qg      =      0.000 10 m3 /d
Final Flow Rate   qw      =      8.5 m3 /d
  
```

RESERVOIR PARAMETERS

```

Wellbore Radius   rw      =      0.100 m      Reservoir Temp   TR =      313 K
Net Pay           h        =      7.3 m      Water Saturation Sw =      1.000
Total Porosity    phit     =      0.120      Oil Saturation   So =      0.000
  
```

FLUID PROPERTIES

```

Compress.   cg = 0.00009545 1/kPa      Viscosity   uw      =      0.650 mPa.s
Compress.   co = 0.00002202 1/kPa      Vol. Fac.   Bg      =      0.0073789
Compress.   cw = 0.00000044 1/kPa      Vol. Fac.   Bo      =      1.174
Compress.   cf = 0.00000065 1/kPa      Vol. Fac.   Bw      =      1.001
Compress.   ct = 0.00000109 1/kPa      Sol. Gas    Rsw     =      0.0 m3 /m3
  
```

PRESSURES

```

Horner Extrap.    p*      =      9356 kPa
Initial Reservoir pi =      --- kPa
Final Flowing     pwfo    =      16504 kPa
1 Hour Shut-in    pwsl    =      22640 kPa
Average Test      pav     =      11884 kPa
  
```

WATER PRESSURE FALLOFF ANALYSIS - HORNER

OMEGA WASKADA
7-4-2-26 WPM

LOWER AMARANTH INJECTOR
SEPTEMBER 1992

SEMILOG STRAIGHT LINE RESULTS

Slope	m	=	3241 kPa
Transmissivity	[kh/ult	=	5.54 mD.m/mPa.s
	[kh/ulw	=	5.54 mD.m/mPa.s
Mobility	[k/ult	=	0.76 mD/mPa.s
	[k/ulw	=	0.76 mD/mPa.s
Flow Capacity	[kh]w	=	3.60 mD.m
Permeability	kw	=	0.49 mD
Skin Factor	s	=	-6.4
Pressure Drop Due to Skin		=	--- kPa
Flow Efficiency	FE	=	6.04
Damage Ratio	DR	=	0.17
Injectivity Index	PI	=	0.00236087 m ³ /d/kPa
Radius of Inv.	rinv	=	1023 m

AVERAGE PRESSURE CALCULATION

Drainage Area	A	=	64 ha
Shape/Well Configuration		=	R1A
Average Reserv. Pressure	pR	=	12925 kPa

STABILIZED RATE PREDICTIONS

Time to Stabilization	ts	=	2073 hr
Stabilized Rate	qs	=	8.4 m ³ /d
Productivity Index	PI	=	0.00235602 m ³ /d/kPa

PRESSURE FALLOFF DATA
IN TERMS OF PRESSURE

OMEGA WASKADA
7-4-2-26 WPM

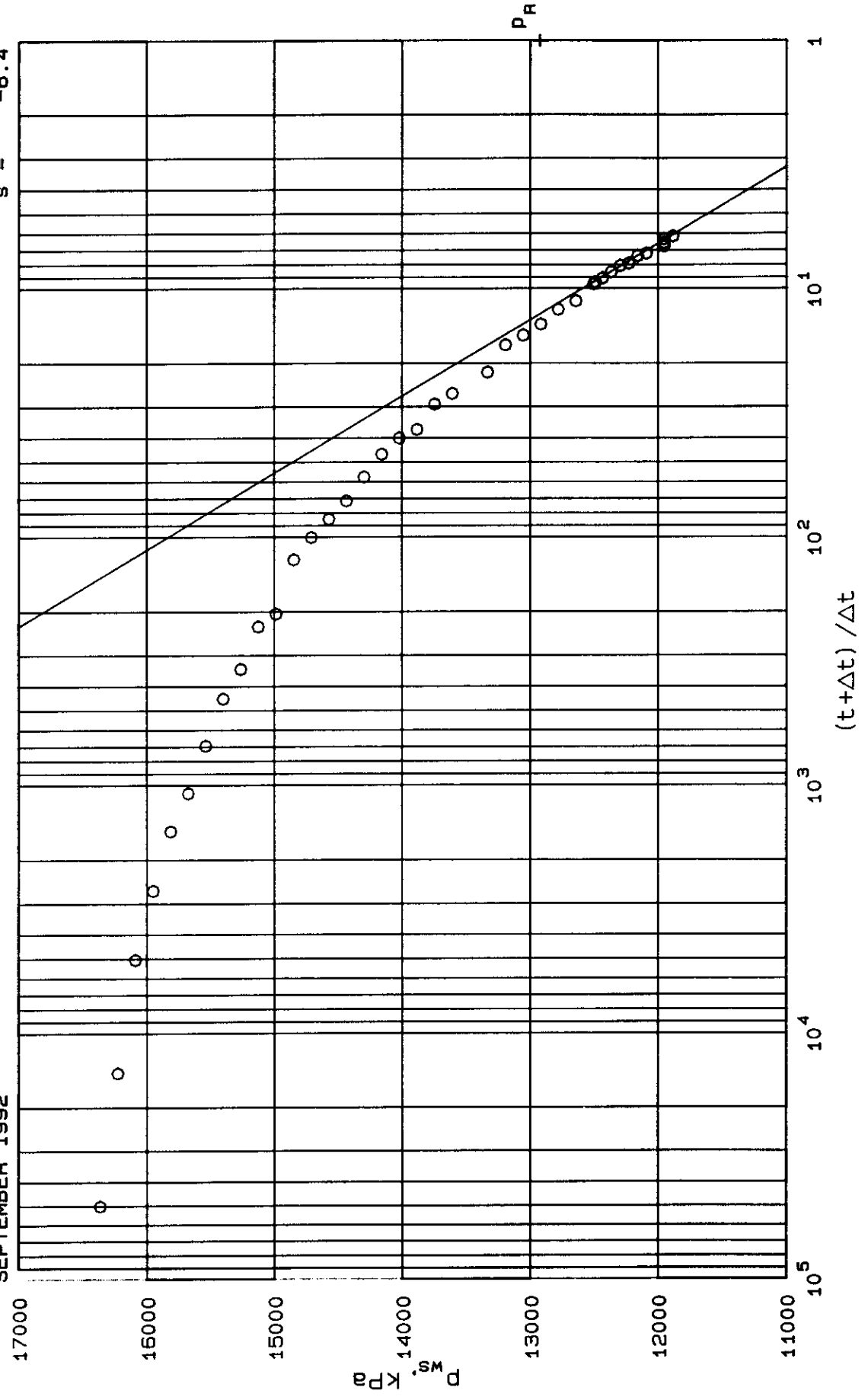
LOWER AMARANTH INJECTOR
SEPTEMBER 1992

Shut-in time hr	Horner time	Equiv time hr	Super time	Super Equiv time hr	Gauge Press RRD kPa	pws MPP kPa	del p kPa
0.00	---	---	---	---	6895	16504	---
0.25	50230.00	0.25	---	---	6757	16366	138
0.87	14434.60	0.87	---	---	6619	16228	276
2.50	5023.90	2.50	---	---	6481	16090	414
4.75	2644.63	4.75	---	---	6343	15952	552
8.25	1523.09	8.24	---	---	6206	15815	690
11.75	1069.70	11.74	---	---	6068	15677	827
18.25	689.97	18.22	---	---	5930	15539	965
28.25	445.50	28.19	---	---	5792	15401	1103
37.25	338.11	37.14	---	---	5654	15263	1241
55.25	228.28	55.01	---	---	5516	15125	1379
62.25	202.72	61.94	---	---	5378	14987	1517
103.25	122.62	102.41	---	---	5240	14849	1655
127.25	99.68	125.97	---	---	5102	14711	1793
151.25	84.02	149.45	---	---	4964	14573	1931
179.25	71.05	176.73	---	---	4827	14436	2068
224.25	57.00	220.32	---	---	4689	14298	2206
278.25	46.13	272.22	---	---	4551	14160	2344
324.25	39.73	316.09	---	---	4413	14022	2482
351.25	36.75	341.69	---	---	4275	13884	2620
447.25	29.08	431.87	---	---	4137	13746	2758
495.25	26.36	476.46	---	---	3999	13608	2896
609.25	21.61	591.06	---	---	3723	13332	3172
706.25	16.77	748.77	---	---	3585	13194	3310
875.25	15.35	818.22	---	---	3448	13057	3448
978.25	13.34	907.55	---	---	3310	12919	3585
1135.25	12.06	1041.13	---	---	3172	12781	3723
1236.25	11.16	1125.45	---	---	3034	12643	3861
1475.25	9.51	1320.16	---	---	2896	12505	3999
1505.25	9.34	1344.13	---	---	2882	12491	4013
1565.25	9.02	1391.77	---	---	2827	12436	4068
1673.25	8.50	1476.51	---	---	2758	12367	4137
1785.25	8.03	1563.04	---	---	2689	12298	4206
1831.25	7.86	1598.18	---	---	2620	12229	4275
1983.25	7.33	1712.74	---	---	2551	12160	4344
2032.25	7.18	1749.17	---	---	2482	12091	4413
2200.25	6.71	1872.21	---	---	2344	11953	4551
2286.25	6.49	1934.11	---	---	2344	11953	4551
2381.25	6.27	2001.67	---	---	2344	11953	4551
2459.25	6.11	2056.50	---	---	2275	11884	4620

Pressure vs. Time

OMEGA WASKADA
7-4-2-26 WPM
LOWER AMARANTH INJECTOR
SEPTEMBER 1992

$m = 3241 \text{ kPa}$
 $p_R = 12925 \text{ kPa}$
 $s = 5.54 \text{ mD.m/MPa.s}$
 $[kh/\omega]_t = -6.4$



GENERAL WELL INFORMATION

13-34-1-26 WPM
Test Date: 92/07/16

GL: 460.4 m
KB: 464.9 m
MPP: 917 m
Datum: 904.9 mKB
Hydrostatic Head: 9526.5 kpa (Assuming a gradient of 10.44 kpa/m)
Last Shut-in Date: 90/08/10 Last Test Date
Actual Inj. (Hrs): 8169 hrs.
Actual Inj. (m³): 4106
Avg. Rate (m³/d): 12.06

ϕ = 16.4%
h = 6.75 m

P* = 8552 kPa
Pws = 11306 kPa
PR = 12329 kPa (Overcorrected)

Average reservoir pressure at MPP = $0.5(11306-8552)+8552=9929$ kPa (8939 kPag)
Average reservoir pressure at Datum = 9803 kPa (9893 kPag)

PRESSURE FALLOFF DATA
IN TERMS OF PRESSURE

OMEGA WASKADA
13-34-1-26 WPM

LOWER AMARANTH INJECTOR
SEPTEMBER 1992

Shut-in time hr	Horner time	Equiv time hr	Super time	Super Equiv time hr	Gauge Press RRD kPa	pws MPP kPa	del p kPa
0.00	---	---	---	---	7309	16925	---
0.07	22085.20	0.07	---	---	7171	16787	138
1.12	7296.66	1.12	---	---	7033	16649	276
2.25	3632.62	2.25	---	---	6895	16512	414
4.00	2043.79	4.00	---	---	6757	16374	552
6.25	1308.38	6.25	---	---	6619	16236	689
10.25	798.18	10.24	---	---	6481	16098	827
14.75	554.98	14.72	---	---	6343	15960	965
20.75	394.79	20.70	---	---	6206	15822	1103
28.70	287.71	28.40	---	---	6068	15684	1241
38.75	214.62	38.07	---	---	5930	15546	1379
51.75	158.90	51.42	---	---	5792	15408	1517
62.25	132.26	61.72	---	---	5654	15270	1655
77.75	106.10	77.02	---	---	5516	15133	1793
91.70	90.20	90.49	---	---	5378	14995	1931
112.25	73.79	112.72	---	---	5240	14857	2068
148.70	56.02	147.25	---	---	5102	14719	2206
186.70	50.08	183.18	---	---	4964	14581	2344
221.70	41.67	196.67	---	---	4827	14443	2482
257.70	36.92	227.21	---	---	4689	14305	2620
299.70	32.49	251.71	---	---	4551	14167	2758
307.70	27.37	296.25	---	---	4413	14029	2896
347.70	24.51	332.22	---	---	4275	13891	3034
397.70	21.53	372.21	---	---	4137	13754	3172
451.70	19.10	427.26	---	---	3999	13616	3310
494.70	17.52	466.28	---	---	3861	13478	3447
557.70	15.40	530.65	---	---	3723	13340	3585
627.70	13.83	600.22	---	---	3585	13202	3723
710.70	12.50	672.26	---	---	3448	13064	3861
787.70	11.22	712.29	---	---	3310	12926	3999
872.70	10.27	789.14	---	---	3172	12788	4137
967.70	9.19	888.29	---	---	3034	12650	4275
1086.70	8.52	958.29	---	---	2896	12512	4413
1229.70	7.87	1032.24	---	---	2758	12375	4551
1309.70	7.24	1128.63	---	---	2620	12237	4689
1430.70	6.71	1217.33	---	---	2482	12099	4827
1517.70	6.05	1271.22	---	---	2344	11961	4964
1584.70	5.85	1326.52	---	---	2310	11926	4999
1726.70	5.73	1425.24	---	---	2206	11823	5102
1804.70	5.53	1478.08	---	---	2138	11754	5171
2002.70	5.08	1603.29	---	---	1931	11547	5378

Shut-in time hr	Horner time	Equiv time hr	Super time	Super Equiv time hr	Gauge Press RRD kPa	pws MPP kPa	del p kPa
2171.70	4.76	1715.58	---	---	1793	11409	5516
2356.70	4.47	1829.02	---	---	1689	11306	5619

WATER PRESSURE FALLOFF ANALYSIS - HORNER

W. LA WASKADA
13-34-1-26 WPM

LOWER AMARANTH INJECTOR
SEPTEMBER 1992

INJECTION AND TIMES

Cumulative Injection = 4106.0 m³
Actual Flow Time = 8159.00 hr
Horner Flow Time = 8171.14 hr
Final Flow Rate qo = 0.0 m³/d
Final Flow Rate qg = 0.000 10 m³/d
Final Flow Rate qw = 12.1 m³/d

RESERVOIR PARAMETERS

Wellbore Radius rw = 0.100 m Reservoir Temp TR = 313 K
Wellbore Depth h = 6.0 m Water Saturation Sw = 1.000
Initial Porosity phi = 0.164 Oil Saturation So = 0.000

FLUID PROPERTIES

Compress. co = 0.00010127 1/kPa Viscosity mu = 0.650 mPa.s
Compress. cw = 0.00002300 1/kPa Vol. Exp. Bg = 0.0079096
Compress. cm = 0.00000044 1/kPa Vol. Exp. Cw = 1.166
Compress. co = 0.00000077 1/kPa Vol. Exp. Bw = 1.001
Compress. cg = 0.00000101 1/kPa Vol. Gas Rcw = 0.0 m³/m³

PRESSURES

Horner Extrap. p* = 2552 kPa
Initial Reservoir pi = --- kPa
Final Flowing pwf = 16925 kPa
1 Hour Shut-in pws1 = 25426 kPa
Average Test pwa = 11306 kPa

WATER PRESSURE FAILOFF ANALYSIS - HORNER

05.13A WASKADA
13-34-1-26 WPM

LOWER AMARANTH INJECTOR
SEPTEMBER 1992

SEMILOG STRAIGHT LINE RESULTS

Slope	m	=	4312 kPa
Transmissivity	$[kh/u]$	=	5.94 mD.m/mPa.s
	$[kh/u]_w$	=	5.94 mD.m/mPa.s
Mobility	$[k/u]$	=	0.38 mD/mPa.s
	$[k/u]_w$	=	0.38 mD/mPa.s
Flow Capacity	$[kh]_w$	=	7.56 mD.m
Permeability	k	=	0.57 mD
Skin Factor	s	=	-6.1
Pressure Drop Due to Skin		=	1.44 kPa
Flow Efficiency	FE	=	1.25
Damage Ratio	DR	=	0.16
Productivity Index	PI	=	0.0025946 m ³ /d/kPa
Radius of Inv.	r_{inv}	=	700 m

AVERAGE PRESSURE CALCULATION

Drainage Area	A	=	14 km ²
Well Configuration		=	PIB
Average Reservoir Pressure	P_R	=	12322 kPa

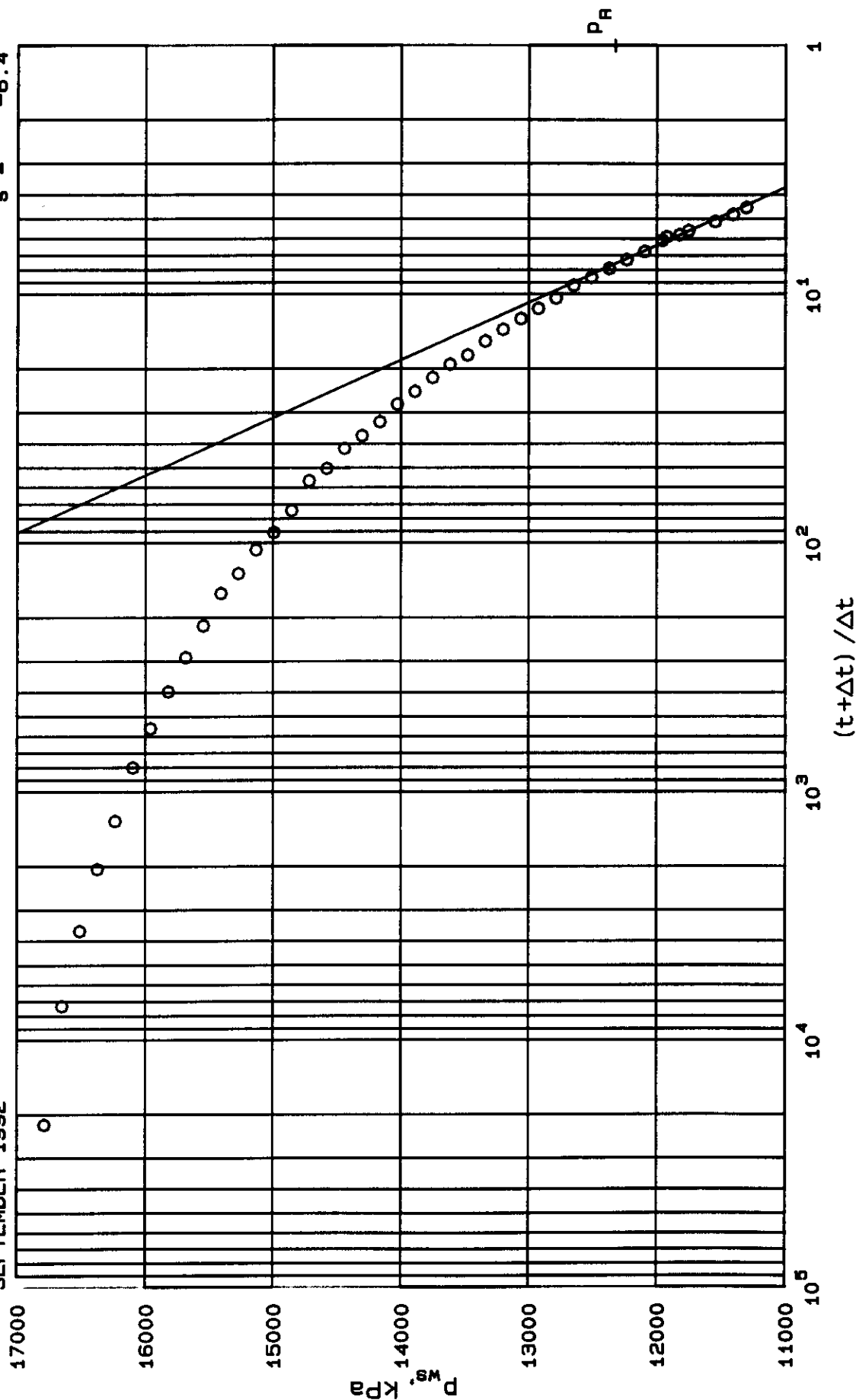
STABILIZED RATE PREDICTIONS

Time to Stabilization	t_{ss}	=	7360 hr
Stabilized Rate	q_s	=	12.0 m ³ /d
Productivity Index	PI	=	0.0025946 m ³ /d/kPa

11/01/92 11:00 AM 11/01/92 11:01 AM

OMEGA WASKADA
13-34-1-26 WPM
LOWER AMARANTH INJECTOR
SEPTEMBER 1992

$m = 4313 \text{ kPa}$
 $P_R = 12329 \text{ kPa}$
 $[kh/\omega]_t = 5.94 \text{ mD.m/MPa.s}$
 $s = -6.4$

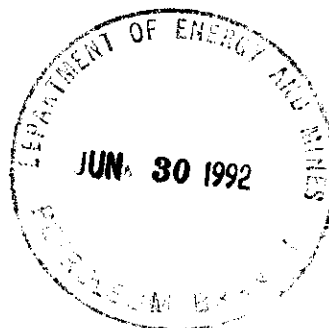


FILE : WASKADA FIELD
LOWER AMARANTH A POOL
PRESSURE SURVEY



1300 SUN LIFE PLAZA III
112 - 4TH AVENUE S.W.
