

# KANSAS CORPORATION COMMISSION ONE POINT STABILIZED OPEN FLOW OR DELIVERABILITY TEST

Type Test:

(See Instructions on Reverse Side)

- Open Flow  
 Deliverability

Test Date: 11/12/2010

API No. 15

119-21264 - 0000

Company <b>APACHE CORP.</b>		Lease <b>HAGER</b>		Well Number <b>1-18</b>	
County <b>MEADE</b>	Location <b>NW, SW</b>	Section <b>18</b>	TWP <b>34</b>	RNG (E/W) <b>27W</b>	Acres Attributed <b>80</b>
Field <b>JOHN</b>		Reservoir <b>CHESTER</b>		Gas Gathering Connection <b>DCP</b>	
Completion Date <b>10/25/2010</b>		Plug Back Total Depth <b>6100</b>		Packer Set at	
Casing Size <b>5.500</b>	Weight <b>17#</b>	Internal Diameter	Set at <b>6100</b>	Perforations <b>5923</b>	To <b>5930</b>
Tubing Size <b>2.875</b>	Weight <b>6.5#</b>	Internal Diameter	Set at <b>5895</b>	Perforations	To
Type Completion (Describe) <b>GAS</b>		Type Fluid Production <b>WATER</b>		Pump Unit or Traveling Plunger? Yes / No	
Producing Thru (Annulus / Tubing) <b>TUBING</b>		% Carbon Dioxide <b>.100</b>		% Nitrogen <b>2.453</b>	
Vertical Depth(H) <b>6100</b>		Pressure Taps <b>FLG</b>		(Meter Run) (Prover) Size <b>2.067</b>	
Pressure Buildup: Shut in <b>11/10</b> 20 <b>10</b> at <b>9</b> (AM) (PM) Taken <b>11/11</b> 20 <b>10</b> at <b>9</b> (AM) (PM)					
Well on Line: Started <b>11/11</b> 20 <b>10</b> at <b>10</b> (AM) (PM) Taken <b>11/12</b> 20 <b>10</b> at <b>10</b> (AM) (PM)					

**OBSERVED SURFACE DATA**

Duration of Shut-in **24** Hours

Static / Dynamic Property	Orifice Size (Inches)	Circle one: Meter Prover Pressure psig (Pm)	Pressure Differential in Inches H <sub>2</sub> O	Flowing Temperature t	Well Head Temperature t	Casing Wellhead Pressure (P <sub>w</sub> ) or (P <sub>1</sub> ) or (P <sub>2</sub> )		Tubing Wellhead Pressure (P <sub>w</sub> ) or (P <sub>1</sub> ) or (P <sub>2</sub> )		Duration (Hours)	Liquid Produced (Barrels)
						psig	psia	psig	psia		
Shut-In					<b>74</b>	<b>1034</b>	<b>1048.4</b>	<b>1034</b>	<b>1048.4</b>	<b>24</b>	
Flow	<b>1.250</b>	<b>123</b>	<b>13</b>	<b>65</b>	<b>74</b>	<b>361</b>	<b>375.4</b>	<b>216</b>	<b>230.4</b>	<b>24</b>	

**FLOW STREAM ATTRIBUTES**

Plate Coefficient (F <sub>s</sub> ) (F <sub>p</sub> ) Mcfd	Circle one: Meter or Prover Pressure psia	Press Extension $\sqrt{P_m \times h}$	Gravity Factor F <sub>g</sub>	Flowing Temperature Factor F <sub>t</sub>	Deviation Factor F <sub>pv</sub>	Metered Flow R (Mcf/d)	GOR (Cubic Feet/ Barrel)	Flowing Fluid Gravity G <sub>m</sub>
<b>8.329</b>	<b>137.4</b>	<b>42.26</b>	<b>1.2312</b>	<b>.9952</b>	<b>1.011</b>	<b>436</b>		

**(OPEN FLOW) (DELIVERABILITY) CALCULATIONS**

(P<sub>e</sub>)<sub>2</sub> = 0.207  
(P<sub>d</sub>)<sub>2</sub> =

(P<sub>e</sub>)<sub>2</sub> = **1099.1** ; (P<sub>w</sub>)<sub>2</sub> = **140.9** ; P<sub>d</sub> = % (P<sub>e</sub> - 14.4) + 14.4 = :

