NEW MEXICO OIL CONSERVATION COMMSSION

MULTIPC T AND ONE POINT BACK PRESSURE EST FOR GAS WELL

Form C-122
Revised 9-1-65

RECEIVED
DEC 18 1981
O. C. D.
ARTESIA, OFFICE

Type Test: [X] Initial [ ] Annual [ ] Special				Test Date: 11-6-81	
Company: IKE LOVELADY, INC. ✓		Connection: TO AIR			
Pool: ~~WILDCAT~~, Abo		Formation: ABO		Unit	
Completion Date: 10/31/81	Total Depth: 4800		Plug Back TD: 4719	Elevation: 3765.4 Gl.	Farm or Lease Name: Pennzoil "A" State
Csg. Size: 4½" / Wt.: 10.5# / d: 4.052" / Set At: 4798			Perforations: From 4301 To 4702		Well No.: 1
Tbg. Size: 2 3/8" / Wt.: 4.7# / d: 1.995 / Set At: 4163			Perforations: From OPENENDED To		Unit: J / Sec.: 16 / Twp.: 9S / Rge.: 26E
Type Well – Single – Bradenhead – G.G. or G.O. Multiple: SINGLE			Packer Set At: NONE		County: CHAVES
Producing Thru: TUBING	Reservoir Temp. °F: 92° @ 4502	Mean Annual Temp. °F: 60°	Baro. Press. – P_a: 13.2		State: New Mexico

L	H	Gg	% CO_2	% N_2	% H_2S	Prover	Meter Run	Taps
4502	4502	.8368	21.616	4.601	-0-	2"		

	FLOW DATA						TUBING DATA		CASING DATA		
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	Duration of Flow
SI							780		PKR.		24 Hr.
1.	2"	x	1/16	759		39°	759	70	759		1 Hr.
2.	2"	x	3/16	320		27°	682	70	682		1 Hr.
3.	2"	x	3/16	513		47°	513	70	513		1 Hr.
4.	2"	x	7/32	350		42°	350	70	350		1 Hr.
5.											

RATE OF FLOW CALCULATIONS

NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P_m	Flow Temp. Factor Ft.	Gravity Factor Fg	Super Compress. Factor, Fpv	Rate of Flow Q, Mcfd
1	.06405		772.2	1.021	1.094	1.102	61
2.	.6082		333.2	1.033	1.094	1.042	239
3.	.6082		526.2	1.013	1.094	1.063	377
4.	.8393		363.2	1.018	1.094	1.039	353
5.							

NO.	P_t	Temp. °R	T_t	Z
1.	1.03	499	1.28	.823
2.	.444	487	1.25	.921
3.	.702	507	1.30	.885
4.	.484	502	1.29	.927
5.				

Gas Liquid Hydrocarbon Ratio: T.S.T.M. Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons: Deg.
Specific Gravity Separator Gas: .8368 XXXXXXXXX
Specific Gravity Flowing Fluid: XXXXX
Critical Pressure: 750 P.S.I.A. P.S.I.A.
Critical Temperature: 389 R R

P_c 782.12 P_c^2 611.7

NO	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1		755.4	570.6	41.1
2		746.8	557.7	54
3		544	311.0	300.7
4		381.3	145.4	466.3
5				

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 14.80$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 3.857$