CALGARY, ALBERTA, CANADA T2P 0H3
TELEPHONE (403) 261-0743
FAX (403) 264-5691

June 26, 1992



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

Attention: Mr. John Fox
Chief Petroleum Engineer

Dear Sir:

RE: 1992 Annual Pressure Survey
Omega Waskada 5-13-1-26 WPM
Omega Waskada 7-23-1-26 WPM
Omega Waskada 15-24-1-26 WPM

In accordance with the Pressure Maintenance rules contained in Board Order No. PM54 find attached a copy of a recently conducted pressure test for each of the aforementioned wells.

Should there be any questions or comments please contact the undersigned at (403) 261-0743.

Yours truly,

OMEGA HYDROCARBONS LTD.



K. Thomas
Production Technologist

KT/ns
C.C.: Waskada Pressure Data Binders
Wellfiles

GENERAL WELL INFORMATION

5-13-1-26 WPM

Test Date: 92/02/25

GL: 465.8 m

KB: 470.0 m

MPP: 916.5 mKB

Datum: 910.0 mKB

Hydrostatic Head: 9,524 kpa

Last Shut-in Date: 08/10/90

Actual Inj. (Hrs): 5,400

Actual Inj. (m³): 3,380.7

Avg. Rate (m³/d): 15.0

O = 13.8%

h = 4.7 m

P* = 9,826 kPa

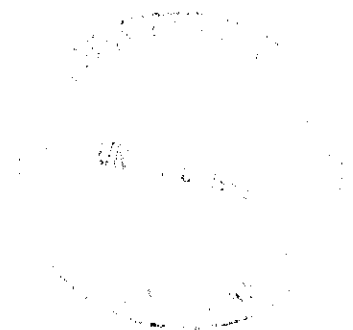
Pws = 11,269 kPa

Pr = 12,295 kPa (over corrected)

Pr = $0.5(11,269 - 9,826) + 9,826 = 10,547.5$

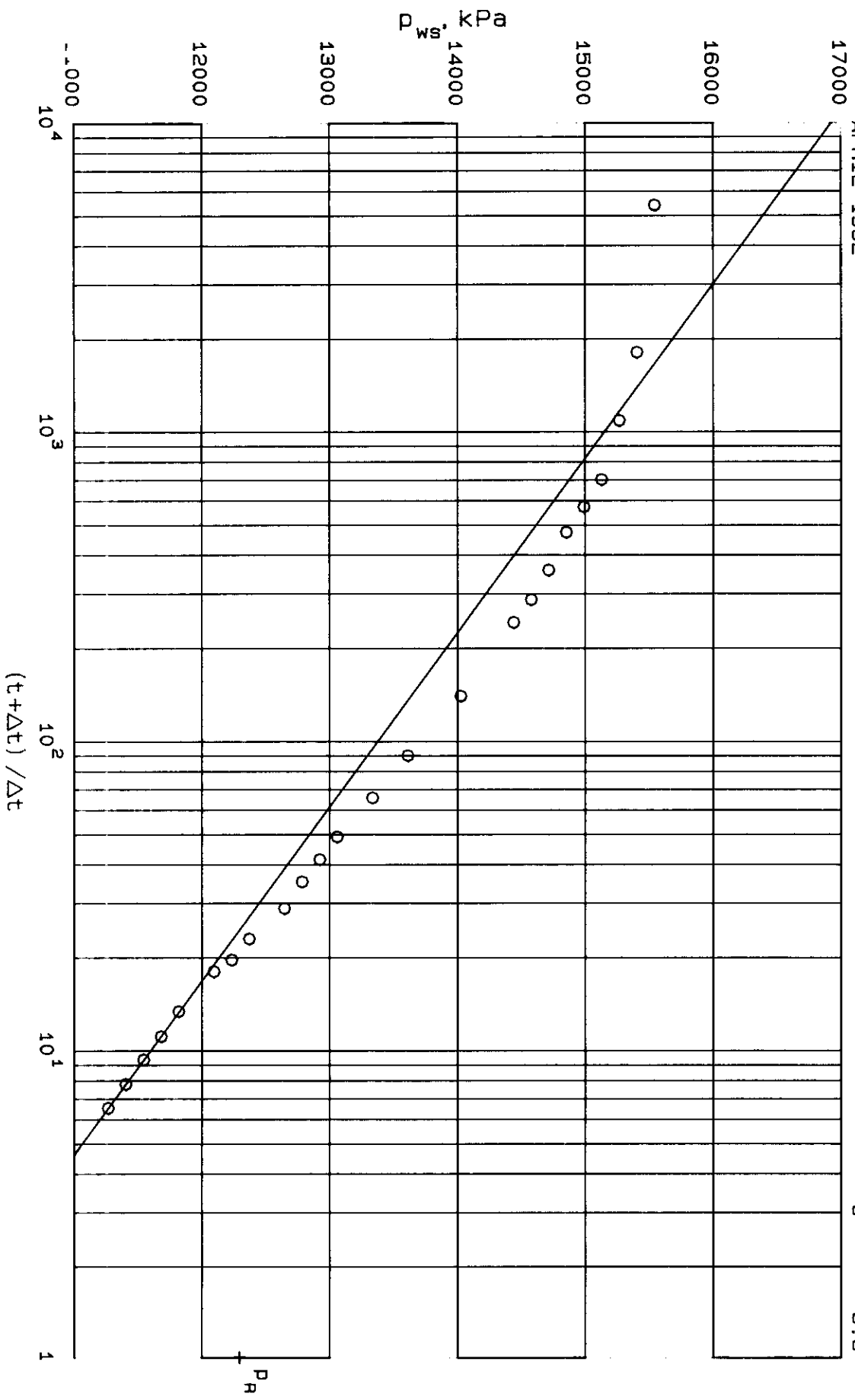
Average reservoir pressure at MPP = 10,548 kPa (10,458 kPag)

Average reservoir pressure at Datum = 10,490 kPa (10,390 kPag)

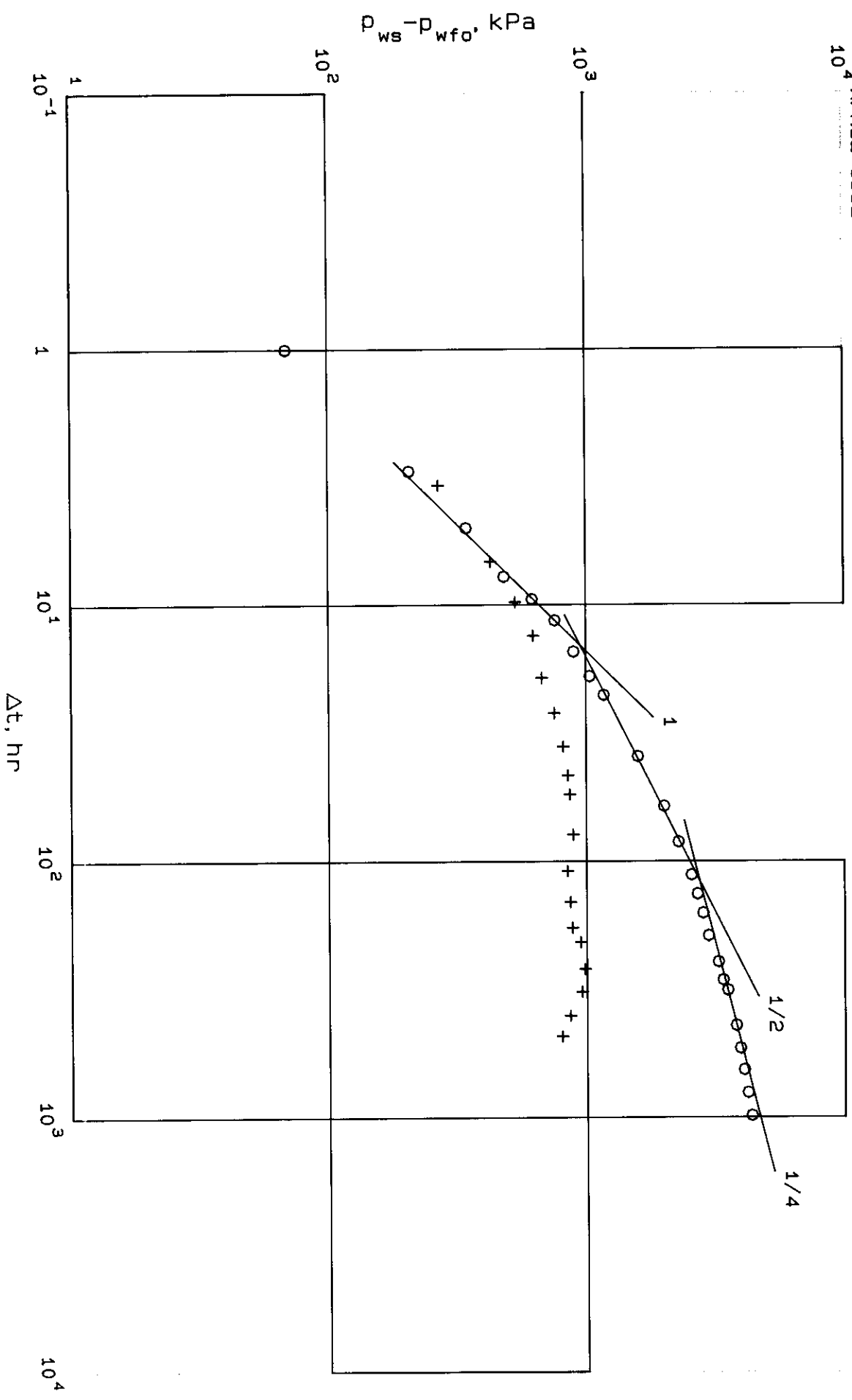


OMEGA WASKADA
 5-13-1-26 WPM
 LOWER AMARANTH WATER INJECTOR
 APRIL 1992

$m = 1775 \text{ kPa}$
 $P_R = 12295 \text{ kPa}$
 17.95 MD.m/mPa.s
 $s = -5.5$



OMEGA WASKADA
 5-13-1-26 WPM
 LOWER AMARANTH WATER INJECTOR
 APRIL 1992



○ Data points
 + Derivative

GENERAL WELL INFORMATION

7-23-1-26 WPM

Test Date: 92/04/13

GL: 466.4 m

KB: 470.7 m

MPP: 917.5 mKB

Datum: 910.7 mKB

Hydrostatic Head: 9,534 kpa (Assuming a gradient of 10.44 kpa/m)

Last Shut-in Date: 02/27/91

Actual Inj. (Hrs): 4,056

Actual Inj. (m³): 3,091.4

Avg. Rate (m³/d): 18.3

ϕ = 14.9%

h = 6.60 m

p^* = 8,271 kPa

p_{ws} = 9,624 kPa

p_r = 9,852 kPa (over corrected)

$p_r = 0.5(9,624 - 8,271) + 8,271 = 8,947.5$

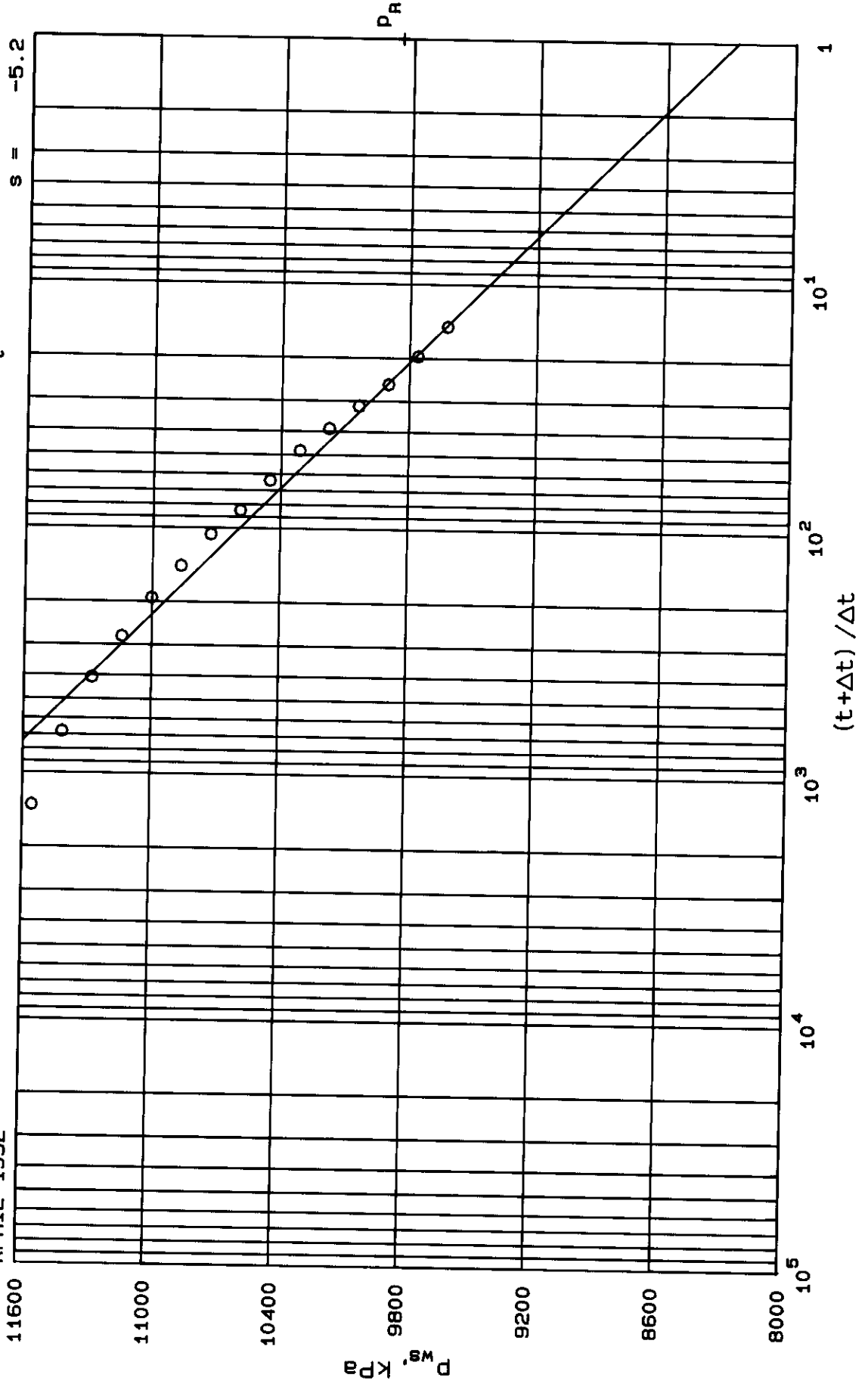
Average reservoir pressure at MPP = 8,948 kPa (8,858 kPag)

Average reservoir pressure at Datum = 8,877 kPa (8,787 kPag)

HORNER PRESSURE FALLOFF PLOT

OMEGA WASKADA
7-23-1-26 WPM
LOWER AMARANTH WATER INJECTOR
APRIL 1992

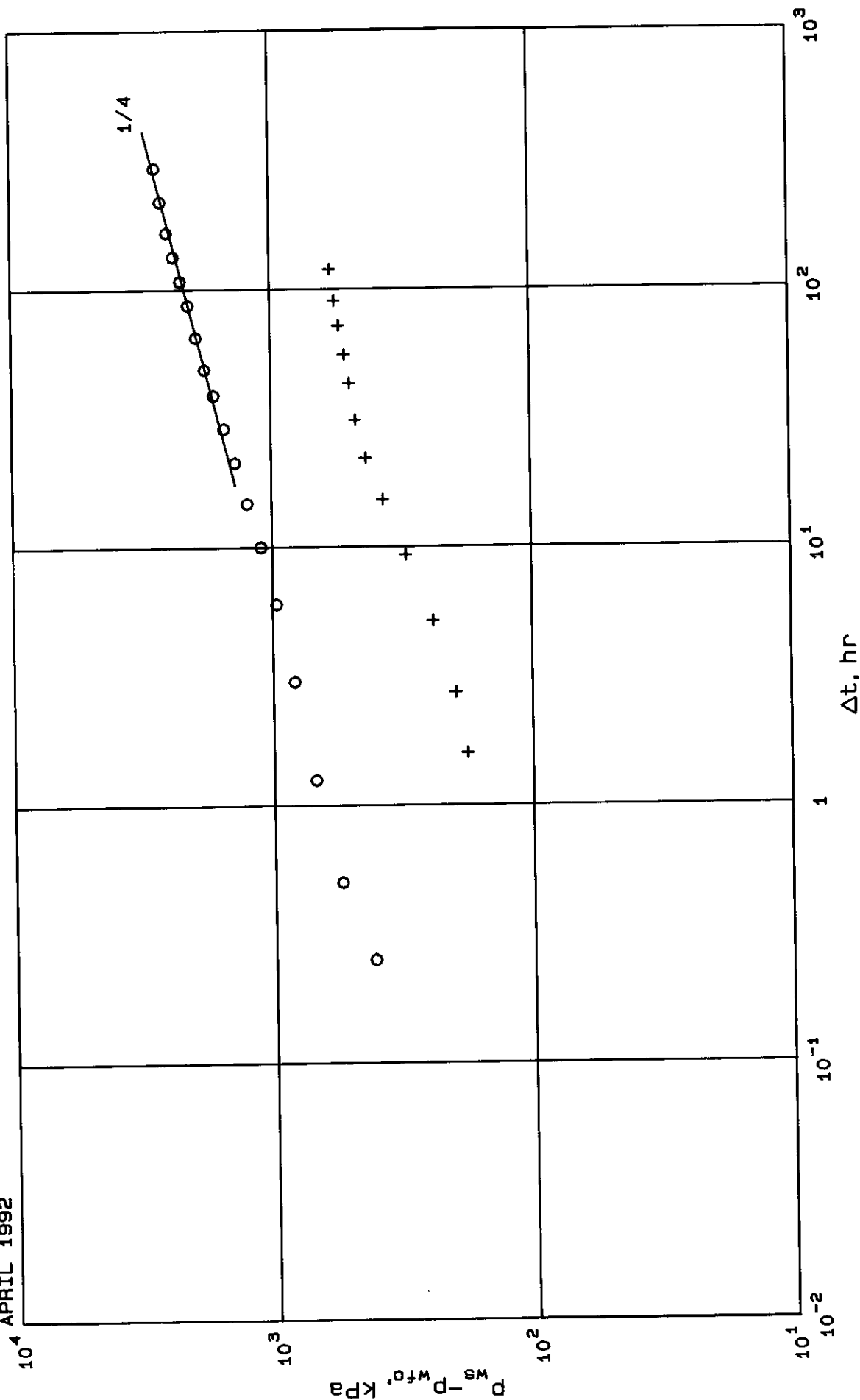
$m = 1159 \text{ kPa}$
 $p_R = 9852 \text{ kPa}$
 $[kh/\mu]_t = 33.56 \text{ mD.m/MPa.s}$
 $s = -5.2$



TYPE CURVE PRESSURE FALLOFF PLOT

OMEGA WASKADA
7-23-1-26 WPM
LOWER AMARANTH WATER INJECTOR
APRIL 1992

○ Data points
+ Derivative



WELL 11-07-11-36 WPM

DAY NO	DATE	TIME	DELTA TIME	PRESS (FEI)	PRESS (KPA)
1	04/13	15.75	0.00	400	2758.0
2		16.00	0.25	340	2344.3
3		16.25	0.50	320	2206.4
4		17.00	1.25	300	2063.5
5		18.75	3.00	150	1530.6
6		20.75	6.00	200	1792.7
7	04/14	1.75	10.00	240	1654.5