(P <sub>e</sub> ) <sub>2</sub> - (P <sub>w</sub> ) <sub>2</sub> or (P <sub>e</sub> ) <sub>2</sub> - (P <sub>d</sub> ) <sub>2</sub>	(P <sub>e</sub> ) <sub>2</sub> - (P <sub>w</sub> ) <sub>2</sub>	Choose formula 1 or 2: 1. P <sub>e</sub> <sup>2</sup> - P <sub>w</sub> <sup>2</sup> 2. P <sub>e</sub> <sup>2</sup> - P <sub>d</sub> <sup>2</sup> divided by: P <sub>e</sub> <sup>2</sup> - P <sub>w</sub> <sup>2</sup>	LOG of formula 1. or 2. and divide by: $\frac{P_e^2 - P_w^2}{P_e^2 - P_d^2}$	Backpressure Curve Slope = "n" Assigned Standard Slope	n x LOG	Antilog	Open Flow Deliverability Equals R x Antilog (Mcf/d)
<b>1098.9</b>	<b>958.2</b>	<b>1.14683</b>	<b>0.59502</b>	<b>.894</b>	<b>.0531948</b>	<b>1.13030</b>	<b>492</b>

Open Flow **492** Mcfd @ 14.65 psia Deliverability 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 therein, and that said report is true and correct. Executed this the 11 day of NOVEMBER 20 10.

RECEIVED  
KANSAS CORPORATION COMMISSION

THURMOND-MCGLOTHLIN, INC.

Witness (if any)

For Company

*Steve D...*

JAN 21 2011

For Commission

Checked by

I declare under penalty of 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

and that the foregoing pressure information and statements contained on this application form are true and correct to the best of my knowledge and belief based upon available production summaries and lease records

of equipment installation and/or upon type of completion or upon use being made of the gas well herein named. I hereby request a one-year exemption from open flow testing for the

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 not capable of producing at a daily rate in excess of 250 mcf/D

I further agree to supply to the best of my ability any and all supporting documents deemed by Commission staff as necessary to corroborate this claim for exemption from testing.

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Title: \_\_\_\_\_

**Instructions:** If a gas well meets one of 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 claim exempt status for the gas well.

At some point during the current calendar year, wellhead shut-in pressure shall have been 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 for so long as the gas well continues to meet the eligibility criterion or until the claim of eligibility for exemption **IS** denied.

The G-2 form conveying the newest shut-in pressure reading shall be filed with the Wichita office no later than December 31 of the year for which it's intended to acquire exempt status for the subject well. The form must be signed and dated on the front side as though it was a verified report of annual test results.

STATE OF KANSAS - CORPORATION COMMISSION  
MULTIPOINT BACK PRESSURE TEST

FORM CG-1 Rev.

TYPE TEST:  Initial  Annual  Special TEST DATE: 11/11/2010  
 COMPANY APACHE CORP. LEASE HAGER WELL NO: 1-18  
 COUNTY MEADE LOCATION NW, SW SECTION 18 TWP 34 RNG (E/W) 27W ACRES 80  
 API WELL NUMBER 15- 11921264 RESERVOIR CHESTER PIPELINE CONNECTION DCP  
 COMPLETION DATE 10/25/2010 PLUG BACK TOTAL DEPTH 6100 PACKER SET AT  
 CASING SIZE 5.500 WT. 17# ID. 4.892 SET AT 6100 PERF. 5923 TO 5930  
 TUBING SIZE 2.875 WT. 6.5# ID. 2.441 SET AT 5895 PERF. TO  
 TYPE COMPLETION (Describe) GAS TYPE FLUID PRODUCTION WATER  
 PRODUCING THRU TUBING RESERVOIR TEMPERATURE °F 122 BAR PRESS - P<sub>s</sub> 14.4 Psia  
 GAS GRAVITY - G<sub>s</sub> .6597 % CARBON DIOXIDE .100 % NITROGEN 2.453 API GRAVITY OF LIQUID  
 VERTICAL DEPTH (H) TYPE METER CONNECTION FLG (METER RUN) (PROVER) SIZE 2.067

REMARKS

OBSERVED DATA

DURATION OF SHUT-IN \_\_\_\_\_ HR.