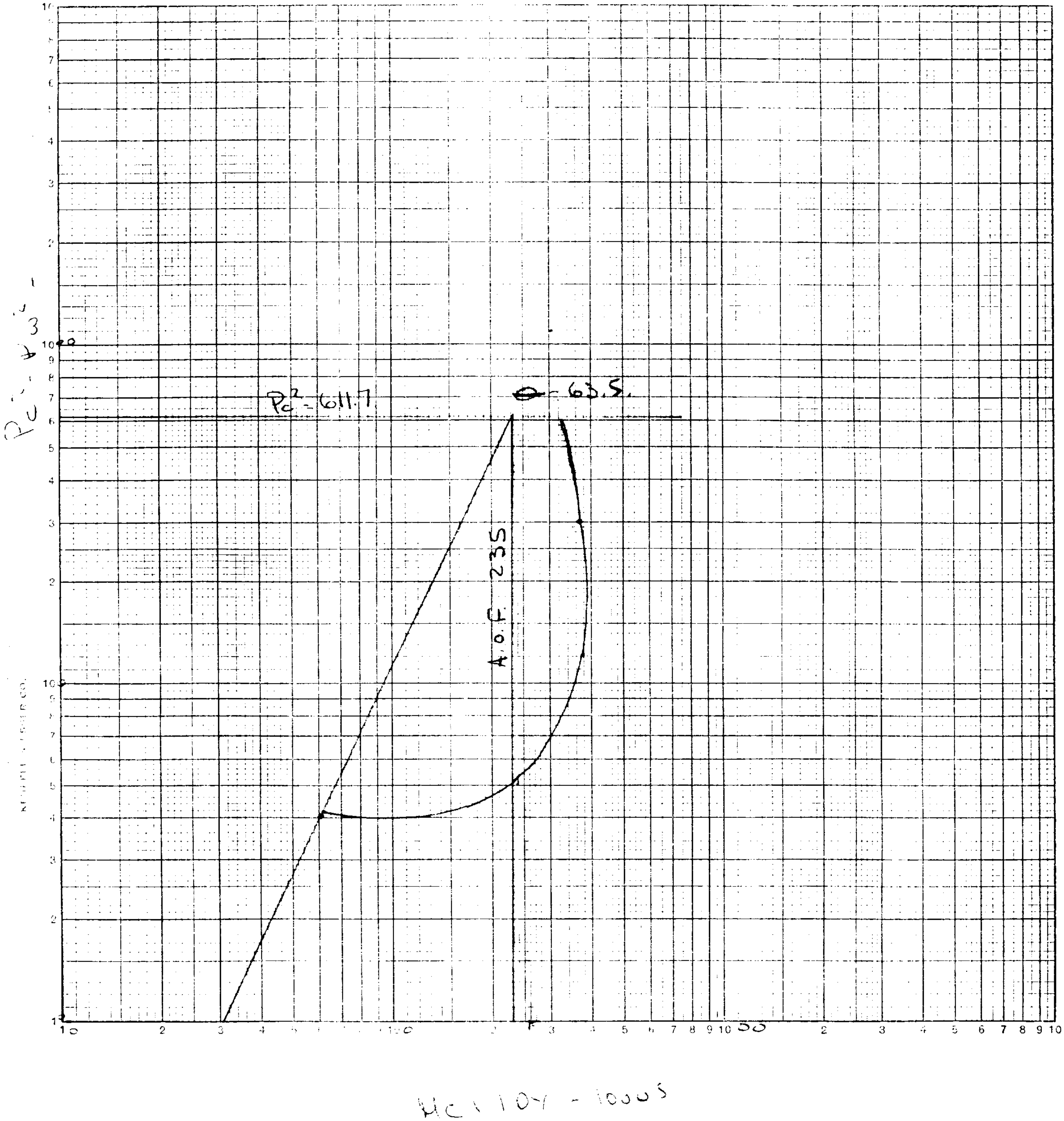
AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 235$

Absolute Open Flow: 235 Mcfd @ 15.025 Angle of Slope θ: 63.5 Slope, n: .500

Remarks: Plot too steep use 63.5 thru low rate.

Approved By Commission:	Conducted By:	Calculated By:	Checked By:
	W.S.	M.K.	M.K.

$61\left(\frac{611.7}{41.1}\right)^{.5} = 235$



WORK SHEET FOR CALCULATION OF WELLHEAD PRESSURES (P_c or P_w)

Form C-122F
Adopted 9-1-65

FROM KNOWN BOTTOM HOLE PRESSURE (P_f or P_s)