8		3.50	14.75	220	1516.9
9		12.00	21.25	200	1379.0
10		20.50	29.75	190	1341.1
11	04/15	21.50	38.75	160	1103.2
12		16.50	48.75	140	965.3
13	04/16	8.75	65.00	120	877.4
14	04/17	0.00	86.75	100	689.5
15	04/18	0.75	107.5	50	551.6
16	04/17	5.00	133.75	60	413.7
17	04/20	17.00	165.75	40	275.8
18	04/22	18.00	219.75	20	137.9
19	04/25	22.00	294.75	0	0.0

GENERAL WELL INFORMATION

15-24-1-26 WPM
Test Date: 92/03/23

GL: 466.3 m
KB: 470.8 m
MPP: 913.0 mKB
Datum: 910.8 mKB
Hydrostatic Head: 9,485 kpa (Assuming a gradient of 10.44 kpa/m)
Last Shut-in Date: 10/10/90
Actual Inj. (Hrs): 6,588
Actual Inj. (m³): 3,293.3
Avg. Rate (m³/d): 12.0

$\phi = 13.7\%$
 $h = 7.2 \text{ m}$

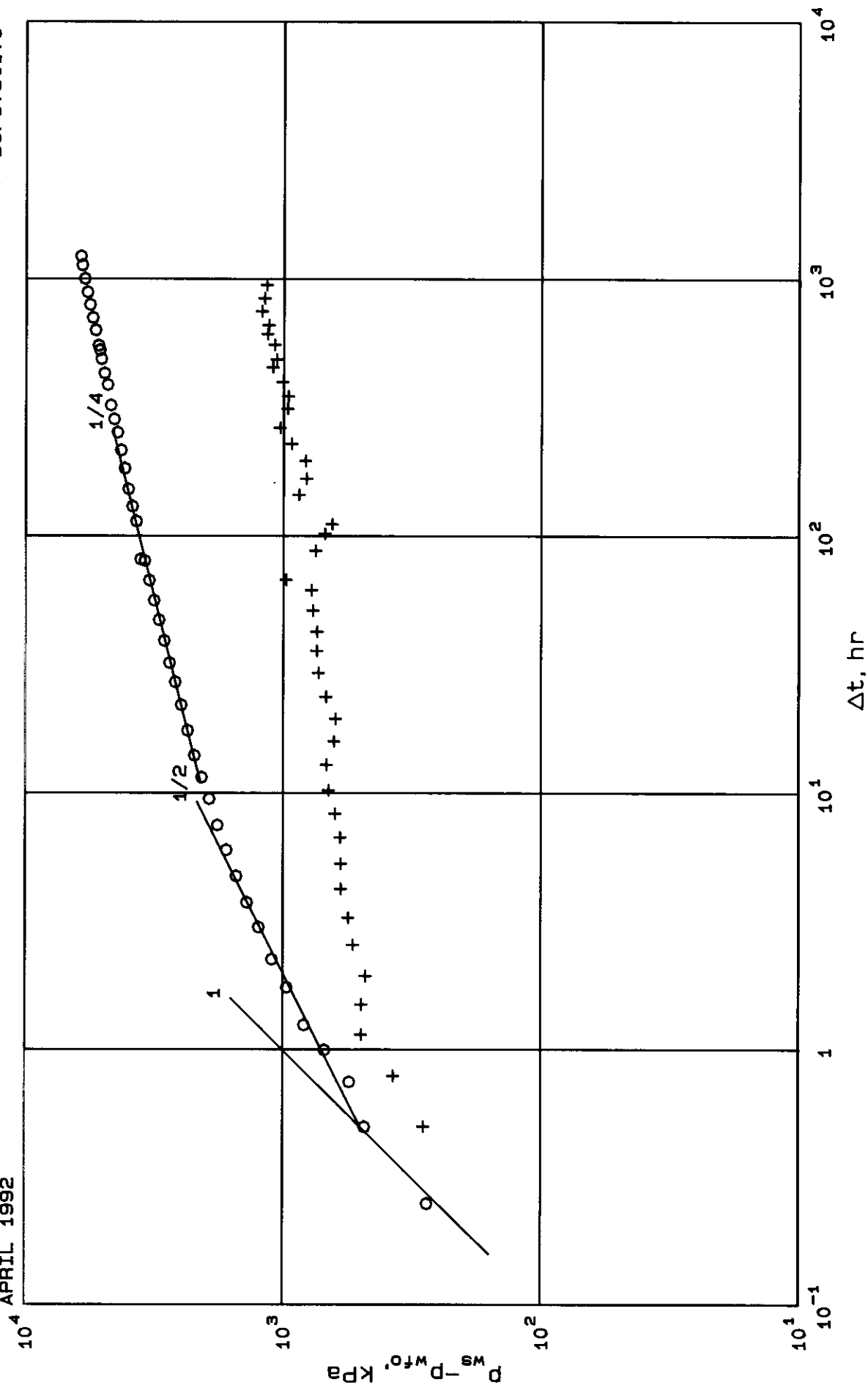
$P^* = 8,536 \text{ kPa}$
 $P_{ws} = 10,885 \text{ kPa}$
 $P_r = 11,400 \text{ kPa (over corrected)}$
 $P_r = 0.5(10,885 - 8,536) + 8,536 = 9710.5$

Average reservoir pressure at MPP = 9,711 kPa (9,621 kPag)
Average reservoir pressure at Datum = 9,688 kPa (9,598 kPag)

TYPE CURVE PRESSURE FALLOFF PLOT

OMEGA WASKADA
15-24-1-1-26 WPM
LOWER AMARANTH WATER INJECTOR
APRIL 1992

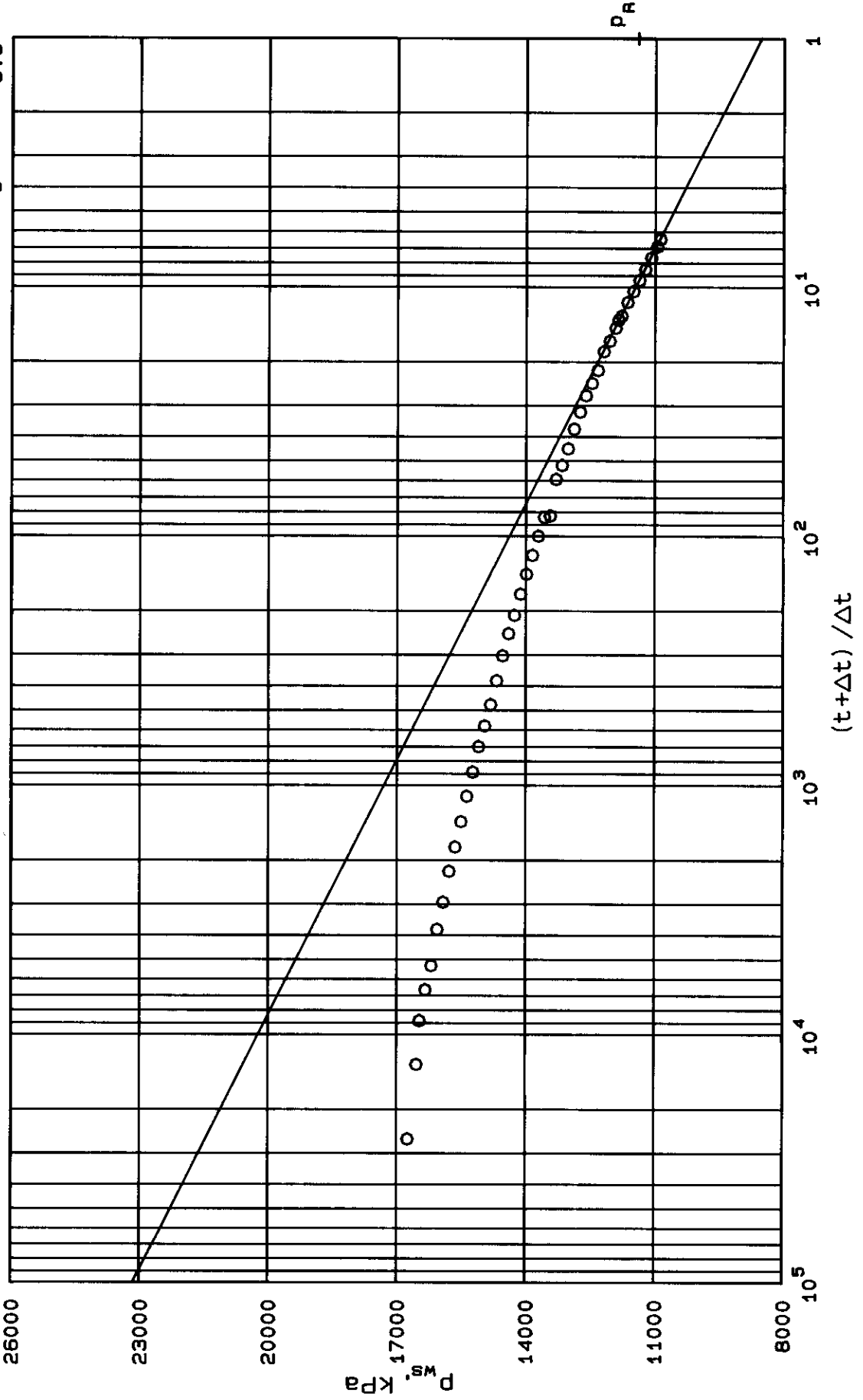
○ Data points
+ Derivative



HORNER PRESSURE FALLOFF PLOT

OMEGA WASKADA
15-24-1-26 WPM
LOWER AMARANTH WATER INJECTOR
APRIL 1992

$m = 2923 \text{ KPa}$
 $p_R = 11400 \text{ KPa}$
 $[kh/\omega]_t = 8.72 \text{ mD.m/mPa.s}$
 $s = -5.5$



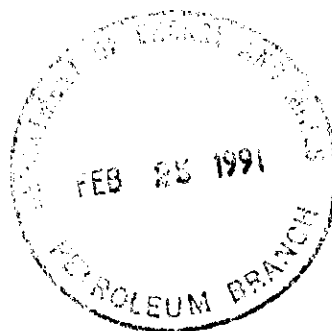
03-15-19-1-26 WFM

DATA NO	DATE	TIME	DELTA TIME	PRESS (PSI)	PRESS (KPA)
0	03/23	15.00	0.00	1080	7446.6
0		15.25	0.25	1040	7170.8
0		15.50	0.50	1010	6964.0
0		15.75	0.75	1000	6895.0
0		16.00	1.00	980	6757.1
0		16.25	1.25	960	6619.2
0		16.75	1.75	940	6481.3
0		17.25	2.25	920	6343.4
0		18.00	3.00	900	6205.5
0		18.75	3.75	880	6067.6
0		19.75	4.75	860	5929.7
0		21.00	6.00	840	5791.8
0		22.50	7.50	820	5653.9
1	03/24	0.50	9.50	800	5516.0
1		2.50	11.50	780	5378.1
1		5.00	14.00	760	5240.2
1		8.50	17.50	740	5102.3
1		17.00	22.00	720	4964.4
1		19.00	27.00	700	4826.5
1		23.00	32.00	680	4688.6
1	03/25	5.00	39.00	660	4550.7
1		14.00	47.00	640	4412.8
1		20.00	56.00	620	4274.9
1	03/26	10.00	67.00	600	4137.0
1		23.00	80.00	580	3999.1
4	03/27	12.00	81.00	560	3861.2
5	03/28	9.00	114.00	540	3723.3
6	03/29	1.00	130.00	520	3585.4
1		23.00	152.00	500	3447.5
7	03/31	6.00	183.00	480	3309.6
9	04/01	14.00	215.00	460	3171.7
11	04/03	3.00	252.00	440	3033.8
12	04/04	11.00	284.00	420	2895.9
14	04/06	1.00	322.00	400	2758.0
16	04/06	18.00	387.00	380	2620.1
18	04/10	12.00	429.00	360	2482.2
20	04/12	23.00	488.00	340	2344.3
22	04/14	16.00	529.00	330	2275.4
23	04/15	14.00	551.00	320	2206.4
25	04/18	23.00	632.00	300	2068.5
29	04/22	7.00	706.00	280	1930.6
33	04/25	16.00	773.00	260	1792.7
37	04/29	14.00	887.00	240	1654.8
41	05/06	8.00	1001.00	220	1516.9
45	05/09	17.00	1130.00	200	1379.0
51	05/12	16.00	1225.00	190	1310.1



300 SUN LIFE PLAZA III
12 - 4TH AVENUE S.W.