RATE NO.	ORIFICE SIZE in.	(METER) (PROVER) PRESSURE Psig	DIFF. (h <sub>w</sub> ) (h <sub>p</sub> )	FLOWING TEMP t	WELL-HEAD TEMP. t	CSG WELLHEAD PRESS. Psig (P <sub>w</sub> )(P <sub>p</sub> )(P <sub>s</sub> ) Psia	TBG WELLHEAD PRESS. Psig (P <sub>w</sub> )(P <sub>p</sub> )(P <sub>s</sub> ) Psia	FLOW DURATION (HOURS)	LIQUID PROD. Bbls.
SHUT IN									
1	1.250	103.4	8.4	73	74	981 995.4	990 1004.4		
2	1.250	114.9	31.0	69.7	74	932 946.4	933 947.4		
3	1.250	130.8	62.4	71.8	74	875 889.4	850 864.4		
4	1.250	143.1	101.7	71.8	74	806 820.4	780 794.4		
5									

RATE OF FLOW CALCULATIONS

RATE NO.	COEFFICIENT (F <sub>1</sub> ) (F <sub>p</sub> ) Mcfd	(METER) (PROVER) PRESSURE Psia	PRESS EXTENSION $\sqrt{P_w \cdot h_w}$	GRAVITY FACTOR F <sub>g</sub>	FLOWING TEMP FACTOR F <sub>t</sub>	DEVIATION FACTOR F <sub>pr</sub>	RATE OF FLOW Q Mcfd	GOR (ft <sup>3</sup> /Bbl)	G <sub>m</sub>
1	8.329	117.8	31.46	1.2312	.9877	1.010	322		
2	8.329	129.3	63.31	1.2312	.9908	1.011	650		
3	8.329	145.2	95.19	1.2312	.9888	1.011	976		
4	8.329	157.5	126.56	1.2312	.9888	1.014	1301		
5									

PRESSURE CALCULATIONS

RATE NO.	P <sub>i</sub> Psia	P <sub>c</sub> Psia	P <sub>w</sub> Psia	(P <sub>c</sub> ) <sup>2</sup> THOUSANDS	(P <sub>w</sub> ) <sup>2</sup> THOUSANDS	PLOTTING POINTS		% SHUT-IN (P <sub>w</sub> - P <sub>c</sub> ) / (P <sub>c</sub> - P <sub>w</sub> )
						(P <sub>c</sub> ) <sup>2</sup> - (P <sub>w</sub> ) <sup>2</sup> THOUSANDS	Q Mcfd	
1		1048.4	995.4	1049.1	990.8	108.8	322	94.9
2		1048.4	946.4	1049.1	895.7	203.5	650	90.1
3		1048.4	889.4	1049.1	791.0	308.1	976	84.6
4		1048.4	820.4	673.1	679.1	426.1	1301	77.9
5								

INDICATED WELLHEAD OPEN FLOW 310.0

Mcf @ 14.65 Psia

"b" = .894

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 11 day of NOVEMBER, 19 2010

Witness (if any)

*Steve Duvet*

For Commission

RECEIVED  
KANSAS CORPORATION COMMISSION

THURMOND-MCGLOTHLIN, INC.  
For Company

JAN 21 2011

Checked By (Rev.10/96)

CONSERVATION DIVISION  
WICHITA, KS

OPERATOR: APACHE CORP.

