

KANSAS CORPORATION COMMISSION
ONE POINT STABILIZED OPEN FLOW OR DELIVERABILITY TEST

FORM G-2
(Rev.8/98)

TYPE TEST:

- ☒ Open Flow
☒ Deliverability

TEST DATE: 11/3/99 API No. 15-075-20665

Company Horseshoe Operating Inc		Lease Suerte		Well Number 1	
County Hamilton	Location SW NE	Section 20	TWP 23s	RNG (E/W) 41	Acres Attributed
Field Bradshaw	Reservoir Winfield	Gas Gathering Connection KN			
Completion Date 6-16-1998	Plug Back Total Depth	Packer Set at			
Casing Size 4.500	Weight 10.500	Internal Diameter 4.052	Set at 2510	Perforations 2478	To 2788
Tubing Size 2.375	Weight 4.700	Internal Diameter 1.995	Set at 2401	Perforations	To
Type Completion (Describe) single gas	Type Fluid Production water	Pump Unit or Traveling Plunger? pumping unit			
Producing Thru (Annulus/Tubing) casing	% Carbon Dioxide .148	% Nitrogen 39.689		Gas Gravity- Gg .821	
Vertical Depth (H) 2483	Pressure Taps Flange	Meter Run Size 2.067			
Pressure Buildup: Shut in	10/30/99 @ 8:30am	TAKEN	11/2/99 @ 1:45 PM		
Well on Line: Started	11/2/99 @ 1:45 pm	TAKEN	11/3/99 @ 1:45 PM		

OBSERVED SURFACE DATA

Static/ Dynamic Property	Orifice Size in.	Meter Pressure psig	Pressure Diff. In. H ₂ O	Flowing Temp. t.	WellHead Temp. t.	Casing WellHead Press. (P _w) (P _t) (P _c)		Tubing WellHead Press. (P _w) (P _t) (P _c)		Duration (Hours)	Liquid Prod. Barrels
						psig	psia	psig	psia		
Shut-in						114	127			77.5	
Flow	.750	38.0	45.00	63		65	78			24.0	47.4

FLOW STREAM ATTRIBUTES

COEFFICIENT (F _b) Mcfd	(METER) PRESSURE psia	EXTENSION $\sqrt{P_m \times H_w}$	GRAVITY FACTOR Fg	FLOWING TEMP FACTOR Ft	DEVIATION FACTOR Fpv	RATE OF FLOW R Mcfd	GOR	G _m
2.780	51.4	48.09	1.1036	.9971	1.0036	147	3115.1	1.769

(OPEN FLOW)(DELIVERABILITY) CALCULATIONS

(P _c) ² = 16.2		(P _w) ² = 6.2		29.8		% (P _c - 14.4) + 14.4 =		(P _a) ² = 0.207
(P _c) ² - (P _a) ²		(P _c) ² - (P _w) ²		LOG		n x LOG		(P _d) ² 1.44
$\frac{(P_c)^2 - (P_a)^2}{(P_c)^2 - (P_w)^2}$		$\frac{(P_c)^2 - (P_a)^2}{(P_c)^2 - (P_w)^2}$		Backpressure Curve Slope "n" ----- or ----- Assigned Standard Slope		Antilog		Open Flow Deliverability = R x Antilog Mcfd
16.05		9.99		1.607		.2059		.751
14.79		9.99		1.480		.1703		.751
								.1547
								.1279
								1.428
								1.342
								210
								198

OPEN FLOW 210 Mcfd @ 14.65 psia DELIVERABILITY 198 Mcfd @ 14.65 psia

The undersigned authority, on behalf of the Company, states that he is duly authorized to make the above report and that he has knowledge of the facts stated herein and that said report is true and correct. Executed this the 8 day of Nov, 19 99

Witness (if any)

For Commission

Original: Wichita
Copy : Dodge City
Copy: Horseshoe Operating

For Company

Checked by

I declare under penalty or perjury under the laws of the state of Kansas that I am authorized to request exempt status under rule K.A.R. 82-3-304 on behalf of the operator Horsehoe Operating Inc

and that the foregoing information and statements contained on this application form are true and correct to the best of my knowledge and belief based upon gas production records and records of equipment installation and/or of type completion or upon use of the gas well herein named.