CALGARY, ALBERTA, CANADA T2P 0H3
TELEPHONE (403) 261-0743
FAX (403) 264-5691

February 22, 1991



Manitoba Energy & Mines
Petroleum Branch
555 - 330 Graham Avenue
Winnipeg, Manitoba
R3C 4E3

Attention: Mr. John Fox
Chief Petroleum Engineer

Dear Sir:

RE: 1991 Annual Pressure Survey
Omega Waskada 15-30-1-25 WPM
Omega Waskada 7-13-1-26 WPM
Omega Waskada 7-33-1-26 WPM
Omega Waskada 7-36-1-26 WPM

In accordance with the Pressure Maintenance rules contained in Board Order No. PM4 please find attached a copy of a recently conducted pressure test for each of the aforementioned wells. Attachment 1 contains a summary of the results obtained from the static gradient test.

Should there be any questions or comments, please contact the undersigned at (403) 261-0743.

Yours truly,

OMEGA HYDROCARBONS LTD.

K. Thomas
Production Technologist

KT/jb
c.c.: Waskada Pressure Data Binders
Wellfiles

1991 Annual Pressure Survey
Waskada Lower Amaranth Injection Wells

Well	Pool	Test Date	Shut In Time (hrs.)	Pressure @ MPP (kPag)	Pressure @ Datum (kPag)
15-30-1-25 WPM	LAm	91/02/08	93.43	7849	7876
7-13-1-26 WPM	LAm	91/02/08	365.95	9550	9471
7-33-1-26 WPM	LAm	91/01/25	360.00	8036	7946
7-36-1-26 WPM	LAm	91/02/08	379.78	7997	8026

Lower Amaranth Datum Depth = 440 m subsea

Omega Waskada 15-30
15-30-1-25 WLM
Lower Amaranth Formation

Static Gradient Test
February 8, 1991

BASIC DATA

COMPANY: Omega Hydrocarbons Ltd.		WELL NAME: Omega Washada 15-30	
ADDRESS: Calgary, Alberta		UNIQUE WELL IDENTIFIER: 15-30-001-25 W1M	
FIELD AND POOL: Washada / Lower Ameranth		STATUS:	
TYPE OF TEST: Static Gradient Test		DATE OF TEST: Y 91 M 02 D 08 TO Y M D	
PRODUCING INTERVAL (m,CF): 898.0-916.5		PRODUCING THROUGH: 60.3 mm TUBING 892.5	
ELEVATION: (CF) 470.2 m (KB) 474.7 m		mm CASING	
POOL DATUM (SUBSEA): -440.0		MID POINT OF PRODUCING (MPP) INTERVAL (m,CF): 907.3 ✓	
ELEMENT SERIAL NO: RANGE(GAUGE) kPa		DATUM DEPTH OF WELL FROM (m,CF): 910.2	
CALIBRATION EQUATION: See calibration report		CLOCK RANGE: 3 hrs LAST CALIBRATION: See Cal. Report	

STATIC TEST

TUBING PRESSURE: Vacuum	kPag	SHUT-IN DATE: 1600 hrs Feb. 04/91	DURATION: 93.43 hrs
CASING PRESSURE: 2025	kPag	DATE ON BOTTOM: Feb. 08/91	@ 1311 hrs
RUN DEPTH (m,CF): 907.0		DATE OFF BOTTOM: Feb. 08/91	@ 1326 hrs
E.F. TEMP: 38 °C	R.D. PRESSURE 7847 kPag	MPP PRESSURE: 7849	kPag
SURFACE TEMP: °C	GRADIENT 9.291 kPa/m	DATUM DEPTH PRESSURE (GAUGE): 7876	kPag

ACOUSTIC WELL SOUNDER TEST

NOT APPLICABLE

BUILD-UP OR DRAWDOWN TEST

NOT APPLICABLE

CHART READINGS AND CALCULATIONS FOR STATIC TEST

SEE NEXT PAGE

COMMENTS

Estimated liquid level at 135 m,CF

SURVEYED BY: M.M.	TESTED BY: S. Hound	COMPUTED BY: Rory Hale	CHECKED BY:
-------------------	---------------------	------------------------	-------------

Report Date: Feb 13, 1991.

Page 2 of 5

Well/Notes: Omega Waskada 15-30

Location : 15-30-001-25 WIM

Pack : Lower Amaranth

Date Of Test: Feb. 08/91

----- Upper Gauge -----
Serial # 049699 Range 17237

----- Lower Gauge -----
Serial # 053976 Range 17237

Start Time		Corrected				Corrected			
Time	Time	Depth	Deflect	Pressure	Grad.	Depth	Deflect	Pressure	Grad.
hh:mm	hh:mm	(m)	(mm)	(kPag)	(kPa/m)	CF(m)	(mm)	(kPag)	(kPa/m)
12:17	12:22	Surf	0.000	0.0		Surf	0.000	0.0	
12:23	12:28	98.0	0.000	0.0	0.000	100.0	0.000	0.0	0.000
12:29	12:34	198.0	2.026	681.1	6.811	200.0	1.927	677.2	6.772
12:35	12:40	298.0	5.067	1703.3	10.223	300.0	4.878	1714.3	10.371
12:41	12:46	398.0	8.139	2736.0	10.327	400.0	7.773	2731.7	10.174
12:47	12:52	498.0	11.170	3754.4	10.184	500.0	10.823	3801.7	10.699
12:53	12:58	598.0	14.229	4781.0	10.266	600.0	13.745	4822.8	10.211
12:59	13:04	698.0	17.260	5798.2	10.172	700.0	16.725	5864.1	10.414
13:05	13:10	798.0	20.299	6818.2	10.199	800.0	19.553	6852.4	9.882
13:11	13:26	905.0	23.214	7797.6	9.154	907.0	22.396	7846.5	9.291

Comments:

TBS pressure by DWG = Vacuum
CSB pressure by DWG = 2025 kPag
Temperature at run depth = 38 C
Estimated liquid level at 135 m,CF

STATIC GRADIENT

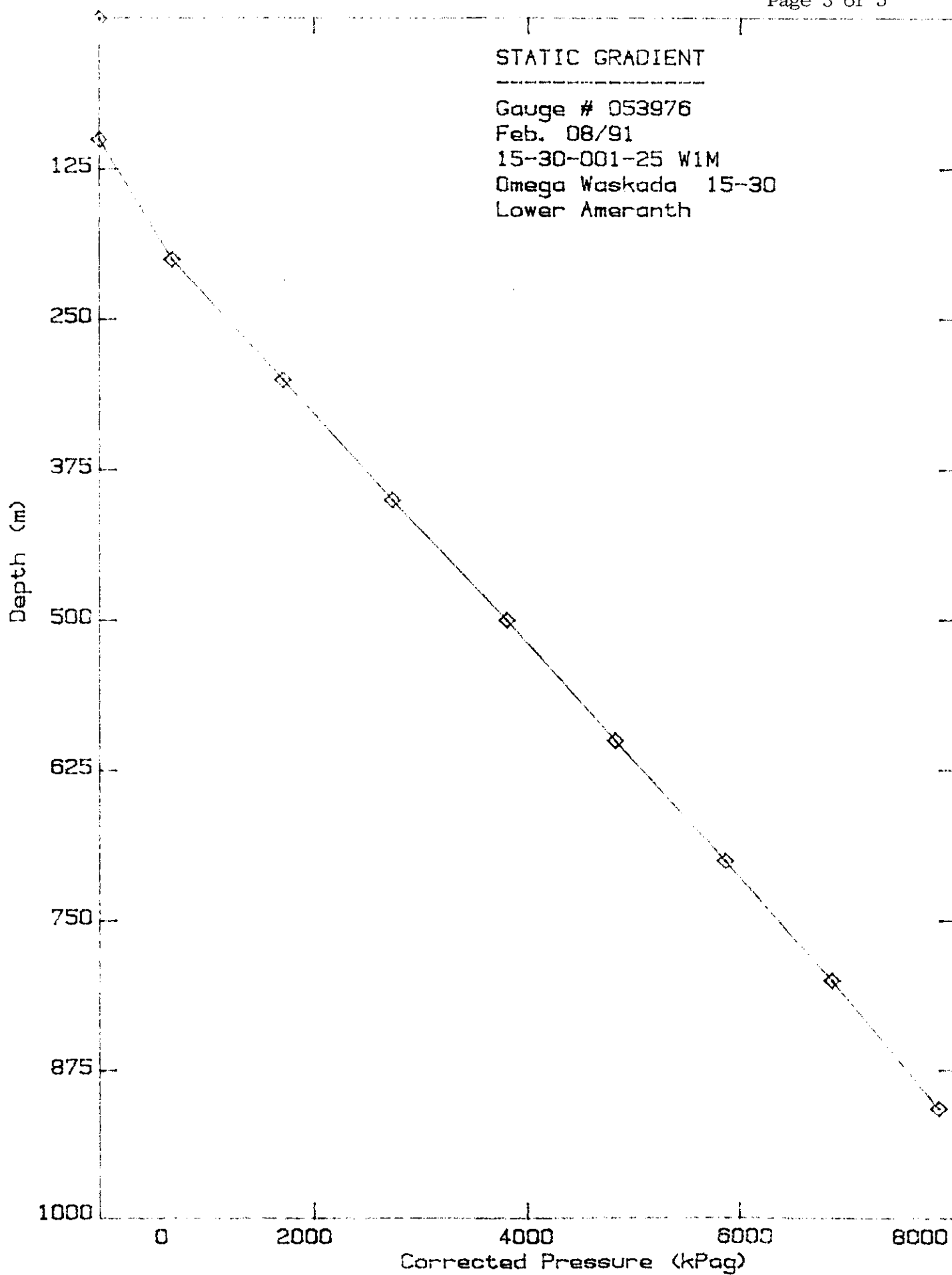
Gauge # 053976

Feb. 08/91

15-30-001-25 W1M

Omega Waskada 15-30

Lower Ameranth



Reporting Date: Feb 13, 1991

Page 4 of 5

Serial No: 049699
Senge: 17237
Cal Temp (air): 21
Cal Temp (bath):
Bath Cal Date: 12-03-90
Last Air Cal Date: 05-01-90
Curr Air Cal Date: 12-03-90
Recorder Section No:
Comments:
Owner: MOOSE MOUNTAIN

Press (kPag)	First (mm)	Second (mm)	Average (mm)	P - Pc (kPa)	Bath (mm)
0	0.000	0.000	0.000	0.59	0.000
3448	10.257	10.257	10.257	2.07	0.000
6895	20.528	20.528	20.528	-2.14	0.000
10343	30.789	30.789	30.789	-2.00	0.000
13790	41.044	41.044	41.044	-0.85	0.000
17237	51.293	51.293	51.293	2.33	0.000
Sum:				-0.00	

Previous m = 336.030
Previous A = -0.930

Present m = 336.016
Present A = -0.589

Present Press = 17069.02
Previous Press = 17069.39

Deviation = -0.38
Acc. Deviation = 43.09

Reporting Date: Oct 13, 1991

Page 5 of 5

Series No: 053976
Range: 1723'
Cal Temp (air): 70
Cal Temp (bath):
Bath Cal Date: 12-03-90
Last Air Cal Date: 08-24-89
Curr Air Cal Date: 12-03-90
Recorder Section No:
Comment:
Owner: MOOSE MOUNTAIN

Press (kPag)	First (mm)	Second (mm)	Average (mm)	P - Pc (kPa)	Bath (mm)
0	0.000	0.000	0.000	-5.62	0.000
3448	9.811	9.811	9.811	7.71	0.000
6895	19.675	19.675	19.675	1.49	0.000
10343	29.535	29.535	29.535	-2.33	0.000
13790	39.382	39.382	39.382	-2.59	0.000
17237	49.217	49.217	49.217	1.34	0.000
Sum:				0.00	

Previous m = 350.090

Previous A = 5.290

Present m = 350.083

Present A = 5.625

Present Press = 17789.84

Previous Press = 17789.86

Deviation = -0.02

Acc. Deviation = 43.09

Omega Waskada 7-13
7-13-1-26 WLM
Lower Amaranth Formation

Static Gradient Test
February 8, 1991

E I C DATA

COMPANY: Omega Hydrocarbons Ltd.		WELL NAME: Omega Waskada 07-13	
ADDRESS: Calgary, Alberta		UNIQUE WELL IDENTIFIER: 07-13-001-26 WIM	
FIELD AND POOL: Waskada / Lower Anadarko		STATUS:	
TYPE OF TEST: Static Gradient Test		DATE OF TEST: Y 91 M 02 D 06 TO Y M D	
PRODUCING INTERVAL (m,CF): 905.8-912.8	PERF	PRODUCING THROUGH: 60.3 mm TUBING 935.9	
ELEVATION: (OF) 466.5 m (NB) 470.7 m		mm CASING	
POOL DATUM (SUBSEA): -440.0		MID POINT OF PRODUCING (MPP) INTERVAL (m,CF): 914.3	
ELEMENT SERIAL NO:	RANGE(GAUGE)	DATUM DEPTH OF WELL FROM (m,CF): 906.5	
CALIBRATION EQUATION: See calibration report		CLOCK RANGE: 3 hrs LAST CALIBRATION: See Cal. Report	

STATIC TEST

TUBING PRESSURE: 615	kPag	SHUT-IN DATE: 0915 hrs Jan. 24/91	DURATION: 365.95	hrs
CASING PRESSURE: 3035	kPag	DATE ON BOTTOM: Feb. 08/91	@ 1457	hrs
RUN DEPTH (m,CF): 914		DATE OFF BOTTOM: Feb. 08/91	@ 1512	hrs
B.H. TEMP: 40 °C	R.D. PRESSURE 9547	kPag	MPP PRESSURE: 9550	kPag
SURFACE TEMP:	°C GRADIENT 10.132	kPa/m	DATUM DEPTH PRESSURE (GAUGE): 9471	kPag

ACOUSTIC WELL SOUNDER TEST

NOT APPLICABLE

BUILD-UP OR DRAWDOWN TEST

NOT APPLICABLE

CHART READINGS AND CALCULATIONS FOR STATIC TEST

SEE NEXT PAGE

COMMENTS

Estimated liquid level at 200 m,CF

SURVEYED BY: M.M.	TESTED BY: S. Hound	COMPUTED BY: Rory Hale	CHECKED BY:
-------------------	---------------------	------------------------	-------------

Reporting Date: Feb 13, 1991.

Page 2 of 5

WellName: Omega Waskada 07-13

Location : 07-13-001-26 WH

Pool : Lower Annapoli

Date Of Test: Feb. 08/91

----- Upper Gauge -----
 Serial # 043379 Range 17237

----- Lower Gauge -----
 Serial # 053976 Range 17237

Start (d-d)	Time	Time	Depth	Deflect	Corrected	Grad.	Depth	Deflect	Corrected	Grad.