COMPANY Ike Longlady LEASE Pennzoil ST "A" WELL NO. 1 DATE 11-6-81

LOCATION: Unit I Section 16 Township 9 South Range 26 East

L _____ H 4502 L/H _____ G .8368 % CO_2 21.616 % N_2 4.601 % H_2S -0-

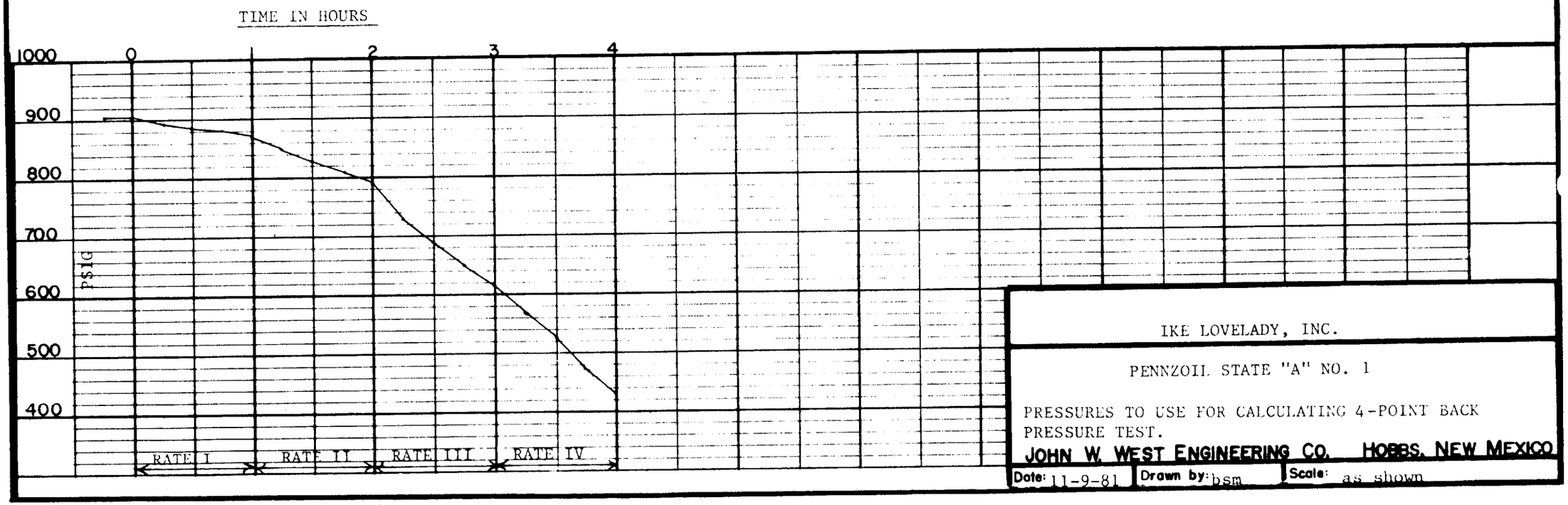
GH _____ P_{ct} 750 (TABLE IX & X) T_{ct} 389 (TABLE IX & X) B.H. 552.

LINE		S.I. 1	RATE I 2	RATE II 3	RATE III 4	RATE IV 5	6	7	8
1	T_w(W.H. °R)	499	499	487	507	502			
2	T_s(B.H. °R)	552	552	552	552	552			
3	$T=(\frac{T_w + T_s}{2})$	525.5	525.5	519.5	529.5	527			
4	Z (Est.)	.838	.842	.852	.898	.919			
5	TZ	440.369	442.471	442.61	475.491	484.313			
6	GH/TZ	8.5548	8.51417	8.51141	7.92291	7.7785			
7	e^S(Table XIV)	1.3782	1.37613	1.37599	1.345962	1.33869			
8	P_f or P_s	918.2	886.2	806.2	631.2	441.2			
9	P_f^2 or P_s^2	843.09	785.35	649.95	398.41	194.657			
10	$P_c^2 - P_f^2/e^s$ or $P_w^2 = P_s^2/e^s$	611.717	570.69	472.35	296.00	145.40			
11	P_c or P_w	782.12	755.4	687.3	544	381.3			
12	$P=(\frac{P_w + P_s}{2})$ or $(\frac{P_c + P_f}{2})$	850.16	820.8	746.75	587.6	411.25			
13	$P_r = (P/P_{ct})$	1.13	1.10	1.00	.78	.55			
14	$T_r = (T/T_{ct})$	1.35	1.35	1.34	1.36	1.35			
15	Z (Table XI)	.838	.842	.852	.898	.919			

TEST DATE: NOVEMBER 6, 1981
TEST DEPTH: 4502 FEET

ELEMENT NO: 17772
RANGE: 0-3850 psi
CLOCK NO: E/6532
RANGE: 0-72 Hours

NOTE: See tabulation of Times and Pressures on attached sheet.



IKE LOVELADY, INC.