I hereby request a permanent exemption from open flow testing for the Suerte gas well on the grounds that said well:

(check one)

- ☐ is a coalbed methane producer
- ☐ is cycled on plunger lift due to water
- ☐ is a source of natural gas for injection into an oil reservoir undergoing ER
- ☐ is on vacuum at the present time; KCC approval Docket No. _____
- ☒ is incapable of producing at a daily rate in excess of 150 mcf/D

Date: 11-8-99

Signature: Paul Surpata

Title: Tester

Instructions:

All active gas wells must have at least an original G-2 form on file with the conservation division. If a gas well meets the eligibility criteria set out in KCC regulation K.A.R. 82-3-304, the operator may complete the statement provided above in order to obtain a testing exemption.

At some point during the succeeding calendar year, wellhead shut-in pressure shall be measured after a minimum of 24 hours shut-in/buildup time and shall be reported on the front side of this form under "observed surface data." Shut-in pressure shall thereafter be reported yearly in the same manner.

The G-2 form conveying the newest shut-in pressure reading shall be filed with the Wichita office no later than thirty (30) days after the taking of the pressure reading. The form must be signed and dated on the front side as though it was a verified report of test results.

KANSAS CORPORATION COMMISSION ONE POINT STABILIZED OPEN FLOW OR DELIVERABILITY TEST

(See Instructions on Reverse Side)

Type Test

☐ Open Flow

☐ Deliverability

Test Date **8/27/99**

API No 15 075 20665

Company

Horseshoe Operating

Lease

Suerte

Well Number

1

County

Hamilton

Location

S W N E N E

Section

20

TWP

23S

RNG (EAM)

41W

Acres Attributed

Field

Bradshaw

Reservoir
Winfield

Gas Gathering Connection
KN

Completion Date

6/16/98

Plug Back Total Depth

2512'

Packer Set at

Casing Size

4 1/2

Weight

10.5

Internal Diameter

4.052

Set at

2510'

Perforations

2478' - 88'

To

Tubing Size

2 3/8

Weight

4.7

Internal Diameter

2.000

Set at

2401'

Perforations

To

Type Completion (Describe)

Single-Gas

Type Fluid Production

Water

Pump Unit or Traveling Plunger? Yes / No

Producing Thru (Annulus / Tubing)

% Carbon Dioxide

% Nitrogen

Gas Gravity - G_g

Vertical Depth(H)

Pressure Taps

(Meter Run) (Prover) Size

Pressure Buildup: Shut in **8/26**

19

99

at **11:00**

(AM)

(PM) Taken

19

at

(AM)

(PM)

Well on Line:

Started

8/27

19

99

at **11:00**

(AM)

(PM) Taken

19

at

(AM)

(PM)

OBSERVED SURFACE DATA

Duration of Shut-in **2.4** Hou

Static / Dynamic Property	Orifice Size Inches	Circle one: Meter or Prover Pressure psig	Pressure Differential in (h) Inches H ₂ O	Flowing Temperature t	Well Head Temperature t	Casing Wellhead Pressure (P _w) or (P _i) or (P _e)		Tubing Wellhead Pressure (P _w) or (P _i) or (P _e)		Duration (Hours)	Liquid Produced (Barrels)
						psig	psia	psig	psia		
Shut-In							79		0		
Flow						51			0		

FLOW STREAM ATTRIBUTES

Plate Coefficient (F _v) (F _p) Mcf/d	Circle one: Meter or Prover Pressure psia	Press Extension $\sqrt{P_m \times H_w}$	Gravity Factor F _g	Flowing Temperature Factor F _{tt}	Deviation Factor F _{dv}	Metered Flow R (Mcf/d)	GOR (Cubic Feet/ Barrel)	Flowing Fluid Gravity G _m

(OPEN FLOW) (DELIVERABILITY) CALCULATIONS

$(P_e)^2 =$: $(P_w)^2 =$: $P_d =$ % $(P_e - 14.4) + 14.4 =$: $(P_e)^2 = 0.207$
 $(P_e)^2 =$:

