

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

FORM G-2
4-10-58

TYPE TEST: ☐ Deliverability ☒ Open Flow TEST DATE: Aug. 9, 1965

COMPANY Citizens Service Oil Co. Adams M LEASE WELL NO. 1

COUNTY Meade LOCATION SECTION 33 TWP 34 RNG 30 ACRES

FIELD 1st and 2nd Wells Meade RESERVOIR Meade PIPELINE CONNECTION P.T.C.

COMPLETION DATE 1-3-58 PLUG BACK TOTAL DEPTH 5212 PACKER SET AT None

CASING SIZE 5.500 WT. 15.5 I.D. 4.950 SET AT 5250 PERF. 5176 TO 5182

TUBING SIZE 1.660 WT. 2.27 I.D. 1.380 SET AT 5124 PERF. 5176 TO 5182

TYPE COMPLETION (Describe) None TYPE FLUID PRODUCTION

PRODUCING THRU Casing RESERVOIR TEMPERATURE F 128 BAR. PRESS - Ps 14.4 Psia

GAS GRAVITY - Gg 1.688 API GRAVITY OF LIQUID

AVERAGE VERTICAL DEPTH (H) 5179 TYPE METER CONN. W. H. Hargis (METER RUN) (PROVER) SIZE

SHUT-IN PRESSURE: SHUT IN 8-6 1965 AT 65 (AM)(PM) TAKEN 8-9 1965 AT 65 (AM)(PM)

FLOW TEST: STARTED 8-9 1965 AT 65 (AM)(PM) TAKEN 8-12 1965 AT 65 (AM)(PM)

OBSERVED DATA

DURATION OF SHUT-IN _____ HR.

	ORIFICE SIZE in.	(METER) (PROVER) PRESSURE psig	DIFF. (h _d)	FLOWING TEMP. t	WELL- HEAD TEMP. t	CASING WELLHEAD PRESS.		TUBING WELLHEAD PRESS.		DURATION HOURS	LIQUID PROD. Bbls.
						psig	(Pw)(Pt)(Pc) psia	psig	(Pw)(Pt)(Pc) psia		
SHUT-IN						1261.0	1275.4			72	
FLOW	1.250	718.0	6.90	70		1087.0	1101.4			72	

RATE OF FLOW CALCULATIONS

COEFFICIENT (Fb) (Fp) Mcf/d	(METER) (PROVER) PRESSURE psia	EXTENSION $\sqrt{P_m \times h_w}$	GRAVITY FACTOR Fg	FLOWING TEMP. FACTOR Ft	DEVIATION FACTOR Fpv	RATE OF FLOW R Mcf/d	GOR	Gm
7.661	732.4	186.73	1.206	0.9905	1.083	1850.7		

(OPEN FLOW) (DELIVERABILITY) CALCULATIONS

(Pc)² 1626.4; (Pw)² 1214.1; Pd _____ % (Pc - 14.4) + 14.4 = _____; (Pd)² _____

(Pc) ² - (Pd) ²	(Pc) ² - (Pw) ²	$\left[\frac{P_c^2 - P_d^2}{P_c^2 - P_w^2} \right]$	LOG []	'n'	n x LOG []	ANTILOG	(OPEN FLOW) (DELIVERABILITY) EQUALS (R x ANTILOG) Mcf/d
1626.4	412.5	3.9427	.5957937	0.871	.5187363	3.3032	6113

(OPEN FLOW) 6113 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 _____ day of _____, 19____.

H. L. GRAHAM - CIG

Witness (if any)

