O'BRIANT ENGINEERING

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April 8, 1988

Mr. Robert Enfield
P.O. Box 2431
Santa Fe, N.M. 87501

Examiner Stogner
Case No. 9390
EXHIBIT NO. 11

Subject: Bottomhole Pressure Buildup Analysis
McCombs No. 1 Well, Wildcat
Chaves County, N.M.

Dear Bob:

The subject well was completed in the Devonian formation as a gas well through perforations 8477-8551'. After a small acid job and cleanup. a four-point test was run giving a calculated open flow potential of 1.8 MMCFPD. Following the 4-point test, the well was produced for an additional 45 hours for a stabilized flow period and then shut in for the pressure buildup period. The total period of flow was 49 hours and the total shutin period was 88.4 hours. The bottomhole pressure (Pw) was plotted against the log ts/ts+tf where ts is the well shutin time in hours and tf is the flow period in hours. This graph is attached. The straight-line portion projects an original bottomhole pressure of 3250 psig. This compares with the drillstem test extrapolation of this zone of 3174 psig. This would seem a reasonable comparison within the accuracy of the various measurements and plots.

I have assumed that the top zone (8476-93') is the only portion of the reservoir contributing production at this time. The only reason for the assumption is the fact that the buildup appears to be a single zone and the fact that the upper zone appears qualitatively and quantitatively better. Also, there was communication during the acidizing and the upper probably received most, if not all of the stimulation.

The various factors used in this analysis and their source are as follows: $T = 625^{\circ}R$ - DST, $Z = .8722$ - DST, $q = 787$ MCFPD avg.- measured, $\mu = 0.5$ cp - DST, $h = 15'$ - log, $\phi = 15.5\%$ - log, $p^* = 3250$ psig - plot, $\bar{p} = 2836$ psig - calc., $m = 995$ psi/cycle - plot, $c = .000013$ 1/psi - DST, $rw = .33'$ - log.

From these data, I have calculated the effective permeability to gas (kg) in this zone to be 5.3 md. The transmissibility of the zone (kh/u) then becomes 127 md-ft/cp. The skin factor (s) calculates to be about -4.8. This compares with the DST calculations of kg = 3.1, kh/μ = 91, and s = 12.5. Apparently, the acid stimulation improved the wellbore skin effect from a damaged zone (positive s) to an improved zone (negative s). The radius of investigation (rinv) for the DST was about 96' and for this buildup, it calculates to be about 699'. These calculations are, of course, rough estimates at best since the various reservoir properties can certainly change away from this wellbore. The equations for pressure behavior in an infinite reservoir are only applicable for a certain dimensionless time and the radius of investigation is an order of magnitude estimate.