$(P_e)^2 - (P_w)^2$ or $(P_e)^2 - (P_d)^2$	$(P_e)^2 - (P_w)^2$	Choose formula 1 or 2 1. $P_e^2 - P_w^2$ 2. $P_e^2 - P_d^2$ divided by $P_e^2 - P_w^2$	LOG of formula 1 or 2, and divide by $P_e^2 - P_w^2$	Backpressure Curve Slope = "n" or Assigned Standard Slope	$n \times \text{LOG}$	Antilog	Open Flow Deliverability Equals R x Antilog Mcf/d

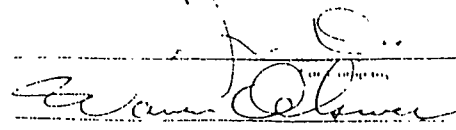
Open Flow

Mcf/d @ 14.65 psia

Deliverability

Mcf/d @ 14.65 psia

The undersigned authority, on behalf of the Company, states that he is duly authorized to make the above report and that he has knowledge of the facts stated therein, and that said report is true and correct. Executed this, the 29 day of September, 1999


 E. J. Oliver

KANSAS CORPORATION COMMISSION
MULTIPOINT BACK PRESSURE TEST

FORM G-1

8-7-58

TYPE TEST: ☒ Initial ☐ Annual ☐ Special		TEST DATE: 11-2-1999	
COMPANY Horsehoe Operating Inc		LEASE Suerte	
		WELL NO. 1	
COUNTY Hamilton	LOCATION SW NE	SECTION 20	TWP 23s 41
FIELD Bradshaw		PIPELINE CONNECTION KN	
COMPLETION DATE 6-16-1998		PACKER SET AT	
CASING SIZE 4.500		TOTAL DEPTH 2788	
TUBING SIZE 2.375			
TYPE COMPLETION (Describe) single gas		TYPE FLUID PRODUCTION water	
PRODUCING THRU (Annulus/Tubing) casing		RESERVOIR TEMPERATURE F 95	
GAS GRAVITY - Gg .821		API GRAVITY OF LIQUID 14.4 psia	
% CARBON DIOXIDE .148		% NITROGEN 39.689	
VERTICAL DEPTH (H) 2483		METER RUN SIZE 2.067	
REMARKS			

OBSERVED SURFACE DATA

RATE NO.	ORIFICE SIZE in.	(METER) PRESSURE psig	DIFF. (h _w) (h _t)	FLOWING TEMP. t.	WELLHEAD TEMP. t.	CASING WELLHEAD PRESS.		TUBING WELLHEAD PRESS.		DURATION HOURS	LIQUID PROD. Bbls.
						psig	(P _w) (P _t) (P _c) psia	psig	(P _w) (P _t) (P _c) psia		
SHUT-IN						113	126				
1.	.750	35.00	9.00	54		109	122			.50	
2.	.750	36.50	18.00	57		103	116			.50	.1
3.	.750	37.00	40.00	56		99	112			.50	.5
4.	.750	38.00	92.00	56		90	103			.50	.5

FLOW STREAM ATTRIBUTES

RATE NO.	COEFFICIENT (F _b) Mcfd	(METER) PRESSURE psia	EXTENSION $\sqrt{P_m \times H_w}$	GRAVITY FACTOR Fg	FLOWING TEMP FACTOR Ft	DEVIATION FACTOR Fpv	RATE OF FLOW Q Mcfd	GOR	G _m
1.	2.780	48.4	20.87	1.1036	1.0058	1.0036	64		.821
2.	2.780	49.9	29.97	1.1036	1.0029	1.0036	92	19280.9	1.018
3.	2.780	50.4	44.90	1.1036	1.0039	1.0037	138	5783.2	1.403
4.	2.780	51.4	68.77	1.1036	1.0039	1.0037	212	8857.9	1.224

