12-32 12/76

STATE OF KANSAS – CORPORATION COMMISSION

STABILIZED OPEN FLOW OR DELIVERABILITY TEST

TYPE OF TEST:	INITIAL	ANNUAL	SPECIAL	TEST DATE
INFORMATION ONLY	MULTI-POINT			03-13-78

COMPANY	LEASE & WELL NO.	ACRES
J MARK RICHARDSON	NELSON #2	0

COUNTY	LOCATION	SEC.	TWN./BLK.	RNG./SRVY.	LEASE NO.
KIOWA	W/2SESW	26	27S	20W	-0000000

FIELD	FIELD NO.	RESERVOIR	PIPE LINE CONNECTION
EARLICK S	-	MISS	

COMPLETION DATE	TOTAL DEPTH	PLUG BACK T.D.	ELEVATION
01-26-78	4881	0	0

CASING SIZE	WT.	I.D.	SET AT:	PERFORATIONS	FROM	TO
4.5000	10.50	4.0520	4881		4854	4860

TUBING SIZE	WT.	I.D.	SET AT:	PERFORATIONS	FROM	TO
2.3750	4.70	1.9950	4878		0	0

TYPE OF COMPLETION	PACKER SET AT	PRODUCING THRU	RESERVOIR TEMP	P_a
SINGLE	0	T	120 AT 04857	14.4

L.	H.	G_g	% CO	% N	H_2S	PROVER	METER RUN	TAPS
4857	4857	0.650	0.00	0.00	2	2		

NO.	FLOW DATA: (PROVER) (LINE) ORIFICE SIZE	FLOW DATA: PRESS. PSIG.	FLOW DATA: DIFF. (IN) ROOTS	FLOW DATA: TEMP. °F	TUBING DATA: PRESS. PSIG.	TUBING DATA: TEMP. °F	CASING DATA: PRESS. PSIG.	CASING DATA: TEMP. °F	DURATION OF FLOW HOURS
SI					1264.0	60	1265.0	60	72.0
1	2 X 0.500	132.0	0.0	55	1211.0	60	1240.0	60	1.0
2	2 X 0.500	225.0	0.0	62	1140.0	60	1212.0	60	1.0
3	2 X 0.500	380.0	0.0	62	1095.0	60	1175.0	60	1.0
4	2 X 0.500	577.0	0.0	66	971.0	60	1107.0	60	1.0
5									

RATE OF FLOW CALCULATIONS

NO.	COEFFICIENT (24 HOUR)	$\sqrt{h_w P_m}$	PRESSURE PSIA	FLOW TEMPERATURE FACTOR (F_t)	GRAVITY FACTOR (F_g)	SUPER-COMP. FACTOR (F_{pv})	RATE OF FLOW Q, MCFD
1	4.3880	0.00	146.4	1.0048	1.240	1.016	813
2	4.3880	0.00	239.4	0.9981	1.240	1.024	1332
3	4.3880	0.00	394.4	0.9981	1.240	1.041	2230
4	4.3880	0.00	591.4	0.9943	1.240	1.060	3393
5							

NO.	P_r	TEMP. R	T_r	Z	P_w	P_w^2	$P_c^2 - P_w^2$
1	0.22	515	1.37	0.969	1254.4	1573.5	63.4
2	0.36	522	1.39	0.953	1226.4	1504.1	132.8
3	0.59	522	1.39	0.923	1189.4	1414.7	222.2
4	0.88	526	1.40	0.890	1121.4	1257.5	379.4
5							

G.O.R.	0.0000 MCF/BBL	
A.P.I. Gravity	0.000 @ 60° F	
G_g	0.650	
G_m		0.650
P_{cr}	670 psia	670 psia
T_{cr}	375 R	375 R

OPEN FLOW OR DELIVERABILITY CALCULATIONS

P_c 1279.4 P_c^2 1636.9 P_d _____ P_d^2 _____ P_a^2 _____

P_c^2	$P_c^2 - P_w^2$	$\frac{P_c^2 - P_a^2}{P_c^2 - P_w^2}$	$\left[\frac{P_c^2 - P_a^2}{P_c^2 - P_w^2}\right]^n$	WELLHEAD OPEN FLOW	$P_c^2 - P_d^2$	$\frac{P_c^2 - P_d^2}{P_c^2 - P_w^2}$	$\left[\frac{P_c^2 - P_d^2}{P_c^2 - P_w^2}\right]^n$	DELIVERABILITY
1636.9	379.4	4.314	3.221	10927				

WELLHEAD OPEN FLOW	10927	ANGLE OF SLOPE θ	51 DEG 20 MIN	SLOPE, n	0.800

REMARKS:

