

STATE OF KANSAS - CORPORATION COMMISSION
ONE POINT STABILIZED OPEN FLOW OR DELIVERABILITY TEST

15-103-21091-0000
 FORM O-2
 8-7-58

TYPE TEST: Deliverability Open Flow **TEST DATE:** 3/29/89

COMPANY: Mid Gulf, Inc. **LEASE:** Greundel **WELL NO.:** 3

COUNTY: Leavenworth **LOCATION:** SECTION 12 TWP 10 RNG 22E **ACRES:** 3

FIELD: McLouth **RESERVOIR:** Fairmont Pipeline **PIPELINE CONNECTION:** Fairmont Pipeline

COMPLETION DATE: _____ **PLUG BACK TOTAL DEPTH:** _____ **PACKER SET AT:** _____

CASINO SIZE: 4 1/2" **WT.:** _____ **L.D.:** _____ **SET AT:** _____ **PERF.:** _____ **TO:** _____

TUBING SIZE: Nil **WT.:** _____ **L.D.:** _____ **SET AT:** _____ **PERF.:** _____ **TO:** _____

TYPE COMPLETION (Describe): Single Gas **TYPE FLUID PRODUCTION:** Nil

PRODUCING THRU: Casing **RESERVOIR TEMPERATURE F:** _____ **BAR. PRESS - P_e:** 14.4 Psia

GAS GRAVITY - G_g: .5765 **% CARBON DIOXIDE:** .3 **% NITROGEN:** 2.42 **API GRAVITY OF LIQUID:** _____

VERTICAL DEPTH (H): _____ **TYPE METER CONN.:** Flange **(METER RUN) (PROVER) SIZE:** 2"

SHUT-IN PRESSURE: SHUT IN: 3/25 1989 AT 400 xx (AM)(PM) TAKEN 3/28 1989 AT 1050 xx (AM)(PM)

FLOW TEST: STARTED: 3/28 1989 AT 316 xx (AM)(PM) TAKEN 3/29 1989 AT 300 xx (AM)(PM)

RECEIVED
 STATE CORPORATION COMMISSION
 MAY 15 1989
 CONSERVATION DIVISION
 Wichita, Kansas

AS
 P2
 5-15-89

OBSERVED DATA DURATION OF SHUT-IN 67 HR.

SHUT-IN OR FLOW	ORIFICE SIZE in.	(METER) (PROVER) PRESSURE psig	DIFF. in. (h _w)(h _d)	FLOWING TEMP. t	WELL-HEAD TEMP. t	CASINO WELLHEAD PRESS.		TUBING WELLHEAD PRESS.		DURATION HOURS	LIQUID PROD. Bbls.
						psig	(P _w)(P _i)(P _e) psia	psig	(P _w)(P _i)(P _e) psia		
SHUT-IN						201.6	216.0			67.0	
FLOW	3/4	60.0	23.5		60	181.1	195.5			24.0	

RATE OF FLOW CALCULATIONS

COEFFICIENT (F _p)(F _e) Mcfd	(METER) (PROVER) PRESSURE psia	EX.ENSION $\sqrt{P_m h_w}$	GRAVITY FACTOR F _g	FLOWING TEMP. FACTOR F _L	DEVIATION FACTOR F _{pv}	RATE OF FLOW R Mcfd	GOR	G _m
2.779	74.4	41.814	1.315	1.00	1.00	153		

(OPEN FLOW) (DELIVERABILITY) CALCULATIONS

(P_e)² = 46 656, (P_w)² = 38 220, P_d = _____ % (P_e - 14.4) + 14.4 = _____ (P_e)² = 0.207 (P_d)² = _____

$\frac{(P_e)^2 - (P_d)^2}{(P_e)^2 - (P_w)^2}$	$(P_e)^2 - (P_w)^2$	$\frac{P_e^2 - P_d^2}{P_e^2 - P_w^2}$	LOG []	"n"	n x LOG []	ANTILOG	OPEN FLOW DELIVERABILITY EQUALS R = ANTILOG Mcfd
46 449	8 436	5.5062	.7409	1.00	.7409	5.5062	841

OPEN FLOW 841 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 2th day of April, 1989.