PENNZOIL STATE "A" NO. 1

PRESSURES TO USE FOR CALCULATING 4-POINT BACK PRESSURE TEST.

JOHN W. WEST ENGINEERING CO. HOBBS, NEW MEXICO

Date: 11-9-81 Drawn by: bsm Scale: as shown

IKE LOVELADY, INC.
PENNZOIL STATE "A" NO. 1

TEST CONDUCTED BY:
JOHN WEST ENGINEERING COMPANY

PRESSURES TO USE FOR CALCULATING 4-POINT BACK PRESSURE TEST.
TABULATION OF TIMES AND PRESSURES.
TEST DATE: NOVEMBER 6, 1981
TEST DEPTH: 4502 FEET
ELEMENT NO: 17772 (0-3850 psi)
OPERATOR: W.S.

DATE	TIME	CUM HRS./ MIN.		PSIG @ 4502 FEET
11-6-81	11:15 A.M.			905 Gauge reached 4502 Feet
	11:30 A.M.	00 Hrs.	00 Min.	905 Begin Test.
	11:45 A.M.	00	15	898
	12:00 Noon	00	30	886
	12:15 P.M.	00	45	880
	12:30 P.M.	01	00	873 End Rate I
	12:45 P.M.	01	15	847
	1:00 P.M.	01	30	826
	1:15 P.M.	01	45	809
	1:30 P.M.	02	00	793 End Rate II
	1:45 P.M.	02	15	728
	2:00 P.M.	02	30	687
	2:15 P.M.	02	45	651
	2:30 P.M.	03	00	618 End Rate III
	2:45 P.M.	03	15	570
	3:00 P.M.	03	30	523
	3:15 P.M.	03	45	471
11-6-81	3:30 P.M.	04	00	428 End Rate IV, Gauge out, End Test.