mm	mm	mm	CF(m)	(mm)	(kPag)	(kPa/m)	CF(m)	(mm)	(kPag)	(kPa/m)
14:02	14:07		Surf	1.777	597.4		Surf	1.709	600.6	
14:09	14:14		98.0	4.260	1432.0	8.517	100.0	4.143	1456.0	8.554
14:15	14:20		198.0	6.777	2278.2	8.461	200.0	6.556	2304.0	8.480
14:21	14:26		298.0	9.815	3299.4	10.213	300.0	9.482	3332.3	10.283
14:27	14:32		398.0	12.876	4327.0	10.275	400.0	12.384	4347.2	10.144
14:33	14:38		498.0	15.881	5335.4	10.085	500.0	15.334	5378.0	10.309
14:39	14:44		598.0	18.946	6364.1	10.286	600.0	18.243	6394.6	10.166
14:45	14:50		698.0	21.981	7383.3	10.192	700.0	21.038	7371.6	9.771
14:51	14:56		798.0	24.996	8396.4	10.131	800.0	23.956	8392.0	10.204
14:57	15:02		912.0	28.457	9549.3	10.113	914.0	27.259	9547.1	10.132

Comments:

TBG pressure by DWG = 615 kPag
 CSG pressure by DWG = 3035 kPag
 Temperature at run depth = 40 C
 Estimated liquid level at 200 m, CF

STATIC GRADIENT

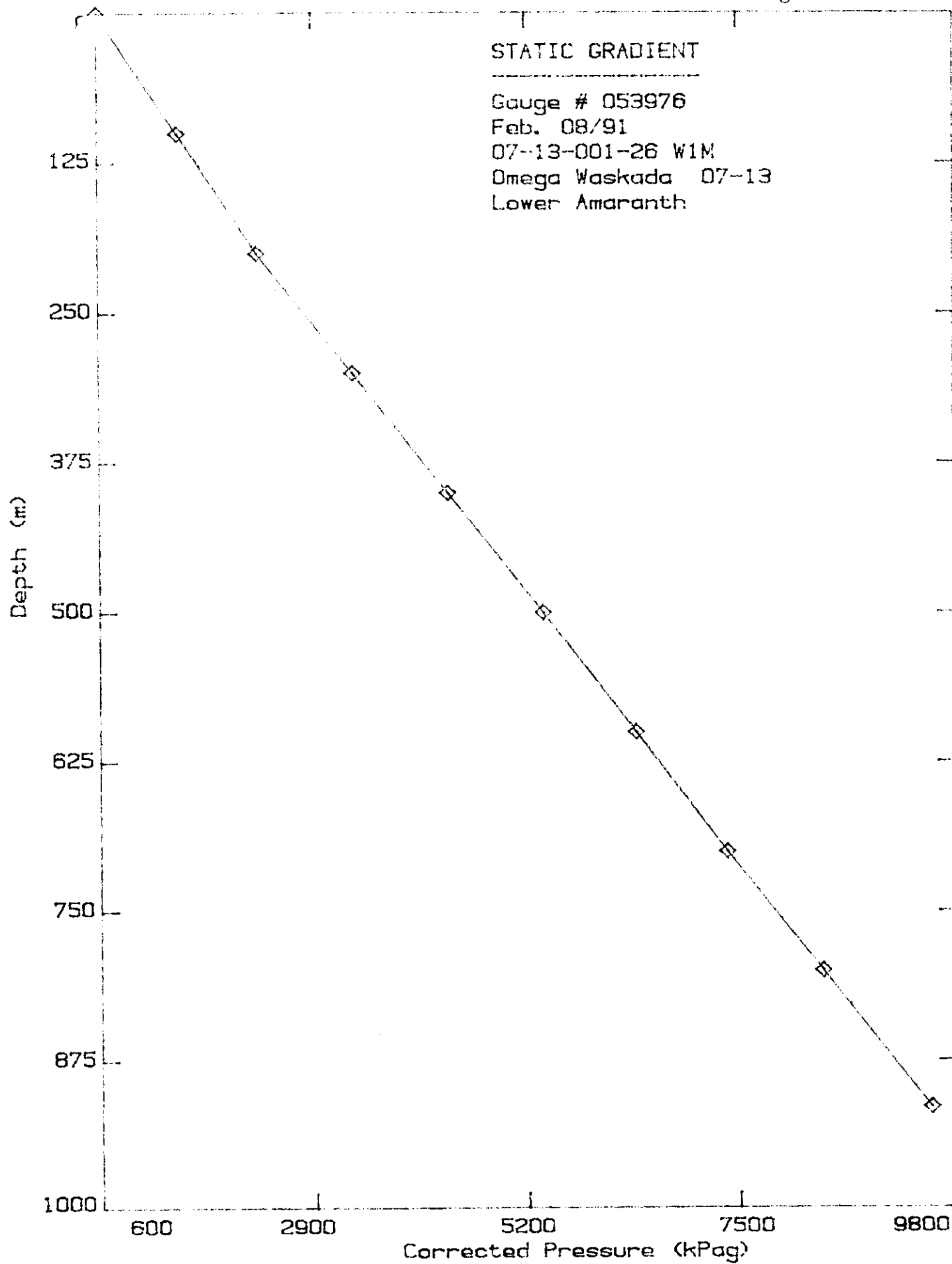
Gauge # 053976

Feb. 08/91

07-13-001-26 W1M

Omega Waskada 07-13

Lower Amaranth



Reporting Date: Feb 20, 1991

Page 4 of 5

Serial No: 004609
 Range: 1773"
 Cal Temp (air): 11
 Cal Temp (bath):
 Bath Cal Date: 12-03-90
 Last Air Cal Date: 03-01-90
 Curr Air Cal Date: 10-03-90
 Recorder Section No:
 Comment:
 Owner: MOOSE MOUNTAIN

Press (kPag)	First (mm)	Second (mm)	Average (mm)	P - Pc (kPa)	Bath (mm)
0	0.000	0.000	0.000	0.59	0.000
3448	10.257	10.257	10.257	2.07	0.000
6895	20.520	20.520	20.520	-2.14	0.000
10343	30.789	30.789	30.789	-2.00	0.000
13790	41.044	41.044	41.044	-0.85	0.000
17237	51.293	51.293	51.293	2.33	0.000
Sum:				-0.00	

Previous m = 336.030
 Previous A = -0.930

Present m = 336.016
 Present A = -0.589

Present Press = 17069.02
 Previous Press = 17069.39

Deviation = -0.38
 Acc. Deviation = 43.09

Reporting Date: Feb 13 1991

Page 5 of 5

Serial No: 021956
Range: 17787
Cal Temp (air): 23
Cal Temp (bath):
Bath Cal Date: 12-01-90
Last Air Cal Date: 04-24-89
Curr Air Cal Date: 12-03-90
Recorder Section No:
Comment:
Owner: MOOSE MOUNTAIN

Press (kPag)	First (mm)	Second (mm)	Average (mm)	P - Pc (kPa)	Bath (mm)
0	0.000	0.000	0.000	-5.62	0.000
3448	9.811	9.811	9.811	7.71	0.000
6895	19.675	19.675	19.675	1.49	0.000
10343	29.535	29.535	29.535	-2.33	0.000
13790	39.382	39.382	39.382	-2.59	0.000
17237	49.217	49.217	49.217	1.34	0.000
Sum:				0.00	

Previous m = 350.090
Previous A = 5.290

Present m = 350.083
Present A = 5.625

Present Press = 17787.80
Previous Press = 17787.86

Deviation = -0.02
Acc. Deviation = 43.09

Omega et al Waskada 7-33
7-33-1-26 WLM
Lower Amaranth Formation

Static Gradient Test
January 25, 1991

SIC DATA

COMPANY: Omega Hydrocarbons Ltd.		WELL NAME: Omega et al Waskada 07-33	
ADDRESS: Calgary / Alberta		UNIQUE WELL IDENTIFIER: 07-33-001-26 W1M	
FIELD AND POOL: Waskada / Lower Amaranth		STATUS:	
TYPE OF TEST: Static Gradient Test		DATE OF TEST: Y 91 M 01 D 25 TO Y M D	
PRODUCING INTERVAL (m,CF): 905.5-912.5		PERF PRODUCING THROUGH: 60.3 mm TUBING 922.1	
ELEVATION: (CF) 460.1 m (KB) 464.6 m		114.3 mm CASING 952.5	
POOL DATUM (SUBSEA): -440.0		MID POINT OF PRODUCING (MPP) INTERVAL (m,CF): 909.0	
ELEMENT SERIAL NO: RANGE(BAUGE) kPa		DATUM DEPTH OF WELL FROM (m,CF): 900.1	
CALIBRATION EQUATION: See calibration Report		CLOCK RANGE: 3 hrs LAST CALIBRATION: See Cal. Report	

STATIC TEST

TUBING PRESSURE: Vacuum	kPag	SHUT-IN DATE: Jan. 10/91	DURATION:	hrs
CASING PRESSURE: 455	kPag	DATE ON BOTTOM: Jan. 25/91	@ 1409	hrs
RUN DEPTH (m,CF): 909		DATE OFF BOTTOM: Jan. 25/91	@ 1419	hrs
B.H. TEMP: 37 °C	R.D. PRESSURE 8036.2 kPag	MPP PRESSURE: 8036.2		kPag
SURFACE TEMP: °C	GRADIENT 10.155 kPa/m	DATUM DEPTH PRESSURE (BAUGE): 7946		kPag

ACOUSTIC WELL SOUNDER TEST

NOT APPLICABLE

BUILD-UP OR DRAWDOWN TEST

NOT APPLICABLE

CHART READINGS AND CALCULATIONS FOR STATIC TEST

SEE NEXT PAGE

COMMENTS

Estimated liquid level at 125 m,CF

SURVEYED BY: M.M.	TESTED BY: S.H.	COMPUTED BY: R. Hale	CHECKED BY:
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Reporting Date: Jan 28, 1991,

Page 2 of 5

WellName: Omega et al Waskada 07-33

Location : 07-33-001-26 W1M

Pool : Lower Amaranth

Date Of Test: Jan. 25/91

----- Upper Gauge -----						----- Lower Gauge -----				
Serial # 045301 Range 13790						Serial # 045299 Range 13790				
Start Time	End Time	Depth	Deflect	Corrected Pressure	Grad.	Depth	Deflect	Corrected Pressure	Grad.	
hh:mm	hh:mm	CF(m)	(mm)	(kPag)	(kPa/m)	CF(m)	(mm)	(kPag)	(kPa/m)	
13:14	13:19	Surf	0.000	0.0		Surf	0.000	0.0		
13:21	13:26	98.0	0.000	0.0	0.000	100.0	0.000	0.0	0.000	
13:27	13:32	198.0	2.753	763.0	7.630	200.0	2.837	774.2	7.742	
13:33	13:38	298.0	6.498	1800.5	10.375	300.0	6.621	1806.5	10.322	
13:39	13:44	398.0	10.215	2830.5	10.300	400.0	10.369	2829.1	10.227	
13:45	13:50	498.0	13.926	3861.2	10.308	500.0	14.137	3860.7	10.315	
13:51	13:56	598.0	17.617	4886.4	10.252	600.0	17.860	4879.8	10.192	
13:57	14:02	698.0	21.315	5916.5	10.301	700.0	21.595	5905.9	10.261	
14:03	14:08	798.0	24.972	6939.4	10.229	800.0	25.301	6929.4	10.234	
14:09	14:19	907.0	28.902	8038.7	10.085	909.0	29.309	8036.2	10.155	

Comments:

TBG pressure by DWG = Vacuum
 CSG pressure by DWG = 455 kPag
 Temperature at run depth = 37 C
 Estimated liquid level at 125 m,CF

STATIC GRADIENT

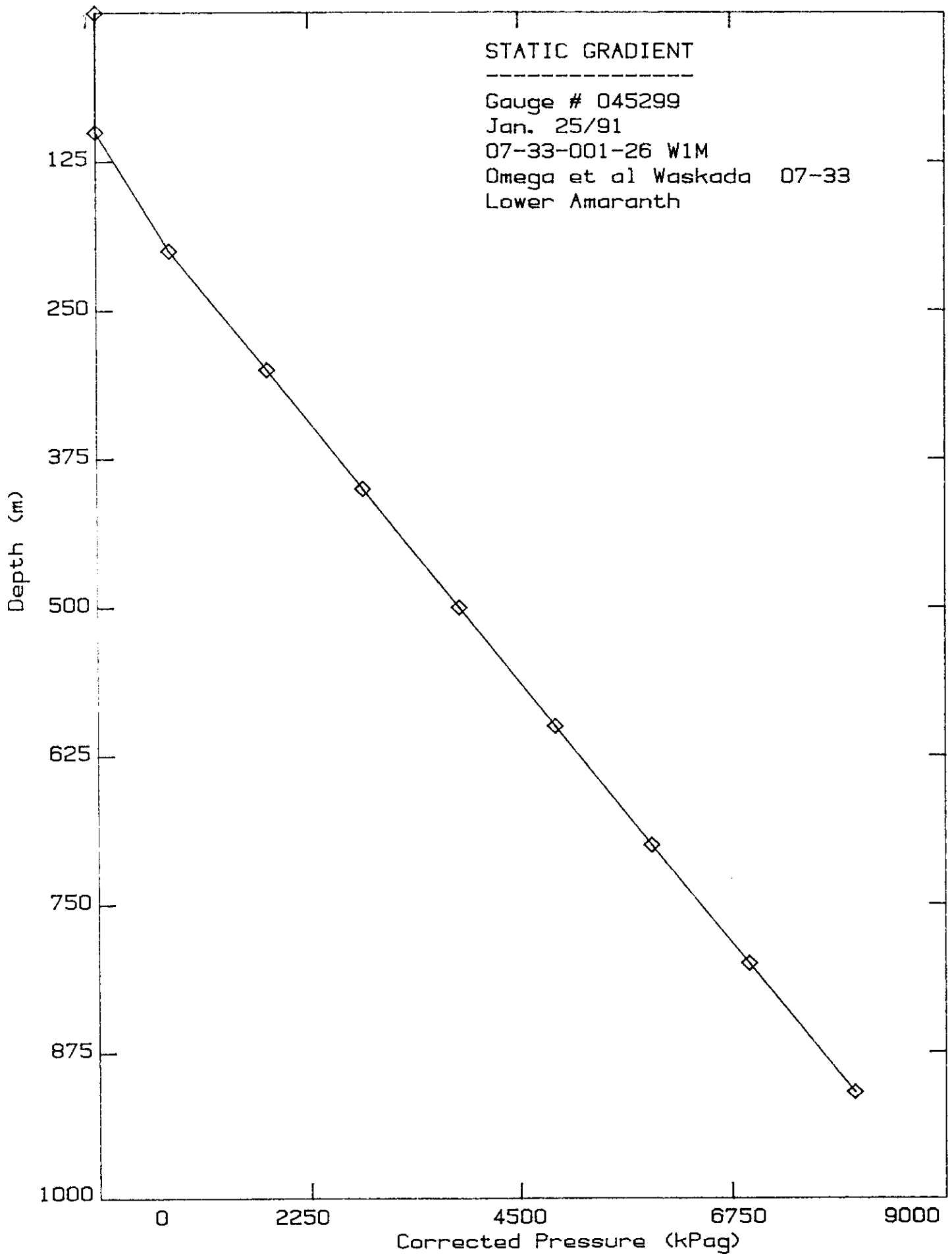
Gauge # 045299

Jan. 25/91

07-33-001-26 W1M

Omega et al Waskada 07-33

Lower Amaranth



Reporting Date: Jan 28, 1991

Page 4 of 5

Serial No: 045299
Range: 13790
Cal Temp (air): 21
Cal Temp (bath):
Bath Cal Date: 12-03-90
Last Air Cal Date: 06-22-90
Curr Air Cal Date: 12-03-90
Recorder Section No:
Comment: m
Owner: MOOSE MOUNTAIN

Press (kPag)	First (mm)	Second (mm)	Average (mm)	P - Pc (kPa)	Bath (mm)
0	0.000	0.000	0.000	29.35	0.000
2758	10.109	10.109	10.109	-3.24	0.000
5516	20.183	20.183	20.183	-26.17	0.000
8274	30.170	30.170	30.170	-25.08	0.000
11032	40.093	40.093	40.093	-6.33	0.000
13790	49.947	49.947	49.947	31.47	0.000
Sum:				0.00	

Previous m = 276.050
Previous A = -29.360

Present m = 276.050
Present A = -29.354

Present Press = 13994.00
Previous Press = 13993.98

Deviation = 0.02
Acc. Deviation = 34.47

Reporting Date: Jan 28, 1991

Page 5 of 5

Serial No: 045301
Range: 13790
Cal Temp (air): 21
Cal Temp (bath):
Bath Cal Date: 12-03-90
Last Air Cal Date: 06-22-90
Curr Air Cal Date: 12-03-90
Recorder Section No:
Comment:
Owner: MOOSE MOUNTAIN

Press (kFag)	First (mm)	Second (mm)	Average (mm)	P - Pc (kPa)	Bath (mm)
0	0.000	0.000	0.000	26.18	0.000
2758	9.954	9.954	9.954	-1.89	10.243
5516	19.883	19.883	19.883	-22.96	20.483
8274	29.743	29.743	29.743	-24.72	30.641
11032	39.530	39.530	39.530	-6.04	40.724
13790	49.257	49.257	49.257	29.42	50.733
Sum:				-0.01	

Previous m = 279.890
Previous A = -26.180

Present m = 279.894
Present A = -26.183

Present Press = 14192.45
Previous Press = 14192.23

Deviation = 0.22
Acc. Deviation = 34.47

Omega Waskada 7-36
7-36-1-26 WLM
Lower Amaranth Formation

Static Gradient Test
February 8, 1991

SIC DATA

COMPANY: Omega Hydrocarbons Ltd		WELL NAME: Omega Waskada 07-36	
ADDRESS: Calgary, Alberta		UNIQUE WELL IDENTIFIER: 07-36-001-26 W1M	
FIELD AND POOL: Waskada / Lower Ameranth		STATUS:	
TYPE OF TEST: Static Gradient Test		DATE OF TEST: Y 91 M 02 D 08 TO Y M D	
PRODUCING INTERVAL (m,CF): 896.8-906.8		PRODUCING THROUGH: 60.3 mm TUBING 911.8	
ELEVATION: (CF) 466.7 m (KB) 470.9 m		mm CASING	
POOL DATUM (SUBSEA): -440.0		MID POINT OF PRODUCING (MPP) INTERVAL (m,CF): 901.8	
ELEMENT SERIAL NO: RANGE(GAUGE) kPa		DATUM DEPTH OF WELL FROM (m,CF): 906.7	
CALIBRATION EQUATION: See calibration report		CLOCK RANGE: 3 hrs LAST CALIBRATION: See Cal. Report	

STATIC TEST

TUBINE PRESSURE: 0	kPag	SHUT-IN DATE: 1600 hrs Jan. 23/91	DURATION: 379.78	hrs
CASING PRESSURE: 600	kPag	DATE ON BOTTOM: Feb. 08/91	@ 1142	hrs
RUN DEPTH (m,CF): 710.0		DATE OFF BOTTOM: Feb. 08/91	@ 1147	hrs
B.H. TEMP: 36 °C	R.D. PRESSURE 6073 kPag	MPP PRESSURE: 7977		kPag
SURFACE TEMP: °C	GRADIENT 9.931 kPa/m	DATUM DEPTH PRESSURE (GAUGE): 8026		kPag

ACOUSTIC WELL SOUNDER TEST

NOT APPLICABLE

BUILD-UP OR DRAWDOWN TEST

NOT APPLICABLE

CHART READINGS AND CALCULATIONS FOR STATIC TEST

SEE NEXT PAGE

COMMENTS

<p>Estimated liquid level at 115 m,CF</p> <p>Tight spot at 644 m,CF - Could only get down to 710 m,CF</p>

SURVEYED BY: M.M.	TESTED BY: S. Hourd	COMPUTED BY: Rory Hale	CHECKED BY:
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Logging Date: Feb 13, 1991,

Page 2 of 5

Well Name: Omega Waskada 07-36

Location : 07-36-001-26 W1M

Tool : Lower Amaranth

Date Of Test: Feb. 08/91

----- Upper Gauge -----
Serial # 042699 Range 17237

----- Lower Gauge -----
Serial # 053976 Range 17237

Start Time	End Time	Depth	Deflect	Corrected Pressure	Grad.	Depth	Deflect	Corrected Pressure	Grad.