MR. [Signature] Consultant
 For Company

Witness (if any) _____

For Commission

Checked by _____

STATE OF KANSAS - CORPORATION COMMISSION
MULTIPOINT BACK PRESSURE TEST

FORM CG-1

TYPE TEST: Initial Annual Special TEST DATE: 3/28/89

COMPANY: Mid Gulf, Inc. LEASE: Greundel WELL NO.: 3

COUNTY: Leavenworth LOCATION: SECTION 12 TWP 10 RNG 22E ACRES

FIELD: Fairmont RESERVOIR: McLouth PIPELINE CONNECTION: Fairmont Pipeline

COMPLETION DATE: PLUG BACK TOTAL DEPTH: PACKER SET AT:

CASING SIZE: 4 1/2" WT. ID SET AT PERF. TO

TUBING SIZE: Nil WT. ID SET AT PERF. TO

TYPE COMPLETION (Describe): Single Gas TYPE FLUID PRODUCTION: MAY 15 1989

PRODUCING THRU: Casing RESERVOIR TEMPERATURE F: CONSERVATION DIVISION BAR PRESS - P_a 14.4 Psia
Wichita, Kansas

GAS GRAVITY - G_g: .5765 % CARBON DIOXIDE: .3 % NITROGEN: 2.42 APL GRAVITY OF LIQUID

VERTICAL DEPTH (H): TYPE METER CONN.: Flange (METER RUN) (PROVER) SIZE: 2"

REMARKS:

OBSERVED DATA

DURATION OF SHUT-IN 67 HR.

RATE No.	ORIFICE SIZE in.	(METER) (PROVER) PRESSURE psig	DIFF. (h _w) (hg)	FLOWING TEMP. t	WELL-HEAD TEMP. t	CASING WELLHEAD PRESS.		TUBING WELLHEAD PRESS.		DURATION HOURS	LIQUID PROD. Bbls.
						psig	(P _w)(P _i)(P _c) psia	psig	(P _w)(P _i)(P _c) psia		
SHUT IN						201.6	216.0			67.	
1	3/4	60.	2.5		60	189.6	204.0			1.33	
2	3/4	61	5.5		60	187.6	202.0			1.33	
3	3/4	61.5	9.0		60	184.1	198.5			1.33	
4	3/4	58.0	24.0		60	178.1	192.5			1.33	
5											

RATE OF FLOW CALCULATIONS

RATE NO.	COEFFICIENT (F _o)(F _p) Mc/d	(METER) (PROVER) PRESSURE psia	EXTENSION $\sqrt{P_m \times h_w}$	GRAVITY FACTOR F _g	FLOWING TEMP FACTOR F _t	DEVIATION FACTOR F _{pv}	RATE OF FLOW Q Mc/d	GOR	G _m
1	2.779	74.4	13.64	1.315	1.00	1.00	50		
2	2.779	75.4	20.36	1.315	1.00	1.00	74		
3	2.779	75.9	26.136	1.315	1.00	1.00	96		
4	2.779	72.4	41.684	1.315	1.00	1.00	152		
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PRESSURE CALCULATIONS

RATE NO.	P _i psia	P _c psia	P _w psia	(P _c) ² THOUSANDS	(P _w) ² THOUSANDS	PLOTTING POINTS		% SHUT-IN $100 \frac{P_w - P_a}{P_c - P_a}$
						(P _c) ² - (P _w) ² THOUSANDS	Q Mc/d	
1	204.0	216.0	204.0	46656	41616	5040	50	94.0
2	202.0	216.0	202.0	46656	40804	5852	74	93.1
3	198.5	216.0	198.5	46656	39402	7254	96	91.3
4	192.5	216.0	192.5	46656	37056	9600	152	88.3
5								

INDICATED WELLHEAD OPEN FLOW

Mc/d @ 14.65 psia

"n" = 1.00 (actual 1.4574)

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 12th day of April, 1989.