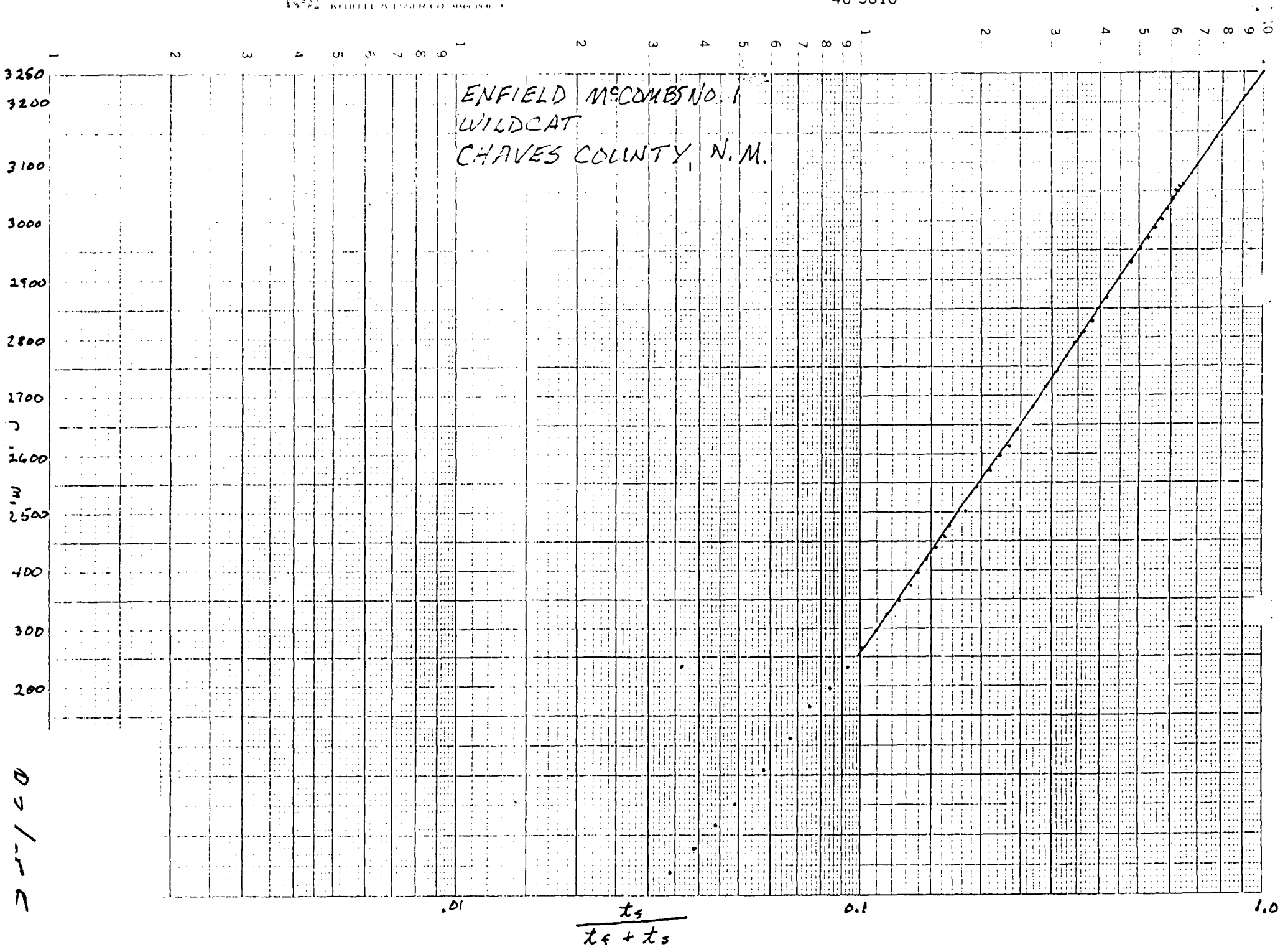
Some thought was given in this regard for the drilling of an offset well either 2000' or 3000' away. Assuming the reservoir properties remain the same and steady state conditions are not reached within a 3000-foot radius of the subject well, it would have to be shut in 1629 hours to have that radius of investigation. The producing period required is estimated to be about 30 days at 1 MMCFPD. An rinv = 2000' would require 724 hours shutin with a producing period of 14 days at 1 MMCFPD. These estimates are highly speculative at best.

I appreciate the opportunity to perform this analysis for you. Please let me know if you have any questions.