LEROY ADDISON - KCC

For Commission

KA Brabury

WILLARD L. LEPPER - CSO

For Company

W. M. OWEN - CIG

Checked by

STATE OF KANSAS CORPORATION COMMISSION
MULTIPOINT BACK PRESSURE TEST

FORM CG-1

TYPE TEST: ☒ Initial ☐ Annual ☒ Special		TEST DATE: 10/21/66	
COMPANY: Horizon Oil & Gas Co. and Edwin L. Cox		LEASE: Adams	WELL NO: 1-32 (UT)
COUNTY: Meade	LOCATION: So. of Plains, Kans.	SECTION: 32	TWP: 34S
		RNG: 30W	ACRES: -
FIELD: Wildcat	RESERVOIR: Lansing Lm.	PIPELINE CONNECTION: -	
COMPLETION DATE: -	PLUG BACK TOTAL DEPTH: 4782	PACKER SET AT: (None effects this zone)	
CASING SIZE: 5-1/2"	WT: 15.50	ID: 4.950	SET AT: 6000'
			PERF: 4540'
			TO: 4545'
TUBING SIZE: 1-1/2"	WT: 2.7#	ID: 1.610	SET AT: 4596 (Plastic coated)
			PERF: -
			TO: None
TYPE COMPLETION (Describe): Triple - 3 strings of 1-1/2" tbg.		TYPE FLUID PRODUCTION: oil	
PRODUCING THRU: 1-1/2" Plastic coated tubing		RESERVOIR TEMPERATURE: 107°	HAR PRESS - P _a : 14.4 Psia
GAS GRAVITY - G _g : 0.718	% CARBON DIOXIDE: 0.07	% NITROGEN: 15.51	API GRAVITY OF LIQUID: 44.4 @ 60 F.
VERTICAL DEPTH (H): -	TYPE METER CONN.: -	PROVER (PROVER) SIZE: 2"	
REMARKS:			

OBSERVED DATA

DURATION OF SHUT-IN: 162 HR.

RATE No.	ORIFICE SIZE in.	(METER) (PROVER) PRESSURE psig	DIF. (h _w) (h _d)	FLOWING TEMP. t	WELL HEAD TEMP. t	CASING WELLHEAD PRESS. psig	(P _w)(P _t)(P _c) psia	TUBING WELLHEAD PRESS. psig	(P _w)(P _t)(P _c) psia	SHUT-IN HOURS	LIQUID PROD. Bbls.
SHUT IN						1223	1237.4	1126	1140.4	162	
1	1/4	337.1		90		1203	1217.4	1053	1067.4	2	1.25
2	3/8	286.2		89		1157	1171.4	1016	1030.4	2	1.67
3	3/8	336.4		86		1150	1164.4	997	1011.4	1-2/3	4.59
4	3/8	472.1		85		1104	1118.4	916	930.4	1-2/3	5.85
5											

RATE OF FLOW CALCULATIONS

RATE NO.	COEFFICIENT (F _t) (F _p) Mcfd	(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 Mcfd	GOR	Q _m
1	1.115	351.5		1.180	0.9723	1.027	462	30,800	
2	2.439	300.6		1.180	0.9732	1.022	860	42,914	
3	2.439	350.8		1.180	0.9759	1.027	1012	15,250	
4	2.439	486.5		1.180	0.9768	1.036	1417	16,755	
5									

PRESSURE CALCULATIONS

RATE NO.	P _t psia	P _c psia	P _w psia	(P _c) ² THOUSANDS	(P _w) ² THOUSANDS	PLOTTING POINTS (P _c) ² - (P _w) ² THOUSANDS	Q Mcfd	% SHUT-IN $100 \frac{P_w - P_a}{P_c - P_a}$
1	1067.4	1237.4	1217.4	1531.2	1482.1	49.1	462	98.4
2	1030.4	1237.4	1171.4	1531.2	1372.2	159.0	860	94.6
3	1011.4	1237.4	1164.4	1531.2	1355.8	175.4	1012	94.0
4	930.4	1237.4	1118.4	1531.2	1250.8	280.4	1417	90.3
5								

INDICATED WELLHEAD OPEN FLOW 4,200

M-14 @ 14.65 psia

"n" = 0.645

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 27th day of October, 1966.

Chris H. Bonker
HORIZON OIL & GAS CO.