MB Nathan Consultant
For Company

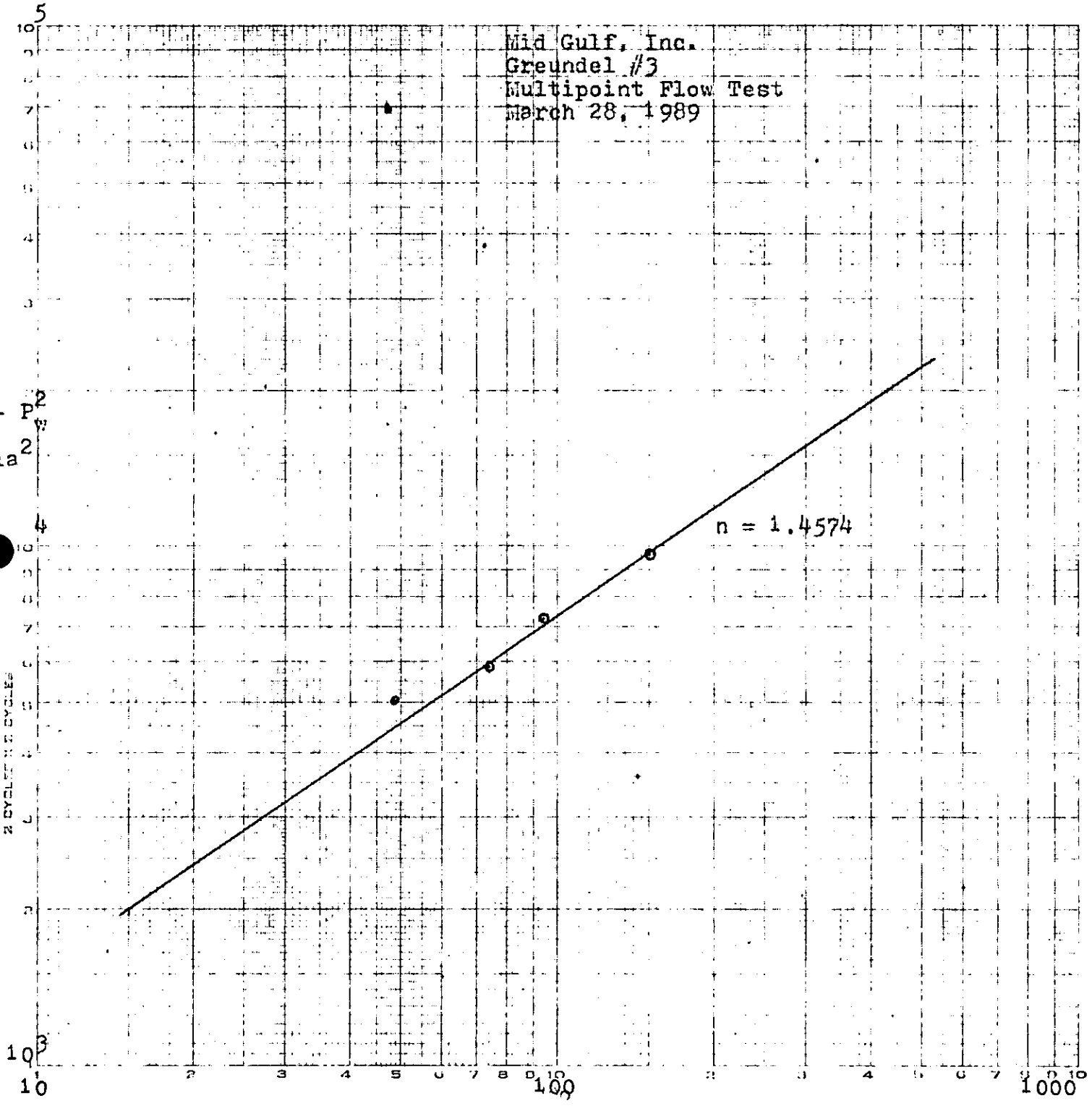
Witness (if any)

For Commission

Checked by

Mid Gulf, Inc.
Greundel #3
Multipoint Flow Test
March 28, 1989

NO. 740-122 DITZGEN GRAPH PAPER
LOGARITHMIC
2 CYCLE PERIOD CYCLES
PSIA



Q GAS FLOW RATE (MCFD)