G. Thane Akins, P.E.

KEUFFEL & ESSER CO. SEMI-LOGARITHMIC 3 CYCLES X 180 DIVISIONS

46 5810



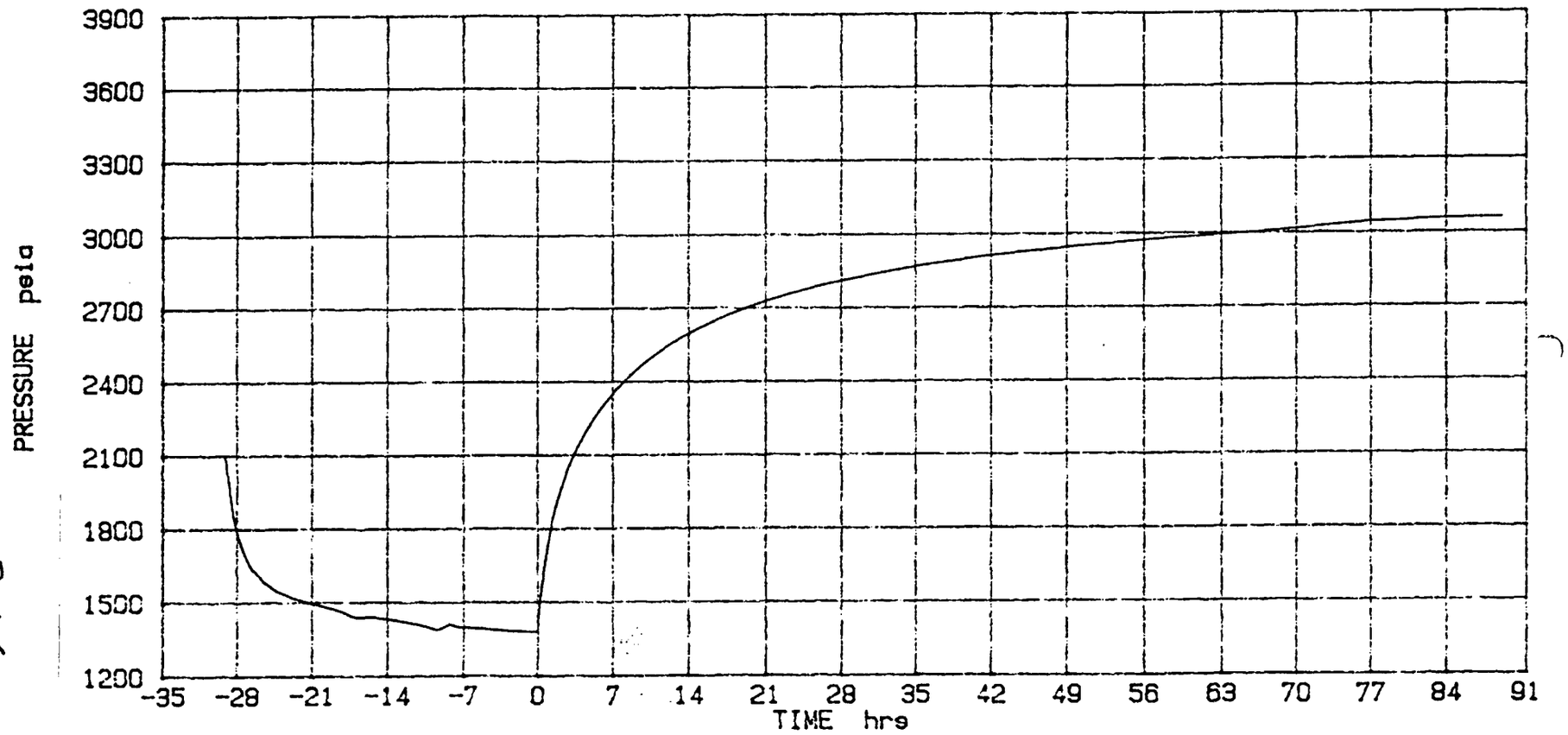
TEST DATE: 03/31/88 TO 04/05/88
TEST DEPTH: 8404 ft
ELEMENT NO: RPG3#27626
RANGE: 6175 psig
CLOCK: 30315
RANGE: 120 hrs
OPERATOR: BO FAULKENBERRY

