

KANSAS CORPORATION COMMISSION

ONE POINT STABILIZED OPEN FLOW OR DELIVERABILITY TEST

Type Test:

- Open Flow
 Deliverability

(See Instructions on Reverse Side)

Test Date:
07/07/03

API No. 15
023-20502-00-00

Company NOBLE ENERGY, INC.		Lease ZWEYGARDT		Well Number 33-32	
County CHEYENNE	Location	Section 32	TWP 3S	RNG (E/W) 41W	Acres Attributed 160
Field CHERRY CREEK		Reservoir NIOBRARA		Gas Gathering Connection BITTER CREEK PIPELINE	
Completion Date 6/16/03		Plug Back Total Depth 1518		Packer Set at	
Casing Size 4 1/2	Weight 10.5	Internal Diameter 4.052	Set at 1565	Perforations 1387	To 1425
Tubing Size	Weight	Internal Diameter	Set at	Perforations	To

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Type Completion (Describe) SINGLE (GAS)	Type Fluid Production	Pump Unit or Traveling Plunger? NO	Yes / No
Producing Thru (Annulus / Tubing) CASING	% Carbon Dioxide	% Nitrogen	Gas Gravity - G _g 0.6
Vertical Depth(H) 1425	Pressure Taps	(Meter Run) (Prover) Size 2"	
Pressure Buildup: Shut in _____ 20____ at _____ (AM) (PM) Taken 6/27 20 03 at _____ (AM) (PM)			
Well on Line: Started 7/7 20 03 at 10:20 (AM) (PM) Taken _____ 20 ____ at _____ (AM) (PM)			

OBSERVED SURFACE DATA

Static / Dynamic Property	Orifice Size (inches)	Circle one: <u>Meter</u> Prover Pressure psig (P _m)	Pressure Differential in Inches H ₂ O	Flowing Temperature t	Well Head Temperature t	Casing Wellhead Pressure (P _w) or (P _t) or (P _c)		Tubing Wellhead Pressure (P _w) or (P _t) or (P _c)		Duration (Hours)	Liquid Produced (Barrels)
						psig	psia	psig	psia		
Shut-In						265	278	na	na		
Flow	3/8"	144	83	60		131	144	na	na	24	0

FLOW STREAM ATTRIBUTES

Plate Coefficient (F _p) (F _p) Mcfd	Circle one: <u>Meter</u> or Prover Pressure psia	Press Extension $\sqrt{P_m \times h}$	Gravity Factor F _g	Flowing Temperature Factor F _t	Deviation Factor F _{pv}	Metered Flow R (Mcfd)	GOR (Cubic Feet/ Barrel)	Flowing Fluid Gravity G _m

(OPEN FLOW) (DELIVERABILITY) CALCULATIONS

(P_c)² = _____ : (P_w)² = _____ : P_g = _____ % (P_c - 14.4) + 14.4 = _____ : (P_g)² = 0.207
(P_o)² = _____

(P _c) ² - (P _a) ² or (P _c) ² - (P _o) ²	(P _c) ² - (P _w) ²	Choose formula 1 or 2: 1. P _c ² - P _a ² 2. P _c ² - P _o ² divided by: P _c ² - P _w ²	LOG of formula 1. or 2. and divide by: $\frac{P_c^2 - P_a^2}{P_c^2 - P_w^2}$	Backpressure Curve Slope = "n" ----- or ----- Assigned Standard Slope	n x LOG []	Antilog	Open Flow Deliverability Equals R x Antilog (Mcfd)

Open Flow _____ Mcfd @ 14.65 psia Deliverability **121** 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 7TH day of AUGUST, 20 03.

Witness (if any)

Patricia J. Jurek
For Company

For Commission

Checked by

•Zweygartd #33-32

- first 24 hours flow data into pipeline
- data used as "one point"

Date	Total Flow MCFD	Hrs On	DP_Avg	SP_Avg	PT_Avg
7/7/2003	121	24	83 InH2O	144 psi	60 °F

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