hh:mm	hh:mm	CF(m)	(mm)	(kPag)	(kPa/m)	CF(m)	(mm)	(kPag)	(kPa/m)
0:27	10:32	Surf	0.000	0.0		Surf	0.000	0.0	
0:33	10:38	98.0	0.000	0.0	0.000	100.0	0.000	0.0	0.000
0:39	10:44	198.0	2.457	825.9	8.259	200.0	2.512	982.8	8.828
0:45	10:50	298.0	5.536	1861.0	10.350	300.0	5.460	1918.9	10.360
0:51	10:56	398.0	8.592	2888.3	10.273	400.0	8.403	2953.1	10.343
0:01	11:06	498.0	11.663	3919.9	10.316	500.0	11.320	3975.3	10.222
0:07	11:12	598.0	14.756	4957.9	10.380	600.0	14.276	5008.3	10.330
0:33	11:38	698.0	17.788	5975.4	10.176	700.0	17.118	6001.5	9.931
0:42	11:47	708.0	18.054	6064.7	8.927	710.0	17.322	6072.7	7.129

Comments:

TBG pressure by DWG = 0 kPag
 CSG pressure by DWG = 600 kPag
 Temperature at run depth = 36 C
 Estimated liquid level at 115 m,CF
 Tight spot at 644 m,CF -could only get to 710 m,CF

STATIC GRADIENT

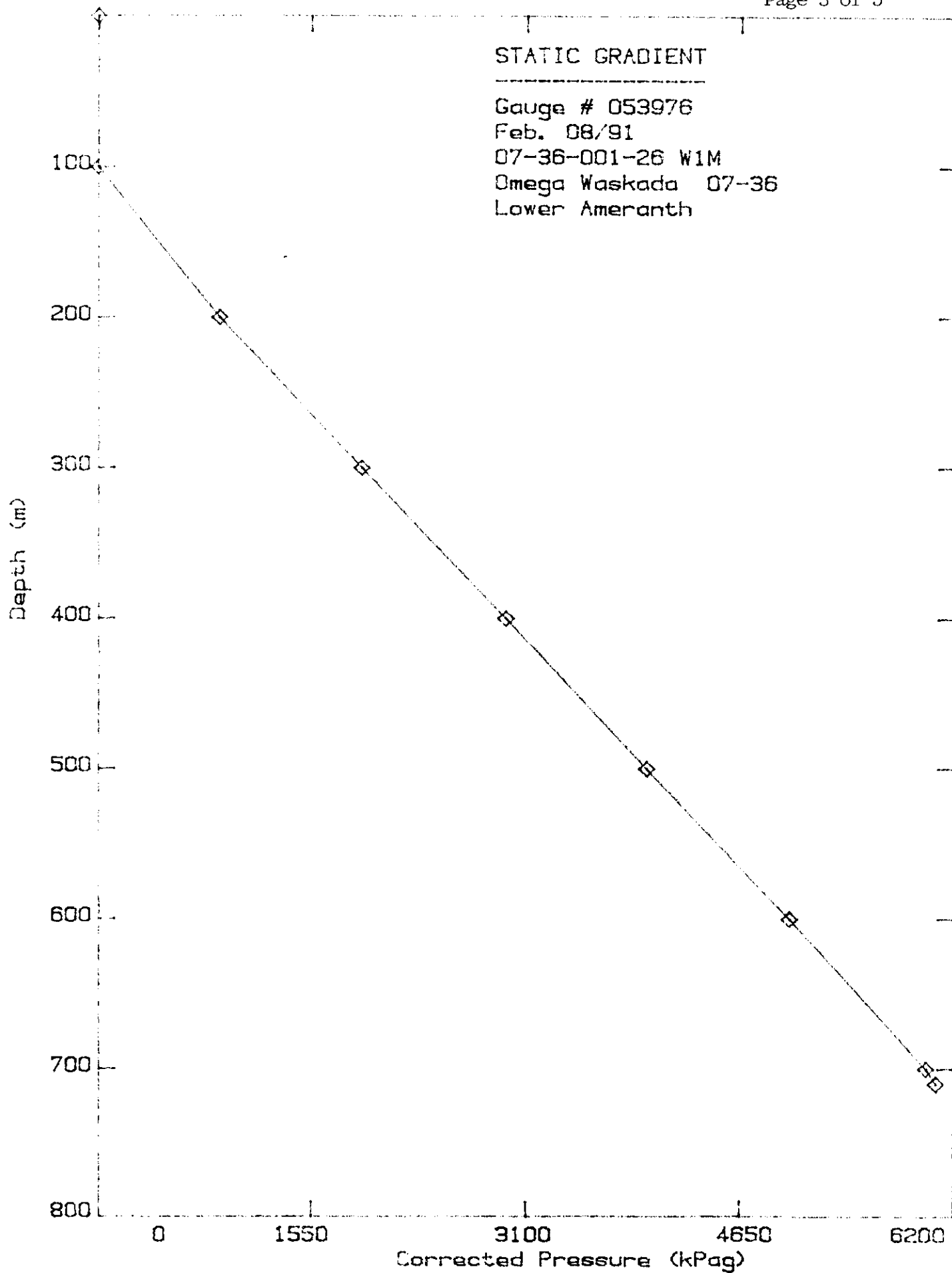
Gauge # 053976

Feb. 08/91

07-36-001-26 W1M

Omega Waskada 07-36

Lower Ameranth



Reporting Date: Feb 13, 1991

Page 4 of 5

Serial No: 049695
Range: 17237
Cal Temp (air): 21
Cal Temp (bath):
Bath Cal Date: 12-03-90
Last Air Cal Date: 05-01-90
Curr Air Cal Date: 12-03-90
Recorder Section No:
Comments:
Owner: MOOSE MOUNTAIN

Press (kPag)	First (mm)	Second (mm)	Average (mm)	P - Pc (kPa)	Bath (mm)
0	0.000	0.000	0.000	0.59	0.000
3448	10.257	10.257	10.257	2.07	0.000
6895	20.528	20.528	20.528	-2.14	0.000
10343	30.789	30.789	30.789	-2.00	0.000
13790	41.044	41.044	41.044	-0.85	0.000
17237	51.293	51.293	51.293	2.33	0.000
Sum:				-0.00	

Previous m = 336.030
Previous A = -0.930

Present m = 336.016
Present A = -0.589

Present Press = 17069.02
Previous Press = 17069.39

Deviation = -0.38
Acc. Deviation = 43.09

Reporting Date: Feb 13, 1991

Page 5 of 5

Serial No: 053976
 Range: 17237
 Cal Temp (air): 20
 Cal Temp (bath):
 Bath Cal Date: 12-03-90
 Last Air Cal Date: 06-24-89
 Curr Air Cal Date: 12-03-90
 Recorder Section No:
 Comment:
 Owner: MOOSE MOUNTAIN

Press (kPag)	First (mm)	Second (mm)	Average (mm)	P - Pc (kPa)	Bath (mm)
0	0.000	0.000	0.000	-5.62	0.000
3448	9.811	9.811	9.811	7.71	0.000
6895	19.675	19.675	19.675	1.49	0.000
10343	29.535	29.535	29.535	-2.33	0.000
13790	39.382	39.382	39.382	-2.59	0.000
17237	49.217	49.217	49.217	1.34	0.000
Sum:				0.00	

Previous m = 350.090
 Previous A = 5.290

Present m = 350.083
 Present A = 5.625

Present Press = 17789.84
 Previous Press = 17789.86

Deviation = -0.02
 Acc. Deviation = 43.09



1300 SUN LIFE PLAZA III
112 4th AVENUE S.W.
CALGARY, ALBERTA, CANADA T2P 0H3
TELEPHONE (403) 261-0743
FAX (403) 264-5691

January 3, 1991

MANITOBA ENERGY & MINES
Petroleum Branch
555 - 330 Graham Avenue
Winnipeg, Manitoba
R3C 4E3

Attention: Mr. John Fox
Chief Petroleum Engineer

Dear Sir:


Re: 1990 Annual Pressure Survey
Omega Waskada 7-31-1-25 WPM
Omega Waskada 5-24-1-26 WPM
Omega Waskada 7-27-1-26 WPM
Omega Waskada 15-8-2-25 WPM

In accordance with the Pressure Maintenance Rules contained in Board Order No. PM4 please find attached a copy of a recently conducted pressure test for each of the abovementioned wells. Attachment 1 contains a summary of the results obtained from the static gradient tests.

Should there be any questions or comments, please contact the undersigned at (403) 261-0743.

Yours truly,

OMEGA HYDROCARBONS LTD.



R.A. Brekke, P. Eng.
Engineering Supervisor - Manitoba

RAB:jb

c.c.: Waskada Pressure Data Binders
Wellfiles

1990 Annual Pressure Survey
Waskada Lower Amaranth Injection Wells

<u>Well</u>	<u>Pool</u>	<u>Test Date</u>	<u>Shut In Time (hrs.)</u>	<u>Pressure @ MPP (kPag)</u>	<u>Pressure @ Datum (kPag)</u>
7-31-1-25 WPM	LAm	90/11/26	1968.0	7110	7231
5-24-1-26 WPM	LAm	90/12/19	556.0	4579	4545
7-27-1-26 WPM	LAm	90/12/19	557.0	5292	5271
15-8-2-25 WPM	LAm	90/12/19	554.0	8803	9145

Lower Amaranth Datum Depth = 440 m subsea

General Well Information

7-31-1-25 WPM

Test Date: 90/09/05-90/11/26 (Static Gradient)

GL: 469.2 m

KB: 473.5 m

MPP: 901.5 mKB

Datum: 913.5 mKB

Hydrostatic Head: N/A

Last Shut In Date: 89/05/19

Actual Inj. (Hrs.) N/A

Actual Inj. (m³) N/A

Avg. Rate (m³/d) N/A

ϕ = N/A

h = N/A

P* = N/A

Pws = N/A

PR = N/A

Well Shut in for approximately 1968 hrs.

*Average reservoir pressure at MPP = 7110 kPag

Average reservoir pressure @ Datum = 7231 kPag (Using a gradient of
10.14 kPa/m)

Omega Waskada 7-31
7-31-1-25 WLM
Lower Amaranth (Spearfish) Formation

Static Gradient Test
November 26, 1990

BASIC DATA

COMPANY: Omega Hydrocarbons Ltd.		WELL NAME: Omega Waskada 07-31	
ADDRESS: Calgary, Alberta		UNIQUE WELL IDENTIFIER: 07-31-001-25 WIM	
FIELD AND POOL: Waskada / Lower Amaranth (Spearfish)		STATUS:	
TYPE OF TEST: Static Gradient Test		DATE OF TEST: Y 90 M 11 D 26 TO Y M D	
PRODUCING INTERVAL (m,CF): 890.7-903.7	PERF	PRODUCING THROUGH: 60.3 ■■ TUBING 908.3	
ELEVATION: (CF) 469.2 ■ (KB) 473.5 ■		■■ CASING	
POOL DATUM (SUBSEA): -440.0		MID POINT OF PRODUCING (MPP) INTERVAL (m,CF): 897.2	
ELEMENT SERIAL NO:	RANGE(GAUGE) kPa	DATUM DEPTH OF WELL FROM (m,CF): 909.2	
CALIBRATION EQUATION: See calibration report		CLOCK RANGE: 3 hrs LAST CALIBRATION: See Cal. Report	

STATIC TEST

TUBING PRESSURE: Vacuum	kPag	SHUT-IN DATE:	DURATION: Extended	hrs
CASING PRESSURE: 660	kPag	DATE ON BOTTOM: Nov. 26/90	@ 1330	hrs
RUN DEPTH (m,CF): 897.3		DATE OFF BOTTOM: Nov. 26/90	@ 1340	hrs
B.H. TEMP: 41 °C	R.D. PRESSURE 7110 kPag	MPP PRESSURE: 7110		kPag
SURFACE TEMP: °C	GRADIENT 10.140 kPa/m	DATUM DEPTH PRESSURE (GAUGE): 7231		kPag

ACOUSTIC WELL SOUNDER TEST

NOT APPLICABLE

BUILD-UP OR DRAWDOWN TEST

NOT APPLICABLE

CHART READINGS AND CALCULATIONS FOR STATIC TEST

SEE NEXT PAGE

COMMENTS

Estimated liquid level at 210 m,CF

SURVEYED BY: Cpsco	TESTED BY: S.H.	COMPUTED BY: R. Hale	CHECKED BY:
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Reporting Date: Nov 29, 1990,

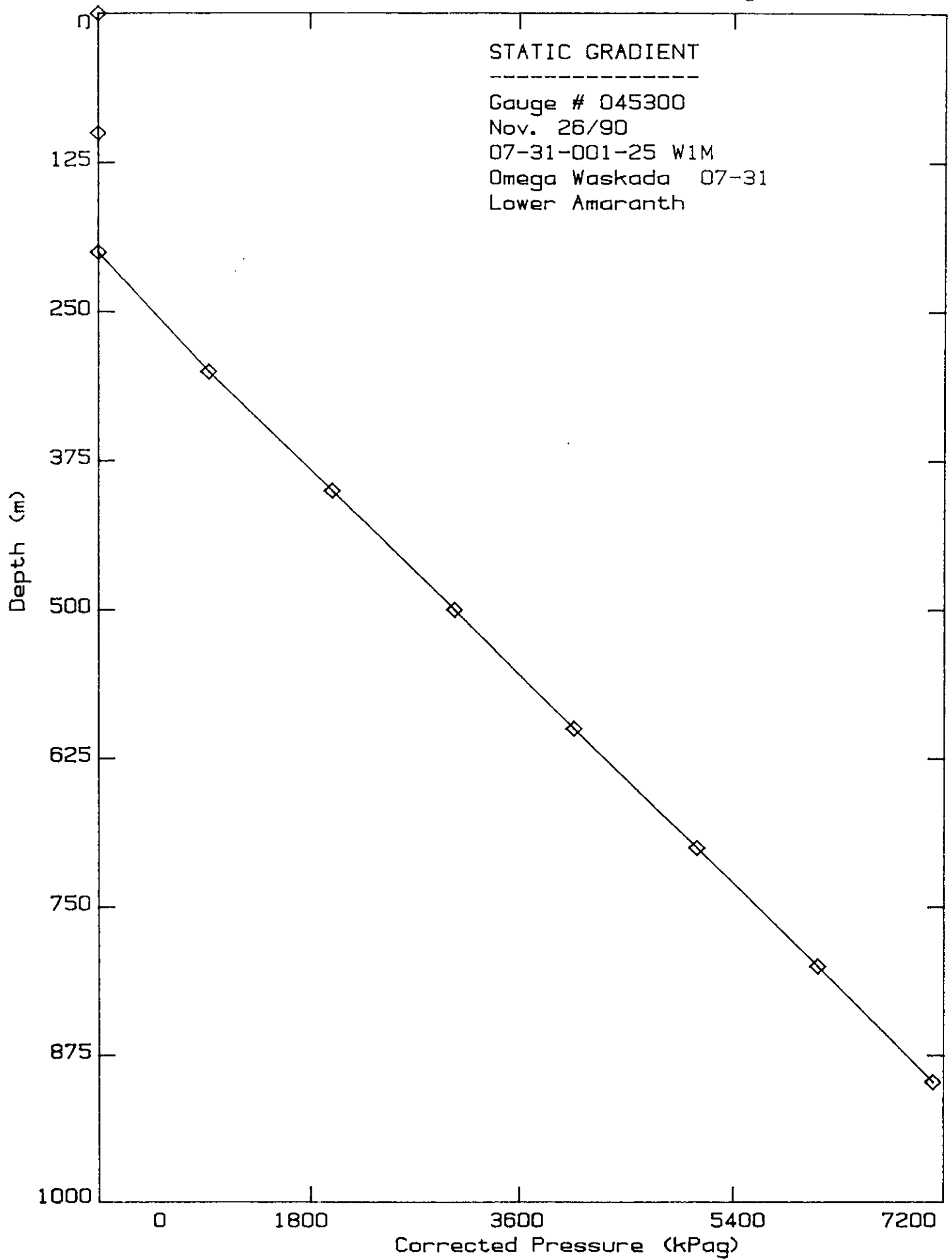
Page 2 of 5

WellName: Omega Waskada 07-31
Pool : Lower AmaranthLocation : 07-31-001-25 W1M
Date Of Test: Nov. 26/90

----- Upper Gauge -----						----- Lower Gauge -----				
Serial # 051953 Range 13790						Serial # 045300 Range 13790				
Start Time	End Time	Depth	Deflect	Corrected Pressure	Grad.	Depth	Deflect	Corrected Pressure	Grad.	