JIM O'BRIANT

ROBERT ENFIELD

E. McCOMBS #1

BENNETT-CATHEY WIRE LINE SERVICE
Box 787 Artesia, N. M. 88210 (505) 748-3354



Date	Time	F T P psig	Flow rate MCF/D	Cum. Gas MCF	Cond. (64.7°API @ 60°F) Bbls.	Cum.	Bbls/MMcf	Comments
3/30/88	14:00	2210	0	0	0	0	0	SITP prior to test; well shut-in @ 12:45 PM, 3/24/88.
	15:00	1960	353	15	0	0	0	
	16:00	1840	468	34	0	0	0	
	17:00	1720	600	59	5	5	84.48	
	18:00	1570	935	98	6	11	112.07	Start extended flow test.
	19:00	1495	901	136	2	13	95.81	
	20:00	1440	790	169	4	17	100.83	
	21:00	1460	523	190	4	21	110.29	
	22:00	1485	794	223	3	24	107.39	
	23:00	1360	1,043	267	4	28	104.89	
	0:00	1280	984	308	3	31	100.67	
3/31/88	1:00	1210	920	346	3	34	98.19	
	2:00	1200	895	384	3	37	96.47	
	3:00	1170	912	422	2	39	92.52	
	4:00	1160	895	459	2	41	89.36	
	5:00	1140	870	495	3	44	88.87	
	6:00	1130	870	531	2	46	86.57	
	7:00	1120	870	568	2	48	84.57	
	8:00	1100	870	604	3	51	84.46	
	9:00	1090	870	640	2	53	82.80	
	10:00	1070	870	676	2	55	81.32	Shut-in to pull 24 hr. bombs.
	11:00	---	---			---	---	Ran 120 hr. bombs.
	11:30	1400	---			---	---	Reopened well.
	12:00	1250	1,131	723	2	57	78.79	
	13:00	1110	1,005	765	1	58	75.78	
	14:00	1040	890	802	3	61	76.02	
	15:00	1040	898	840	3	64	76.21	
	16:00	1030	890	877	2	66	75.27	
	17:00	1020	890	914	2	68	74.40	
	18:00	995	882	951	1	69	72.58	
	19:00	970	873	987	2	71	71.93	
	20:00	980	873	1,023	1	72	70.35	
	21:00	900	827	1,058	1	73	69.00	
	22:00	890	808	1,092	2	75	68.70	
	23:00	890	781	1,124	1	76	67.61	
	0:00	890	781	1,157	1	77	66.57	
4/1/88	1:00	900	791	1,190	1	78	65.57	
	2:00	900	791	1,223	2	80	65.44	
	3:00	900	791	1,255	2	82	65.31	
	4:00	900	781	1,288	2	84	65.22	
	5:00	890	781	1,321	2	86	65.13	
	6:00	890	769	1,353	2	88	65.06	
	7:00	890	760	1,384	3	91	65.74	
	8:00	900	769	1,416	0	91	64.25	
	9:00	890	781	1,449	0	91	62.81	
	10:00	890	781	1,481	3	94	63.46	
	11:00	890	781	1,514	2	96	63.41	
	12:00	890	781	1,546	2	98	63.37	
	13:00	890	781	1,579	2	100	63.34	
	14:00	890	781	1,611	1	101	62.68	
	15:00	890	781	1,644	1	102	62.05	
	16:00	890	781	1,676	3	105	62.63	Shut-in for appx. 96 hr. build-up.

DCL -

"Let your Interest in Measurement be our Concern"

PRECISION SERVICE INC.
Flow Measurement Engineers
Analysis Results Summary
Casper, WY 82601

Run No. 401-1
Date Run 04/01/88
Date Sampled 03/30/88

Analysis For: BENNETT & CATHEY WRLN.
Lease: E. McCOMBS #1 Producer ROBERT ENFIELD
Location County CHAVES State NEW MEXICO
Purpose WELL TEST Sampled By B & C WRLN.
Sampling Temp. 85 °F Atmos Temp. °F
Volume/day 611.5 MCF Formation
Pressure on Bomb 210 PSIG; Line Pressure 223.2 PSIA PSIG