APPROVED BY COMMISSION	CONDUCTED BY	CALCULATED BY	CHECKED BY
	PEPL	UNIVAC 1110	

BOTTOM HOLE PRESSURE FROM WHSIP
CALCULATED BY STEP-WISE METHOD

DATE - 03-14-78

STATE - KANSAS COUNTY - KIOWA

COMPANY - J MARK RICHARDSON

LEASE - NELSON #2

SECTION - 26 TOWNSHIP - 27S RANGE - 20W

RESERVOIR - MISS FIELD - FARLICK S

L - 4857 H - 4857 L/H - 1.000

GG - 0.650 PCR - 670.00 TCR - 375.00

GMIX - 0.650 PCR - 670.00 TCR - 375.00

%CO2 - 0.00 %N2 - 0.00 WHSIP - 1265.0

WELLHEAD TEMP USED	GRAVITY USED	BHP(PF)		DEPTH FEET	BHP/Z		
60	0.650	1463.6	AT	4857	1760.4	-	H
54	0.650	1465.9	AT	4857	1763.6	-	RESERVOIR

12-32 12/76

STATE OF KANSAS – CORPORATION COMMISSION

STABILIZED OPEN FLOW OR DELIVERABILITY TEST

TYPE OF TEST:	INITIAL	ANNUAL	SPECIAL	TEST DATE
INFORMATION ONLY	ONE POINT			03-14-78

COMPANY	LEASE & WELL NO.	ACRES
J MARK RICHARDSON	NELSON #2	0

COUNTY	LOCATION	SEC.	TWN./BLK.	RNG./SRVY.	LEASE NO.
KIOWA	W/2SESW	26	27S	20W	-0000000

FIELD	FIELD NO.	RESERVOIR	PIPE LINE CONNECTION
FARLICK S	-	MISS	

COMPLETION DATE	TOTAL DEPTH	PLUG BACK T.D.	ELEVATION
01-26-78	4881	0	0

CASING SIZE	WT.	I.D.	SET AT:	PERFORATIONS	FROM	TO
4.5000	10.50	4.0520	4881		4854	4860

TUBING SIZE	WT.	I.D.	SET AT:	PERFORATIONS	FROM	TO
2.3750	4.70	1.9950	4878		0	0

TYPE OF COMPLETION	PACKER SET AT	PRODUCING THRU	RESERVOIR TEMP	P_a
SINGLE	0	T	120 AT 04857	14.4

L.	H.	G_g	% CO	% N	H_2S	PROVER	METER RUN	TAPS
4857	4857	0.650	0.00	0.00	3	2		

NO.	FLOW DATA (PROVER) (LINE) ORIFICE SIZE	FLOW DATA PRESS. PSIG.	FLOW DATA DIFF. (IN) ROOTS	FLOW DATA TEMP. °F	TUBING DATA PRESS. PSIG.	TUBING DATA TEMP. °F	CASING DATA PRESS. PSIG.	CASING DATA TEMP. °F	DURATION OF FLOW HOURS
SI					1264.0	60	1265.0	60	72.0
1	2 X 0.500	224.0	0.0	60	1128.0	60	1164.0	60	24.0
2									
3									
4									
5									

RATE OF FLOW CALCULATIONS

NO.	COEFFICIENT (24 HOUR)	$\sqrt{h_w P_m}$	PRESSURE PSIA	FLOW TEMPERATURE FACTOR (F_t)	GRAVITY FACTOR (F_g)	SUPER-COMP. FACTOR (F_{pv})	RATE OF FLOW Q, MCFD
1	4.3880	0.00	238.4	1.0000	1.240	1.025	1329
2							
3							
4							
5							

NO.	P_r	TEMP. R	T_r	Z	P_w	P_w^2	$P_c^2-P_w^2$
1	0.36	520	1.39	0.953	1178.4	1388.6	248.3
2							
3							
4							
5							

G.O.R.	0.0000 MCF/BBL	
A.P.I. Gravity	0.000 @ 60° F	
G_g	0.650	
G_m		0.650
P_{cr}	670 psia	670 psia
T_{cr}	375 R	375 R

OPEN FLOW OR DELIVERABILITY CALCULATIONS

P_c 1279.4 P_c^2 1636.9 P_d _____ P_d^2 _____ P_a^2 _____

$P_c^2-P_a^2$	$P_c^2-P_w^2$	$\frac{P_c^2-P_a^2}{P_c^2-P_w^2}$	$\left[\frac{P_c^2-P_a^2}{P_c^2-P_w^2}\right]^n$	WELLHEAD OPEN FLOW	$P_c^2-P_d^2$	$\frac{P_c^2-P_d^2}{P_c^2-P_w^2}$	$\left[\frac{P_c^2-P_d^2}{P_c^2-P_w^2}\right]^n$	DELIVERABILITY
1636.7	248.3	6.592	4.521	6009				

WELLHEAD OPEN FLOW	6009	ANGLE OF SLOPE θ	51 DEG 20 MIN	SLOPE, n	0.900

REMARKS:

APPROVED BY COMMISSION	CONDUCTED BY	CALCULATED BY	CHECKED BY
	PEPL	UNIVAC 1110	

K+E LOGARITHMIC 2 x 2.7 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

46 7283