JOHN W. WEST ENGINEERING COMPANY
412 NORTH DAL PASO, HOBBS, NEW MEXICO

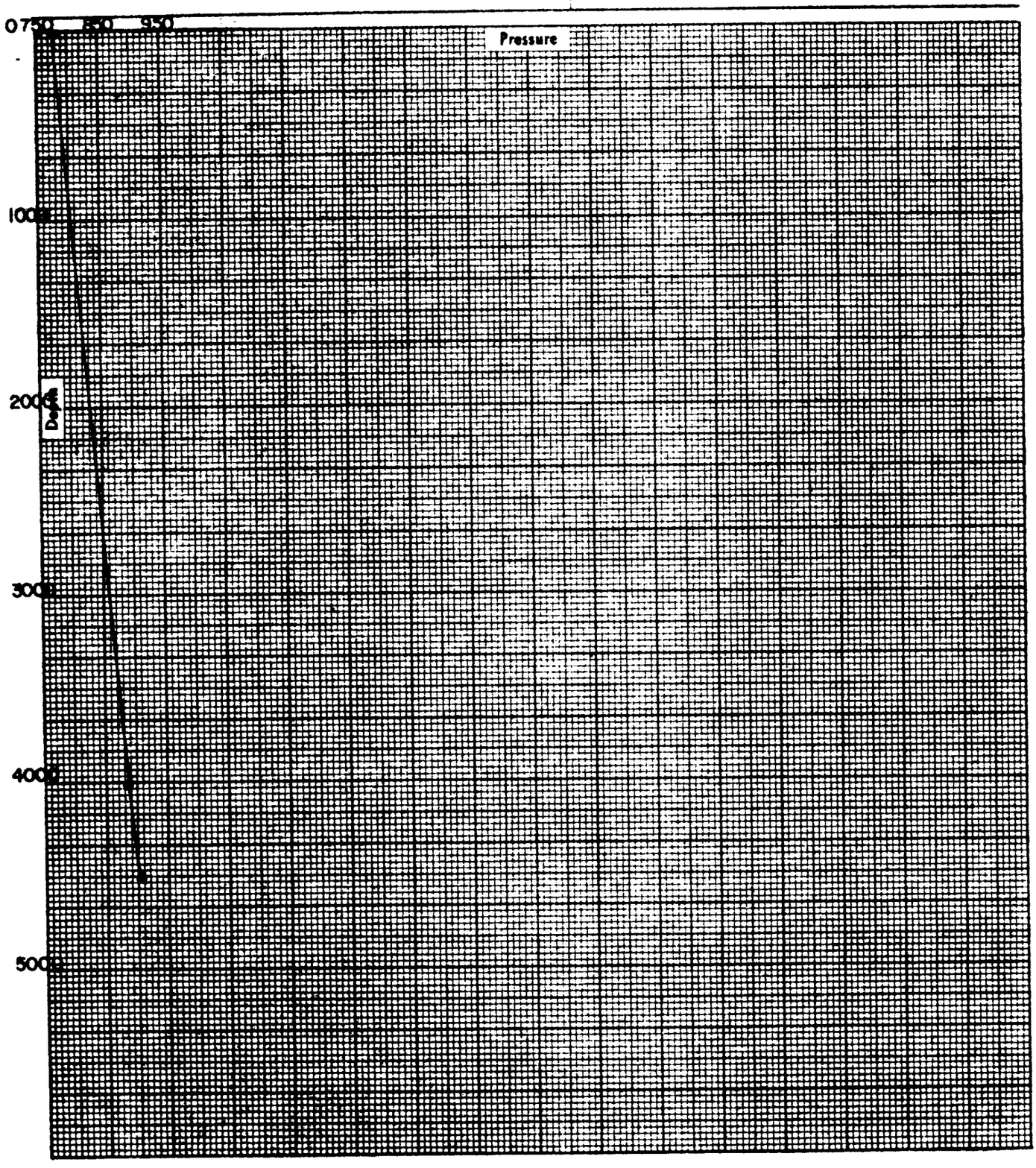
TELEPHONES 393-3942
393-3117

BOTTOM HOLE PRESSURE SURVEY REPORT

OPERATOR IKE LOVELADY, INC.
LEASE PENNZOIL STATE "A"
WELL NO. 1
FIELD
DATE 11-6-81 TIME 11:15 A.M.

STATUS Shut-In TEST DEPTH 4502'
TIME S.I. 24 Hrs. LAST TEST DATE
CAS. PRES. BHP LAST TEST
TUB. PRES. 780 psi BHP CHANGE
ELEV. FLUID TOP
DATUM WATER TOP
TEMP RUN BY W.S.
CLOCK NO. E-6532 GAUGE NO. 19389
ELEMENT NO. 17772 (0-3850 psi)

DEPTH	PRESSURE	GRADIENT
000	780	
4002	888	.027
4502	905	.034



NEW-TEX LAB
P. O. BOX 1161
HOBBS, N.M. 88240

No. 5988
Run No.
Date of Run 11-7-81
Date Secured 11-6-81

CERTIFICATE OF ANALYSIS

Sample of Ike Lovelady — Pennzoil State "A" #1
Secured from John West Engineering
At 412 N Dal Paso
Hobbs, NM 88240
Secured by
Time Date
Sampling conditions Press
Temp.
Station No.

FRACTIONAL ANALYSIS

Percentage Composition

	MOL %	LIQ. %	G.P.M.
Carbon Dioxide	21.616		
Air			
Nitrogen	4.601		
Oxygen			
Hydrogen sulfide			
Hydrogen			
Methane	67.755		
Ethane	3.394		.905
Propane	1.287		.353
Butanes			
Iso-Butane	.186		.061
N-Butane	.420		.132
Pentanes			
Iso-Pentane	.118		.043
N-Pentane	.127		.046
Hexanes	.108		.044
Heptanes	.388		.179
Octanes			
TOTAL	100.000		1.763

Calc. Sp. Gr.— 0.8368
Calc. A.P.I.—
Calc. Vapor Press.— PSIA
Sp. Gr.
Mol. Wt. 24.27

LIQUID CONTENT (GAL./MCF)

Propane Calc. G.P.M.	.353
Butanes Calc. G.P.M.	.193
Pentanes Plus. G.P.M.	.312
Ethane Calc. G.P.M.	.905
___ RVP Gasoline G.P.M.	

B.T.U./Cu. Ft. @ 14.696 P.S.I.A.

Dry Basis	833
Wet Basis	818

Sulfur Analysis by Titration Gr./100 Cu. Ft.

Hydrogen Sulfide	
Mercaptans	
Sulfides	
Residual Sulfur	
Total Sulfur	

Run by Deane Simpson Checked by Approved by Deane Simpson

Additional Data and Remarks