PRESSURE CALCULATION

RATE NO.	P _t psia	P _c psia	P _w psia	(P _c) ² Thousands	(P _w) ² Thousands	PLOTING POINTS		% SHUT-IN 100 $\left[\frac{P_w - P_a}{P_c - P_a} \right]$
						(P _c) ² - (P _w) ² Thousands	Q Mcfd	
1.	122.4	126.9	122.4	16.1	15.0	1.1	64.6	96.1
2.	116.4	126.9	116.5	16.1	13.6	2.5	92.5	90.9
3.	112.4	126.9	112.7	16.1	12.7	3.4	138.8	87.5
4.	103.4	126.9	104.1	16.1	10.8	5.3	212.6	79.9

INDICATED WELLHEAD OPEN FLOW

471

Mcfd @ 14.65 psia

"n" =

The undersigned authority, on behalf of the Company, states that he is duly authorized to make the above report and that he has knowledge of the facts stated herein and that said report is true and correct. Executed this the 8 day of Nov, 19 99

Witness (if any)

For Commission

Original: Wichita
Copy : Dodge City
Copy: Horseshoe Operating

Checked by

GAS WELL BACK PRESSURE CURVE

WELL TESTER:

TEST DATE: 11-2-1999

Horsehoe Operating Inc

Suerte 1

20 23s 41

Hamilton ,KS.

Exponent n: 0.7511

AOF: 467.

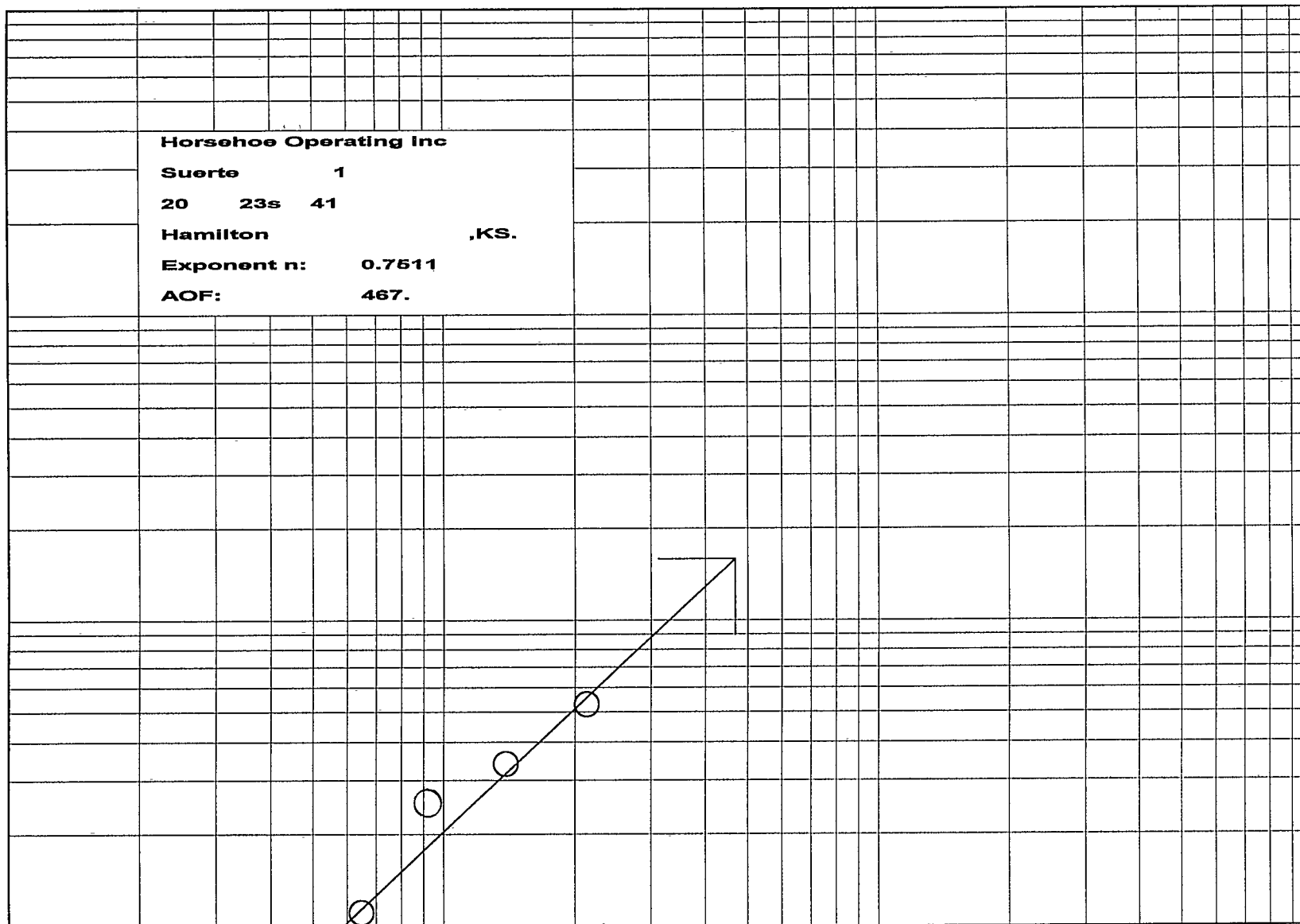
$P_c^2 - P_w^3$ (10 PSI)