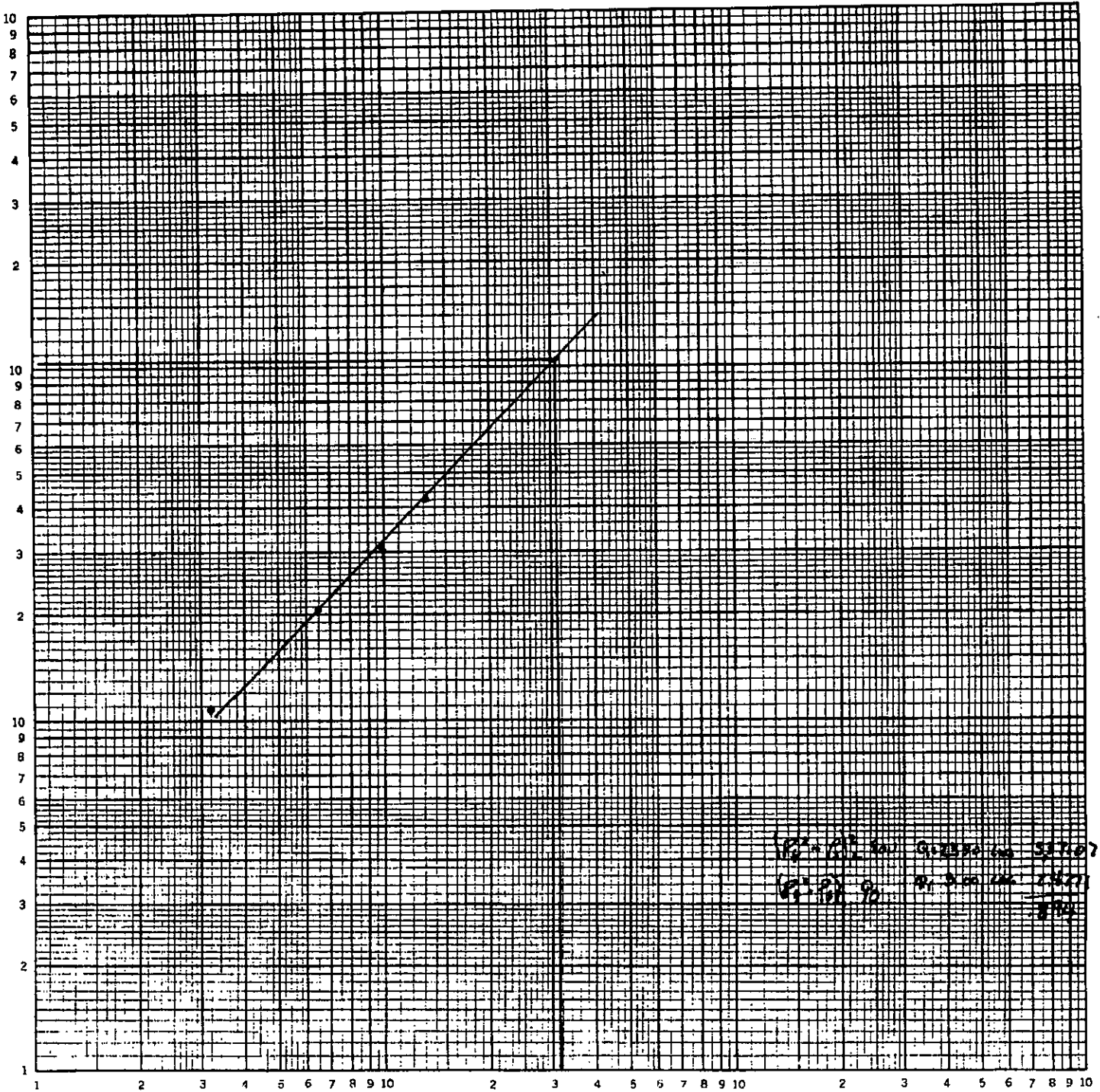
LEASE: HAGER

WELL#: 1-18

DATE: 11/11/2010

46 7402

K·E LOGARITHMIC 3 X 3 CYCLES  
KEUFFEL & ESSER CO. MADE IN U.S.A.



$(P^2 \times A)^2 \approx 9.25 \times 10^7$   
 $(P^2 \times A)^2 \approx 7.5 \times 10^7$   
8700

AP-3,100 MCF 6  
A-894

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KANSAS CORPORATION COMMISSION  
JAN 21 2011  
CONSERVATION DIVISION  
WICHITA, KS