hh:mm	hh:mm	CF(m)	(mm)	(kPag)	(kPa/m)	CF(m)	(mm)	(kPag)	(kPa/m)	
12:29	12:34	Surf	0.000	0.1		Surf	0.000	0.0		
12:36	12:41	98.0	0.000	0.1	0.000	100.0	0.000	0.0	0.000	
12:43	12:48	198.0	0.000	0.1	0.000	200.0	0.000	0.0	0.000	
12:50	12:55	298.0	3.302	924.0	9.240	300.0	3.485	938.5	9.385	
12:56	13:01	398.0	7.025	1965.8	10.418	400.0	7.379	1986.9	10.484	
13:03	13:08	498.0	10.745	3005.0	10.392	500.0	11.251	3029.5	10.426	
13:09	13:14	598.0	14.449	4034.2	10.292	600.0	15.106	4067.7	10.382	
13:16	13:21	698.0	18.155	5063.9	10.297	700.0	18.917	5094.0	10.264	
13:23	13:28	798.0	21.860	6093.7	10.297	800.0	22.718	6122.8	10.288	
13:30	13:40	895.3	25.411	7080.8	10.146	897.3	26.352	7109.5	10.140	

Comments:

TBG pressure by DWG = Vacuum
 CSG pressure by DWG = 660 kPag
 Temperature at run depth = 41 C
 Estimated liquid level at 210 m,CF



Reporting Date: Nov 29, 1990

Page 4 of 5

Serial No: 045300
Range: 13790
Cal Temp (air): 19
Cal Temp (bath):
Bath Cal Date: 01-12-90
Last Air Cal Date: 01-12-90
Curr Air Cal Date: 10-24-90
Recorder Section No:
Comment: MOOSE MOUNTAIN
Owner: MOOSE MOUNTAIN

Press (kPag)	First (mm)	Second (mm)	Average (mm)	P - Pc (kPa)	Bath (mm)
0	0.000	0.000	0.000	25.53	0.000
2758	10.243	10.243	10.243	0.45	10.243
5516	20.483	20.483	20.483	-23.82	20.483
8274	30.641	30.641	30.641	-25.81	30.641
11032	40.724	40.724	40.724	-7.42	40.724
13790	50.733	50.733	50.733	31.07	50.733
Sum:				0.00	

Previous m = 271.710
Previous A = -25.530

Present m = 271.706
Present A = -25.532

Present Press = 13777.13
Previous Press = 13777.34

Deviation = -0.21
Acc. Deviation = 34.47

Reporting Date: Nov 29, 1990

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Serial No: 051953
 Range: 13790
 Cal Temp (air): 19
 Cal Temp (bath):
 Bath Cal Date: 09-25-89
 Last Air Cal Date: 02-14-90
 Curr Air Cal Date: 10-24-90
 Recorder Section No:
 Comment: MOOSE MOUNTAIN
 Owner: MOOSE MOUNTAIN

Press (kPag)	First (mm)	Second (mm)	Average (mm)	P - Pc (kPa)	Bath (mm)
0	0.000	0.000	0.000	-9.12	0.000
2758	9.856	9.856	9.856	7.17	9.856
5516	19.782	19.782	19.782	4.00	19.782
8274	29.703	29.703	29.703	2.21	29.703
11032	39.624	39.624	39.624	0.43	39.624
13790	49.557	49.557	49.557	-4.69	49.557
Sum:				0.00	

Previous m = 278.180
 Previous A = 9.120

Present m = 278.176
 Present A = 9.122

Present Press = 14140.47
 Previous Press = 14140.66

Deviation = -0.20
 Acc. Deviation = 34.47

GENERAL WELL INFORMATION

5-24-1-26 WPM

Test Date: 90/11/26 - 90/12/19 (Static Gradient)

GL: 465.1 m

KB: 469.2 m

MPP: 912.6 mKB

Datum: 909.2 mKB

Hydrostatic Head: N/A

Last Shut-in Date: 89/05/18

Actual Inj. (Hrs): N/A

Actual Inj. (m³): N/A

Avg. Rate (m³/d): N/A

ϕ = N/A

h = N/A

P* = N/A

Pws = N/A

PR = N/A

Well Shut in for approximately 556 hrs.

* Average reservoir pressure at MPP = 4579 kPag
Average reservoir pressure @ Datum = 4545 kPag
(Using a gradient of 10.04 kPa/m)

Omega Waskada 5-24
5-24-1-26 WLM
Lower Amaranth Formation

Static Gradient Test
December 19, 1990

BASIC DATA

COMPANY: Omega Hydrocarbons Ltd.			WELL NAME: Omega Waskada 05-24		
ADDRESS: Calgary, Alberta			UNIQUE WELL IDENTIFIER: 05-24-001-26 WIM		
FIELD AND POOL: Waskada / Lower Amaranth			STATUS:		
TYPE OF TEST: Static Gradient Test			DATE OF TEST: Y 90 M 12 D 19 TO Y M D		
PRODUCING INTERVAL (m,CF): 903.12-913.82		PERF	PRODUCING THROUGH: 60.3 mm TUBING 898.5		
ELEVATION: (CF) 465.1 m (KB) 469.3 m			114.3 mm CASING 951.8		
POOL DATUM (SUBSEA): -440.0			MID POINT OF PRODUCING (MPP) INTERVAL (m,CF): 908.5		
ELEMENT SERIAL NO: RANGE(GAUGE)		kPa	DATUM DEPTH OF WELL FROM (m,CF): 905.1		
CALIBRATION EQUATION: See calibration report			CLOCK RANGE: 3 hrs LAST CALIBRATION: See Cal. Report		

STATIC TEST

TUBING PRESSURE: 550		kPag	SHUT-IN DATE: 0800 Nov. 26/90		DURATION: 555.87 hrs
CASING PRESSURE: 550		kPag	DATE ON BOTTOM: Dec. 19/90		@ 1147 hrs
RUN DEPTH (m,CF): 908.0			DATE OFF BOTTOM: Dec. 19/90		@ 1152 hrs
B.H. TEMP: 40 °C R.D. PRESSURE 4574.0		kPag	MPP PRESSURE: 4579		kPag
SURFACE TEMP: °C GRADIENT 10.040		kPa/m	DATUM DEPTH PRESSURE (GAUGE): 4545		kPa

ACOUSTIC WELL SOUNDER TEST

NOT APPLICABLE

BUILD-UP OR DRAWDOWN TEST

NOT APPLICABLE

CHART READINGS AND CALCULATIONS FOR STATIC TEST

SEE NEXT PAGE

COMMENTS

Estimated oil level at 445 m,CF
 Estimated water level at 760 m,CF

SURVEYED BY: Opsco

TESTED BY: S. Hourd

COMPUTED BY: R. Hale

CHECKED BY:

Reporting Date: Jan 02, 1991,

Page 2 of 5

WellName: Omega Waskada 05-24
Pool : Lower AmaranthLocation : 05-24-002-26 W1M
Date Of Test: Dec. 19/90

----- Upper Gauge -----						----- Lower Gauge -----				
Serial # 051953 Range 13790						Serial # 045300 Range 13790				
Start Time	End Time	Depth	Deflect	Corrected Pressure	Grad.	Depth	Deflect	Corrected Pressure	Grad.	
mm:ss	mm:ss	CF (m)	(mm)	(kPag)	(kPa/m)	CF (m)	(mm)	(kPag)	(kPa/m)	
11:03	11:06	Surf	1.895	530.3	0.000	Surf	1.930	519.9	0.000	
11:11	11:14	98.0	2.050	573.7	0.443	100.0	2.130	573.7	0.538	
11:16	11:19	198.0	2.118	592.7	0.190	200.0	2.204	593.6	0.199	
11:20	11:23	298.0	2.172	607.8	0.151	300.0	2.257	607.9	0.143	
11:25	11:28	398.0	2.217	620.4	0.126	400.0	2.309	621.9	0.140	
11:29	11:32	498.0	3.647	1020.6	4.002	500.0	3.854	1037.9	4.160	
11:33	11:36	598.0	6.475	1811.9	7.913	600.0	6.814	1834.8	7.969	
11:38	11:41	698.0	9.294	2597.9	7.860	700.0	9.724	2618.3	7.835	
11:42	11:45	798.0	12.394	3463.2	8.653	800.0	12.960	3489.7	8.714	
11:47	11:52	906.0	16.286	4544.6	10.013	908.0	16.986	4574.0	10.040	

Comments:

TBG pressure by DWG = 550 kPag
 CSG pressure by DWG = 550 kPag
 Temperature at run depth = 40 C
 Estimated oil level at 449 m,CF
 Estimated water level at 760 m,CF

STATIC GRADIENT

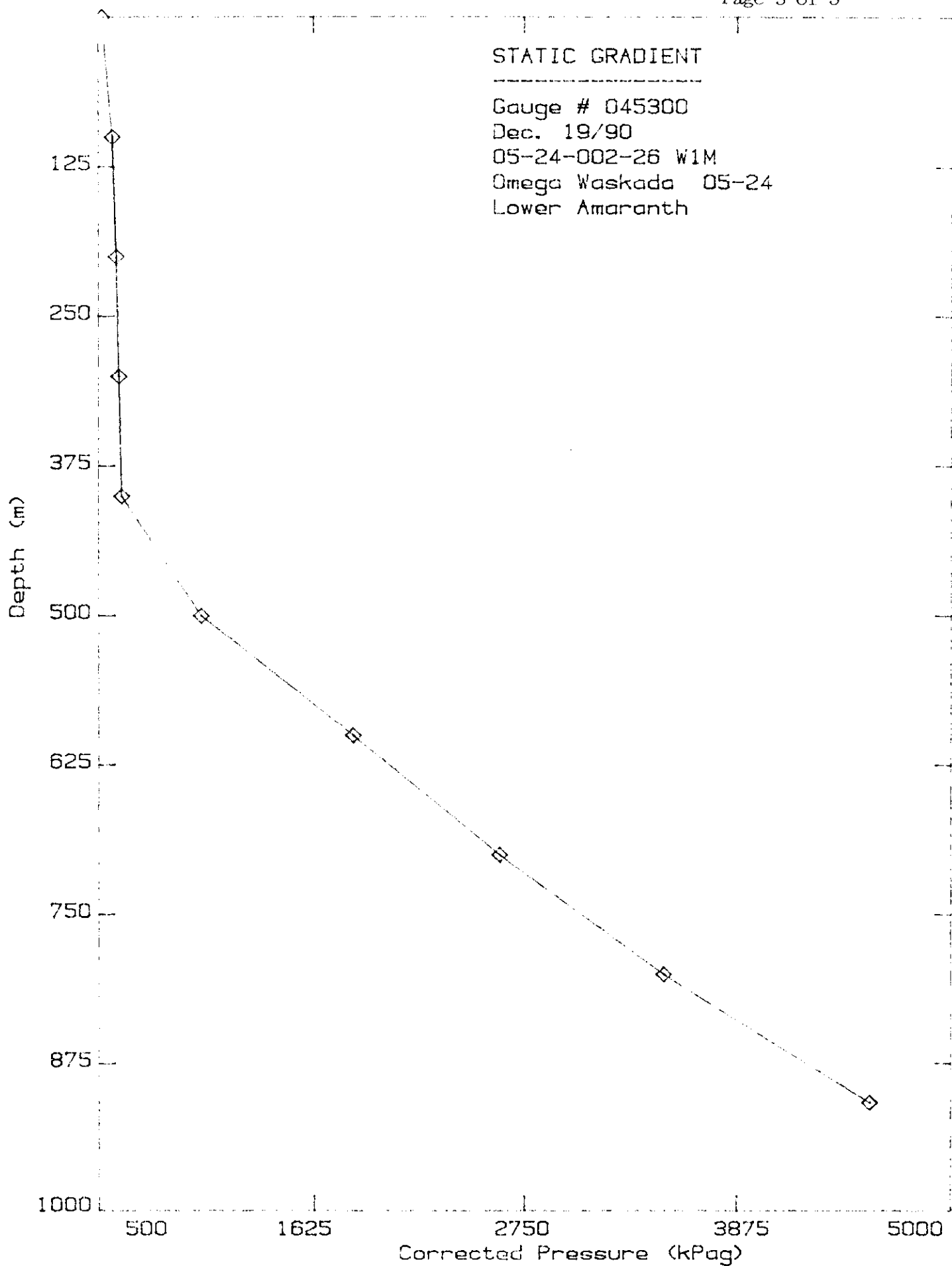
Gauge # 045300

Dec. 19/90

05-24-002-26 W1M

Omega Waskada 05-24

Lower Amaranth



Reporting Date: Dec 27, 1990

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Serial No: 045300
Range: 13790
Cal Temp (air): 19
Cal Temp (bath):
Bath Cal Date: 01-12-90
Last Air Cal Date: 01-12-90
Curr Air Cal Date: 10-24-90
Recorder Section No:
Comment: MOOSE MOUNTAIN
Owner: MOOSE MOUNTAIN

Press (kPag)	First (mm)	Second (mm)	Average (mm)	P - Pc (kPa)	Bath (mm)
0	0.000	0.000	0.000	25.53	0.000
2758	10.243	10.243	10.243	0.45	10.243
5516	20.483	20.483	20.483	-23.82	20.483
8274	30.641	30.641	30.641	-25.81	30.641
11032	40.724	40.724	40.724	-7.42	40.724
13790	50.733	50.733	50.733	31.07	50.733
Sum:				0.00	

Previous m = 271.710

Previous A = -25.530

Present m = 271.706

Present A = -25.532

Present Press = 13777.13

Previous Press = 13777.34

Deviation = -0.21

Acc. Deviation = 34.47

Reporting Date: Dec 27, 1990

Page 5 of 5

Serial No: 051953
Range: 13790
Cal Temp (air): 19
Cal Temp (bath):
Bath Cal Date: 09-25-89
Last Air Cal Date: 02-14-90
Curr Air Cal Date: 10-24-90
Recorder Section No:
Comment: MOOSE MOUNTAIN
Owner: MOOSE MOUNTAIN

Press (kPag)	First (mm)	Second (mm)	Average (mm)	P - Pc (kPa)	Bath (mm)
0	0.000	0.000	0.000	-9.12	0.000
2758	9.856	9.856	9.856	7.17	9.856
5516	19.782	19.782	19.782	4.00	19.782
8274	29.703	29.703	29.703	2.21	29.703
11032	39.624	39.624	39.624	0.43	39.624
13790	49.557	49.557	49.557	-4.69	49.557
Sum:				0.00	

Previous m = 278.180

Previous A = 9.120

Present m = 278.176

Present A = 9.122

Present Press = 14140.47

Previous Press = 14140.66

Deviation = -0.20

Acc. Deviation = 34.47

GENERAL WELL INFORMATION

7-27-1-26 WPM

Test Date: 90/11/26 - 90/12/19 (Static Gradient)

GL: 462.8 m

KB: 467.3 m

MPP: 909.5 mKB

Datum: 907.3 mKB

Hydrostatic Head: N/A

Last Shut-in Date: 89/05/17

Actual Inj. (Hrs): N/A

Actual Inj. (m³): N/A

Avg. Rate (m³/d): N/A

ϕ = N/A

h = N/A

P* = N/A

Pws = N/A

PR = N/A

Well Shut in for approximately 557 hrs.

* Average reservoir pressure at MPP = 5292 kPag
Average reservoir pressure @ Datum = 5271 kPag
(Using a gradient of 9.418 kPa/m)

Omega Waskada 7-27
7-27-1-26 WLM
Lower Amaranth Formation

Static Gradient Test
December 19, 1990

B. LOG DATA

COMPANY: Omega Hydrocarbons Ltd.		WELL NAME: Omega Waskada 07-27	
ADDRESS: Calgary, Alberta		UNIQUE WELL IDENTIFIER: 07-27-001-26 W1M	
FIELD AND POOL: Waskada / Lower Amaranth		STATUS:	
TYPE OF TEST: Static Gradient Test		DATE OF TEST: Y 90 M 12 D 19 TO Y M D	
PRODUCING INTERVAL (m,CF): 898.5-911.5		PRODUCING THROUGH: 60.3 mm TUBING 895.5	
ELEVATION: (CF) 462.8 @ (KB) 467.3 @		mm CASING	
POOL DATUM (SUBSEA): -440.0		MID POINT OF PRODUCING (MPP) INTERVAL (m,CF): 905.0	
ELEMENT SERIAL NO: RANGE(GAUGE) kPa		DATUM DEPTH OF WELL FROM (m,CF): 902.8	
CALIBRATION EQUATION: See calibration report		CLOCK RANGE: 3 hrs LAST CALIBRATION: See Cal. Report	

STATIC TEST

TUBING PRESSURE: Vacuum	kPag	SHUT-IN DATE: 0800 Nov. 26/90	DURATION: 557.52	hrs
CASING PRESSURE: 620	kPag	DATE ON BOTTOM: Dec. 19/90	@ 1326	hrs
RUN DEPTH (m,CF): 905.0		DATE OFF BOTTOM: Dec. 19/90	@ 1331	hrs
B.H. TEMP: 37 °C	R.D. PRESSURE 5292	kPag	MPP PRESSURE: 5292	kPag
SURFACE TEMP: °C	GRADIENT 9.418	kPa/m	DATUM DEPTH PRESSURE (GAUGE): 5271	kPag

ACOUSTIC WELL SOUNDER TEST

NOT APPLICABLE

BUILD-UP OR DRAWDOWN TEST

NOT APPLICABLE

CHART READINGS AND CALCULATIONS FOR STATIC TEST

SEE NEXT PAGE

COMMENTS

Estimated liquid level at 382 m,CF

SURVEYED BY: Opsco	TESTED BY: S. Hourd	COMPUTED BY: R. Hale	CHECKED BY:
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Reporting Date: Dec 27, 1990,

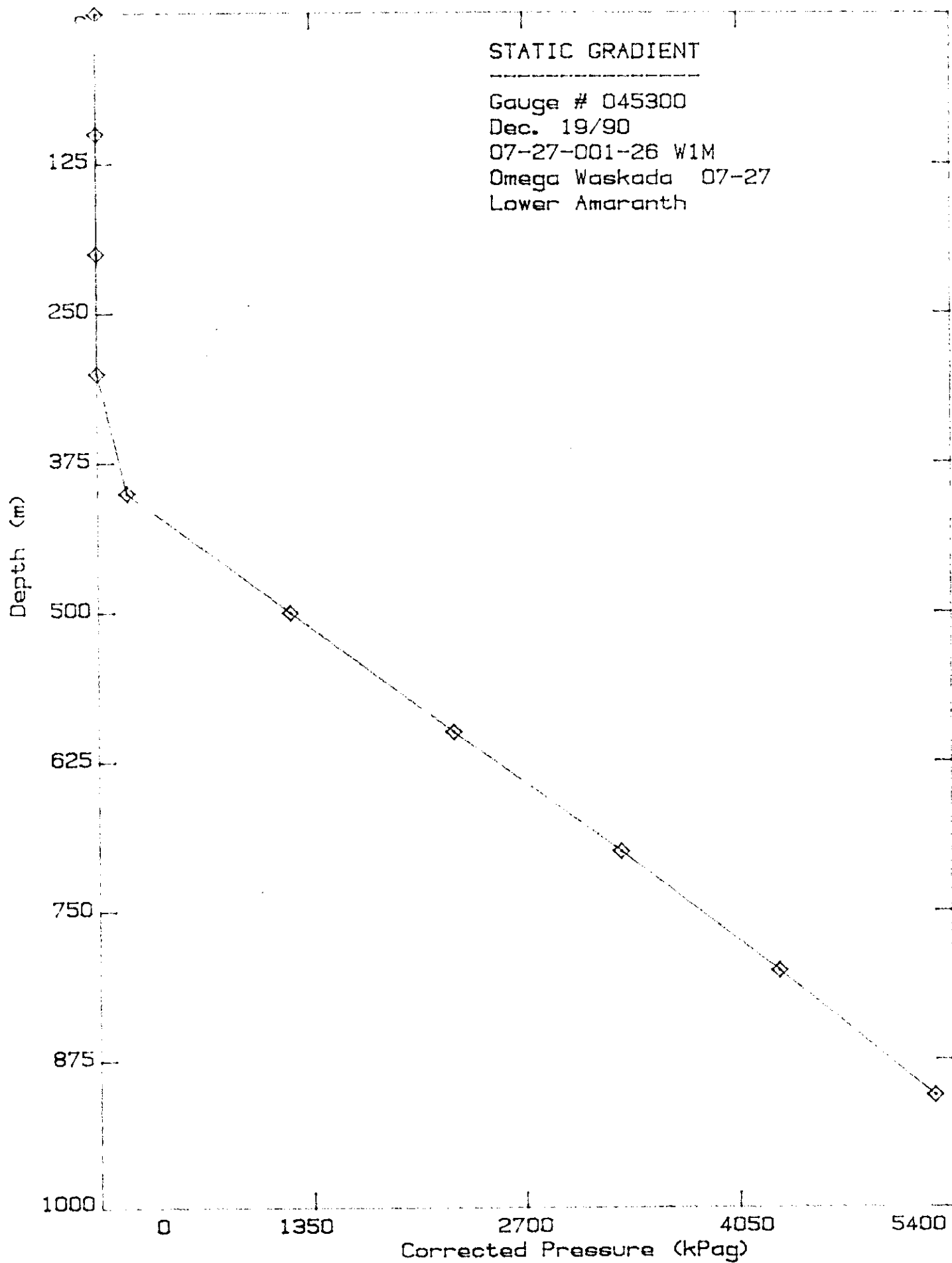
Page 2 of 5

Well Name: Omega Waskada 07-27
Coolant : Lower AmaranthLocation : 07-27-001-26 W1M
Date Of Test: Dec. 19/90

----- Upper Gauge -----						----- Lower Gauge -----				
Serial # 051953 Range 13790						Serial # 045300 Range 13790				
Start Time	End Time	Depth	Deflect	Corrected Pressure	Grad.	Depth	Deflect	Corrected Pressure	Grad.	