10

100

1000

Q (MCF/DAY)



NATURAL GAS ANALYSIS REPORT

Sampled by:
 Trilobite Testing, L. L. C.
 Hays, Kansas
 Scott City, Kansas
 Phone: 800-728-5369
 Fax: 913-625-5620

Analyzed by:
 Caraway Analytical, Inc
 P. O. Box 2137
 Liberal, Kansas 67905
 Phone: 316-624-5389
 Fax: 316-626-7108

Lab Number: 995874	Analyzed: 11/03/99
Sample From: Suerte #1 4pt	Pressure:
Producer: Horseshoe Operating	Temperature:
Date:	Location: 20-23-41
Time:	County: Hamilton
Sampler:	State: Kansas
Source:	Formation: Winfield

	Mole %	GPM
Helium	He: 0.813	0.000
Hydrogen	H2: 0.000	0.000
Oxygen	O2: 0.000	0.000
Nitrogen	N2: 39.689	0.000
Carbon Dioxide	CO2: 0.148	0.000
Methane	C1: 48.778	0.000
Ethane	C2: 4.544	1.215
Propane	C3: 3.311	0.912
Iso Butane	iC4: 0.418	0.137
Normal Butane	nC4: 1.125	0.355
Iso Pentane	iC5: 0.259	0.095
Normal Pentane	nC5: 0.329	0.119
Hexanes Plus	C6+: 0.586	0.256

TOTAL: 100.000 3.089
 Z Fact: 0.9982
 SP.GR.: 0.8213
 BTU (SAT): 750.1 @ 14.73 psia
 BTU (DRY): 763.4 @ 14.73 psia
 OCTANE RATING: 73.2