Gas Component Analysis Press. Base: 14.73

	Mol. %	Liq. %	GPM Per MCF
Carbon Dioxide CO_2	3.660		
Oxygen O_2			
Nitrogen N_2	4.534		
Hydrogen Sulfide H_2S			
Methane C1	69.774		11.826
Ethane C2	10.640		2.846
Propane C3	6.499		1.791
Iso-Butane IC4	1.316		.430
Nor-Butane NC4	1.993		.629
Iso-Pentane IC5	.619		.226
Nor-Pentane NC5	.506		.183
Hexanes plus	.461		.213
Hexanes C6			
Heptanes			
Heptanes Plus C7+			
Total	100.000		18.144
Pentane + G.P.M.			.622
Propane + GPM			3.472
26-lb Gasoline			.913

BTU Dry 1242
BTU Wet 1221
Calc. Specific Gravity .808

@ Std. Press. 14.696
BTU Dry 1239
BTU Wet 1218

Calc. Vap. Press. #/Sq.In.
Reid Vap. Press. #/Sq.In.

Z Factor .9962
N Value 1.2765
Ave Mol Wt 23.3359
Ave Cu Ft/Gal

Run by JEFFREY A. PROPP
Calculated By JEFFREY A. PROPP

Ethane + GPM 6.317

Remarks:

Distribution:

BEFORE EXAMINER STOGNER
OIL CONSERVATION DIVISION
Enfield EXHIBIT NO. 12
CASE NO. 9390

40-67 (5-83)

CITIES SERVICE OIL AND GAS CORPORATION
NATURAL GAS LIQUIDS DIVISION
POTENTIAL NEW CONNECTION REPORT

TO Tom Dixon TEST DATE 3-30-88 4-1-88

FROM Roger Thompson PLANT (AREA) Bluitt (Cato)

PRODUCER Robert N. Enfield

LEASE NAME McCombs WELL NO. #1

FIELD NAME Wildcat MAP NO. 17-28

COUNTY Chaves STATE New Mexico

WELL COMPLETION DATE 3-20-88 NEW OR OLD AREA Old

WELL COMPLETION DATA

LOCATION 1650' FNL, 990' FWL, Sec. 29, T7S, R31E, Chaves Co. New Mexico

PROD. FORMATION Devonian

PDGG THRU Tubing PEFORATIONS 8477 To 8557' PACKER SET @ 8416'

TBG O.D. 2 3/8 TBG. I.D. ____ CSG O.D. 4 1/2 CSG I.D. ____

TYPE SEPARATOR Stack pack WP 10,000 PSI LOCATION FROM WELL Test equip. on location

2.2 ~~xxxxx~~ MILES FROM 8" INCH LINE; SYSTEM PRESSURE, PSIG 15

REMARKS: Measurements from well loc.

WELL TEST DATA

SHUT-IN SURFACE PRESSURE, PSIG 0 CSG 2210 TBG 144 Hrs. HRS. SHUT-IN

FLOWING SURFACE PRESSURE, PSIG Stable @ CSG 890 TBG 14/64 CHOKE SIZE

SEPARATOR PRESSURE 220 ATMOS. TEMP. °F 80 - 30 SP. GRAVITY 0.826

TEST GPM 0.472 CHARCOAL, COMPRESSION, CALC. Charcoal GAS SAMPLE TAKEN YES ~~XX~~ 220

H_2S .02 MOL% CO_2 3.38 MOL% TOTAL ACID GAS 3.40 MOL%

GAS PRODUCTION 814 MCFD Condensate ~~XXX PRODUCTION~~ 66 BOPD WATER PRODUCTION 0 BWPD

GAS/OIL RATIO CF/BBL ____ Condensate ~~OIL GRAVITY~~, API 64.7 PRORATION BASIS ____

LEASE ALLOWABLE N/A CAL DAY VOL. MCFD ____ PRODUCING METHOD Flowing

RIGHT-OF-WAY TERRAIN Pasture, Private Road, Easy

NUMBER OF WELLS ON LEASE One WELLS PRODUCING DURING TEST One

REMARKS: ____

D7 / 6 C 7