HH:MM	HH:MM	CF(m)	(mm)	(kPag)	(kPa/m)	CF(m)	(mm)	(kPag)	(kPa/m)	
12:47	12:50	Surf	0.000	0.1		Surf	0.000	0.0		
12:50	12:53	98.0	0.000	0.1	0.000	100.0	0.000	0.0	0.000	
12:55	12:58	198.0	0.000	0.1	0.000	200.0	0.000	0.0	0.000	
13:00	13:03	298.0	0.000	0.1	0.000	300.0	0.000	0.0	0.000	
13:05	13:08	398.0	0.664	185.9	1.858	400.0	0.696	187.6	1.876	
13:10	13:13	498.0	4.293	1201.3	10.155	500.0	4.506	1213.4	10.258	
13:14	13:17	598.0	7.976	2231.9	10.306	600.0	8.355	2249.7	10.363	
13:18	13:21	698.0	11.759	3286.8	10.549	700.0	12.269	3303.6	10.539	
13:22	13:25	798.0	15.336	4280.7	9.939	800.0	15.978	4302.5	9.989	
13:26	13:31	903.0	18.870	5262.6	9.352	905.0	19.650	5291.5	9.415	

Comments:

TBG pressure by DWG = Vacuum
 CSG pressure by DWG = 90 kPag
 Temperature at run depth = 37 C
 Estimated liquid level at 382 m,CF



Reporting Date: Dec 27, 1990

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Serial No: 045300
Range: 13790
Cal Temp (air): 19
Cal Temp (bath):
Bath Cal Date: 01-12-90
Last Air Cal Date: 01-12-90
Curr Air Cal Date: 10-24-90
Recorder Section No:
Comment: MOOSE MOUNTAIN
Owner: MOOSE MOUNTAIN

Press (kPag)	First (mm)	Second (mm)	Average (mm)	F - Pc (kPa)	Bath (mm)
0	0.000	0.000	0.000	25.53	0.000
2758	10.243	10.243	10.243	0.45	10.243
5516	20.483	20.483	20.483	-23.82	20.483
8274	30.641	30.641	30.641	-25.81	30.641
11032	40.724	40.724	40.724	-7.42	40.724
13790	50.733	50.733	50.733	31.07	50.733
Sum:				0.00	

Previous m = 271.710
Previous A = -25.530

Present m = 271.706
Present A = -25.532

Present Press = 13777.13
Previous Press = 13777.34

Deviation = -0.21
Acc. Deviation = 34.47

Reporting Date: Dec 27, 1990

Page 5 of 5

Serial No: 051953
Range: 13790
Cal Temp (air): 19
Cal Temp (bath):
Bath Cal Date: 09-25-89
Last Air Cal Date: 02-14-90
Curr Air Cal Date: 10-24-90
Recorder Section No:
Comments: MOOSE MOUNTAIN
Owner: MOOSE MOUNTAIN

Press (kPag)	First (mm)	Second (mm)	Average (mm)	P - Pc (kPa)	Bath (mm)
0	0.000	0.000	0.000	-9.12	0.000
2758	9.856	9.856	9.856	7.17	9.856
5516	19.782	19.782	19.782	4.00	19.782
8274	29.703	29.703	29.703	2.21	29.703
11032	39.624	39.624	39.624	0.43	39.624
13790	49.557	49.557	49.557	-4.69	49.557
Sum:				0.00	

Previous m = 278.180

Previous A = 9.120

Present m = 278.176

Present A = 9.122

Present Press = 14140.47

Previous Press = 14140.66

Deviation = -0.20

Acc. Deviation = 34.47

GENERAL WELL INFORMATION

15-8-2-25 WPM

Test Date: 90/11/26 - 90/12/19 (Static Gradient)

GL: 474.3 m

KB: 478.5 m

MPP: 885.0 mKB

Datum: 918.5 mKB

Hydrostatic Head: N/A

Last Shut-in Date: 88/11/21

Actual Inj. (Hrs): N/A

Actual Inj. (m³): N/A

Avg. Rate (m³/d): N/A

ϕ = N/A

h = N/A

P* = N/A

Pws = N/A

PR = N/A

Well Shut in for approximately 554 hrs.

* Average reservoir pressure at MPP = 8803 kPag
Average reservoir pressure @ Datum = 9145 kPag
(Using a gradient of 10.219 kPa/m)

Omega Waskada 15--8
15-8-2-25 WLM
Lower Amaranth Formation

Static Gradient Test
December 19, 1990

B. IC DATA

COMPANY: Omega Hydrocarbons Ltd.		WELL NAME: Omega Waskada 15-08	
ADDRESS: Calgary, Alberta		UNIQUE WELL IDENTIFIER: 15-08-002-25 W1M	
FIELD AND POOL: Waskada / Lower Amaranth		STATUS:	
TYPE OF TEST: Static Gradient Test		DATE OF TEST: Y 90 M 12 D 19 TO Y M D	
PRODUCING INTERVAL (m,CF): 875.8-885.8	PERF	PRODUCING THROUGH: 60.3 mm TUBING 873.5	
ELEVATION: (CF) 474.3	m (KB) 478.5	mm CASING	
POOL DATUM (SUBSEA): -440.0		MID POINT OF PRODUCING (MPP) INTERVAL (m,CF): 880.8	
ELEMENT SERIAL NO:	RANGE(GAUGE)	DATUM DEPTH OF WELL FROM (m,CF): 914.3	
CALIBRATION EQUATION: See calibration report		CLOCK RANGE: 3 hrs LAST CALIBRATION: See Cal. Report	

STATIC TEST

TUBING PRESSURE: 0	kPag	SHUT-IN DATE: 0800 Nov. 26/90	DURATION: 554.23	hrs
CASING PRESSURE: 1900	kPag	DATE ON BOTTOM: Dec. 19/90	@ 1009	hrs
RUN DEPTH (m,CF): 880.0		DATE OFF BOTTOM: Dec. 19/90	@ 1014	hrs
B.H. TEMP: 39	°C R.D. PRESSURE 8795	kPag	MPP PRESSURE: 8803	kPag
SURFACE TEMP:	°C GRADIENT 10.219	kPa/m	DATUM DEPTH PRESSURE (GAUGE): 9145	kPag

ACOUSTIC WELL SOUNDER TEST

NOT APPLICABLE

BUILD-UP OR DRAWDOWN TEST

NOT APPLICABLE

CHART READINGS AND CALCULATIONS FOR STATIC TEST

SEE NEXT PAGE

COMMENTS

Estimated liquid level at 29 m,CF

SURVEYED BY: Opsco	TESTED BY: S. Hourd	COMPUTED BY: R. Hale	CHECKED BY:
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Reporting Date: Jan 02, 1991,

Page 2 of 5

WellName: Omega Wasteds 15-08
Pool : Lower AgeranthLocation : 15-08-002-25 W1M
Date Of Test: Dec. 19/90

----- Upper Gauge -----						----- Lower Gauge -----			
Serial # 051253 Range 13790						Serial # 045300 Range 13790			
Start Time	End Time	Depth	Deflect	Corrected Pressure	Grad.	Depth	Deflect	Corrected Pressure	Grad.
hh:mm	hh:mm	CF(m)	(mm)	(kPag)	(kPa/m)	CF(m)	(mm)	(kPag)	(kPa/m)
09:14	09:17	Surf	0.000	0.1	0.000	Surf	0.000	0.0	0.000
09:18	09:21	98.0	2.533	708.8	7.232	100.0	2.745	739.3	7.393
09:30	09:33	198.0	6.240	1746.1	10.373	200.0	6.589	1774.2	10.349
09:38	09:41	298.0	9.948	2783.6	10.375	300.0	10.451	2814.0	10.398
09:44	09:47	398.0	13.654	3813.3	10.297	400.0	14.298	3850.1	10.361
09:49	09:52	498.0	17.353	4841.1	10.278	500.0	18.118	4878.9	10.288
09:55	09:58	598.0	21.073	5874.9	10.338	600.0	21.953	5915.1	10.362
10:00	10:03	698.0	24.775	6904.0	10.291	700.0	25.752	6946.6	10.315
10:05	10:08	798.0	28.474	7932.3	10.283	800.0	29.548	7977.2	10.306
10:09	10:14	878.0	31.419	8751.0	10.234	880.0	32.544	8794.7	10.219

Comments:

TBS pressure by DWG = 0 kPag
 CSB pressure by DWG = 1900 kPag
 Temperature at run depth = 39 C
 Estimated liquid level at 29 m.CF

STATIC GRADIENT

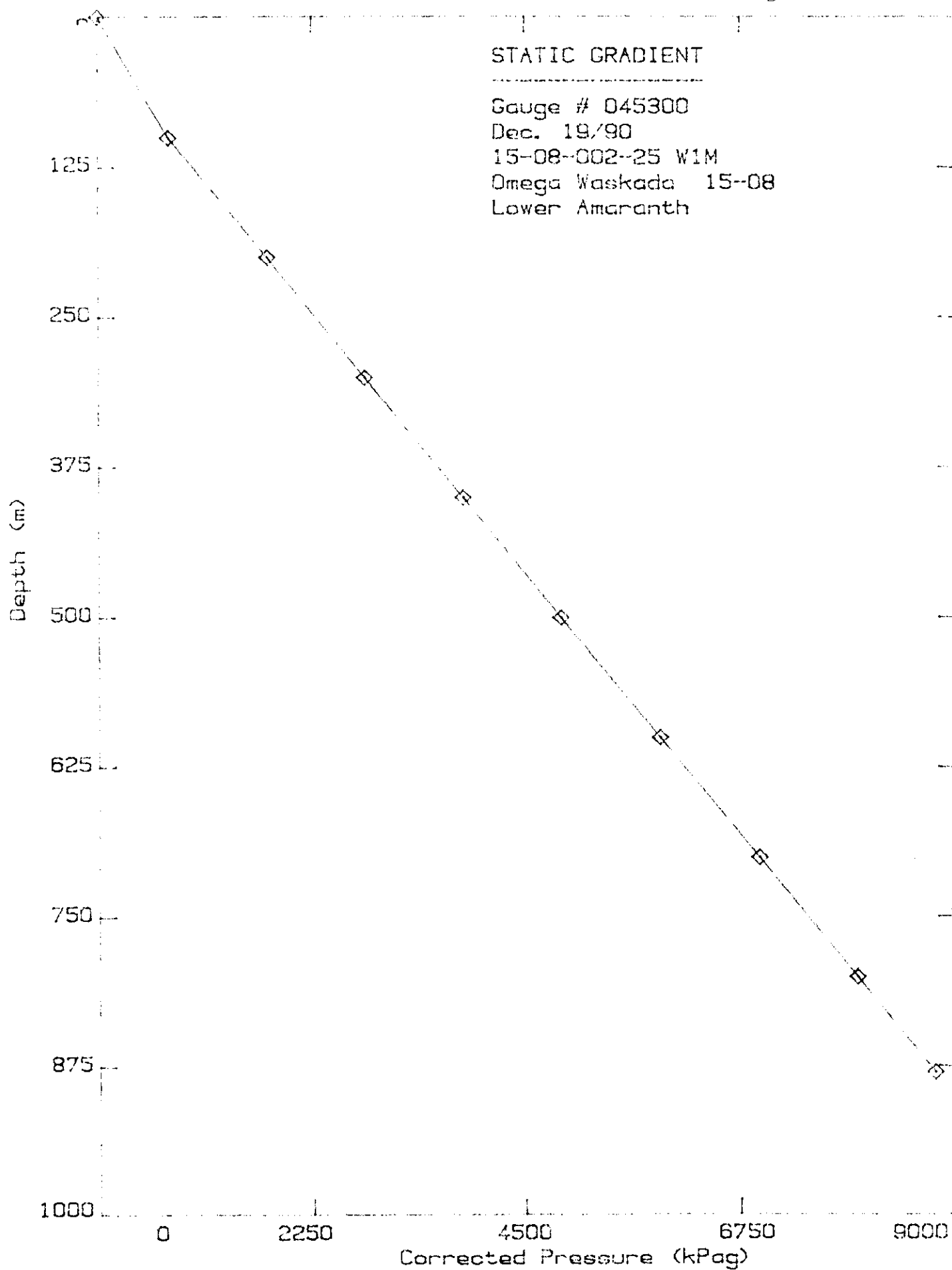
Gauge # 045300

Dec. 19/90

15-08-002-25 W1M

Omega Waskada 15-08

Lower Amaranth



Reporting Date: Dec 27, 1990

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Serial No: 045300
 Range: 13790
 Cal Temp (air): 19
 Cal Temp (bath):
 Bath Cal Date: 01-12-90
 Last Air Cal Date: 01-12-90
 Curr Air Cal Date: 10-24-90
 Recorder Section No:
 Comment: MOOSE MOUNTAIN
 Owner: MOOSE MOUNTAIN

Press (kPag)	First (mm)	Second (mm)	Average (mm)	P - Pc (kPa)	Bath (mm)
0	0.000	0.000	0.000	25.53	0.000
2758	10.243	10.243	10.243	0.45	10.243
5516	20.483	20.483	20.483	-23.82	20.483
8274	30.641	30.641	30.641	-25.81	30.641
11032	40.724	40.724	40.724	-7.42	40.724
13790	50.733	50.733	50.733	31.07	50.733
Sum:				0.00	

Previous m = 271.710
 Previous A = -25.530

Present m = 271.706
 Present A = -25.532

Present Press = 13777.13
 Previous Press = 13777.34

Deviation = -0.21
 Acc. Deviation = 34.47

Reporting Date: Dec 27, 1990

Page 5 of 5

Serial No: 051953
Range: 13790
Cal Temp (air): 19
Cal Temp (bath):
Bath Cal Date: 09-25-89
Last Air Cal Date: 02-14-90
Curr Air Cal Date: 10-24-90
Recorder Section No:
Comment: MOOSE MOUNTAIN
Owner: MOOSE MOUNTAIN

Press (kPag)	First (mm)	Second (mm)	Average (mm)	P - Pc (kPa)	Bath (mm)
0	0.000	0.000	0.000	-9.12	0.000
2758	9.856	9.856	9.856	7.17	9.856
5516	19.782	19.782	19.782	4.00	19.782
8274	29.703	29.703	29.703	2.21	29.703
11032	39.624	39.624	39.624	0.43	39.624
13790	49.557	49.557	49.557	-4.69	49.557
Sum:				0.00	

Previous m = 278.180
Previous A = 9.120

Present m = 278.176
Present A = 9.122

Present Press = 14140.47
Previous Press = 14140.66

Deviation = -0.20
Acc. Deviation = 34.47