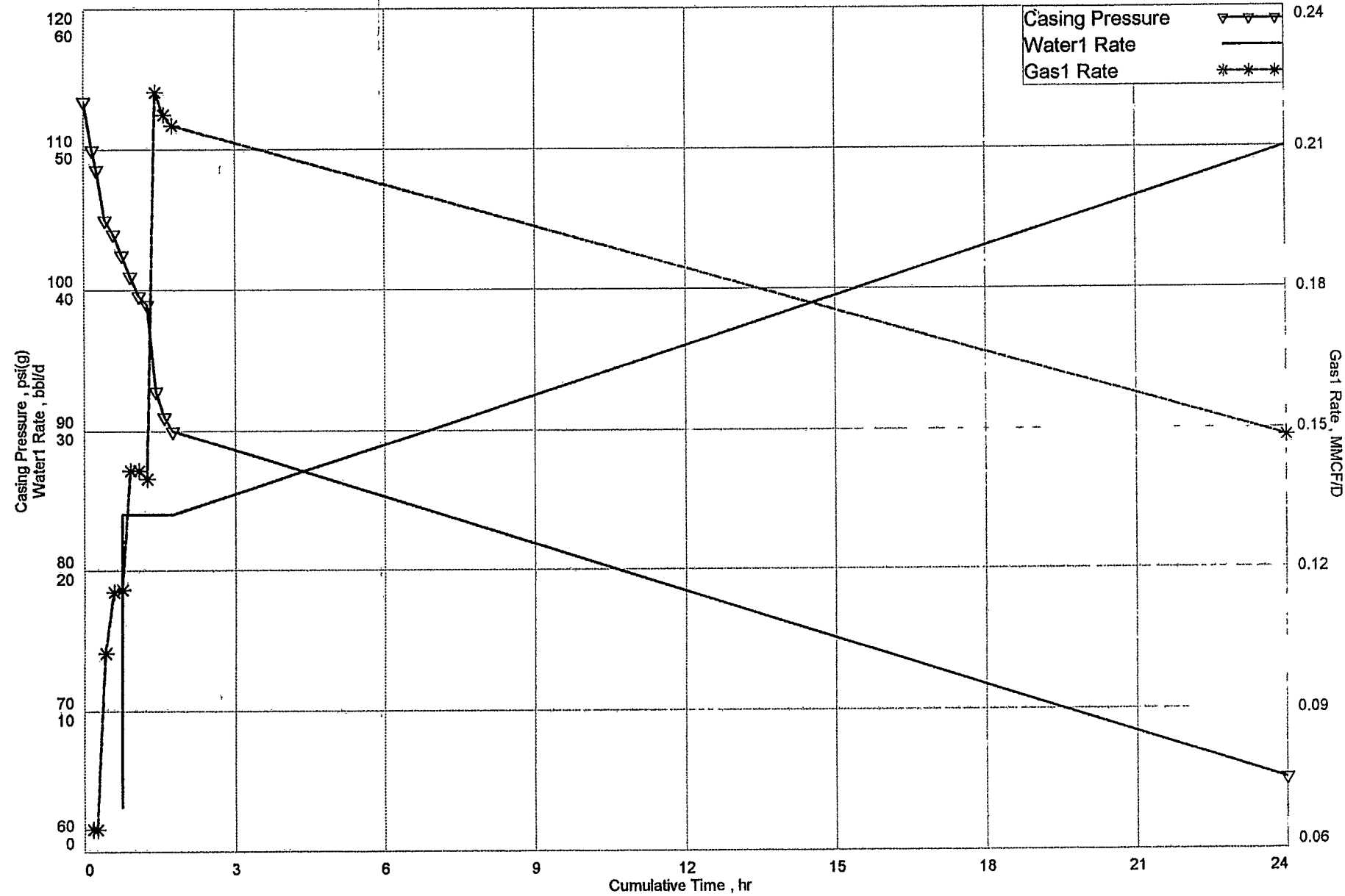
COMMENTS:

0.000

Horseshoe Operating, Inc
SW NE 20 23s 41w Hamilton county Kansas

Suerte 1

Plot



FieldNotes

Field Measurements

	Date	Clock Time	Comments	Casing Pres	Static1 Pres	Diff1 Pres	Meter1 Temp	Gas1 Rate	Measured Wat1 Vol	Water1 Rate	Calc Inc Wat1 Gain
	yyyy/mm/dd	hh:mm:ss		psi(g)	psi(g)	in of H2O	°F	MMCF/D	bbl	bbl/d	bbl
1	1999/11/02	13:45:00	shutin	113.50					950.200		0.000
2		13:55:00		110.00	35.00	9.00	54.00	0.065			
3		14:00:00	1st pt	108.60	35.00	9.00	54.00	0.065			
4		14:10:00		105.00	36.00	22.00	55.00	0.102			
5		14:20:00		104.00	36.00	28.00	56.00	0.116			
6		14:30:00	2nd pt	102.50	36.50	28.00	57.00	0.116	950.300	3.200	0.100
7		14:40:00		101.00	37.00	41.00	56.00	0.141			
8		14:50:00		99.60	37.00	41.00	56.00	0.141			
9		15:00:00	3rd pt	99.00	37.00	40.00	56.00	0.140	950.800	24.000	0.500
10		15:10:00		92.80	37.50	99.00	56.00	0.222			
11		15:20:00		91.00	38.00	94.00	56.00	0.218			
12		15:30:00	4th pt	90.00	38.00	92.00	56.00	0.215	951.300	24.000	0.500
13	1999/11/03	13:45:00	1pt	65.00	38.00	45.00	65.00	0.148	997.700	50.049	46.400
14											