Witness (if any)

For Company

STATE OF KANSAS - CORPORATION COMMISSION
MULTIPOINT BACK PRESSURE TEST

FORM CG-1

TYPE TEST: ☒ Initial ☐ Annual ☒ Special		TEST DATE: 10-21-66	
COMPANY: <u>Horizon Oil & Gas Co. & Edwin L. Cox</u>		LEASE: <u>Adams</u>	
COUNTY: <u>Meade</u>		WELL NO.: <u>#1-32 (MT)</u>	
LOCATION: <u>So. of Plains</u>	SECTION: <u>32</u>	TWP: <u>34S</u>	RNG: <u>30W</u>
FIELD: <u>Wildcat</u>		PIPELINE CONNECTION: <u>-----</u>	
COMPLETION DATE: _____		PLUG BACK TOTAL DEPTH: <u>5700'</u>	PACKER SET AT: <u>4782'</u>
CASING SIZE: <u>5 1/2"</u>	WT.: <u>15.50</u>	ID: <u>4.950</u>	SET AT: <u>6000</u>
		PERF.: <u>@ 4832</u>	TO: _____
TUBING SIZE: <u>1 1/2"</u>	WT.: <u>2.7</u>	ID: <u>1.610</u>	SET AT: <u>4782</u>
		(Plastic Coated) <u>None</u>	
TYPE COMPLETION (Describe): <u>Triple - 3 strings of 1 1/2" Tbg.</u>		TYPE FLUID PRODUCTION: <u>Oil</u>	
PRODUCING THRU: <u>1 1/2" Plastic Coated Tubing</u>		RESERVOIR TEMPERATURE: <u>118</u>	BAR PRESS - P _a : <u>14.4 Psia</u>
GAS GRAVITY - G _g : <u>0.690</u>	% CARBON DIOXIDE: <u>0.04</u>	% NITROGEN: <u>9.87</u>	API GRAVITY OF LIQUID: <u>37.8° API @ 60°F</u>
VERTICAL DEPTH (H): <u>4744'</u>	TYPE METER CONN.: _____		(PROVER) SIZE: <u>2"</u>
REMARKS: <u>Wellhead pressures calculated from bottom hole bomb pressure @ 4750'</u>			

OBSERVED DATA

DURATION OF SHUT-IN: 72 hr.

RATE NO.	ORIFICE SIZE in.	(METER) (PROVER) PRESSURE psig	DISP. (h _w) (h _d)	FLOWING TEMP. t	WELL-HEAD TEMP. t	CASING WELLHEAD PRESS.		TUBING WELLHEAD PRESS.		DURATION HOURS	LIQUID PROD. Bbls.
						psig	(P _w)(P _o) psia	psig	(P _t)(P _o) psia		
SHUT IN						1333.0	1347.4	1316.0	1330.4	162	
1	3/8	96.1	96			1253.5	1267.9	1178.0	1192.4	2	0.42
2	3/8	151.2	90			1227.0	1241.4	1145.0	1159.4	2	0.42
3	3/8	223.1	80			1155.4	1169.8	1051.0	1065.4	2	0.84
4	3/8	257.9	78			1116.1	1130.5	969.0	983.4	2	0.84
5											

RATE OF FLOW CALCULATIONS

RATE NO.	COEFFICIENT (F _p) Mcfd	(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 Mcfd	GOR	Q _m
1	2.439	110.5		1.204	0.9671	--	314	62,302	0.739
2	2.439	165.6		1.204	0.9723	1.013	479	95,040	0.722
3	2.439	237.5		1.204	0.9813	1.020	698	69,246	0.734
4	2.439	272.3		1.204	0.9831	1.022	803	79,663	0.728
5									

PRESSURE CALCULATIONS

RATE NO.	P _t psia	P _c psia	P _w psia	(P _c) ² THOUSANDS	(P _w) ² THOUSANDS	PLOTING POINTS		% SHUT-IN $100 \left[\frac{P_w - P_a}{P_c - P_a} \right]$
						(P _c) ² - (P _w) ² THOUSANDS	Q Mcfd	
1	1192.4	1347.4	1267.9	1815.5	1607.6	207.9	314	94.0
2	1159.4	1347.4	1241.4	1815.5	1541.1	274.4	479	92.0
3	1065.4	1347.4	1169.8	1815.5	1368.4	467.1	698	86.7
4	983.4	1347.4	1130.5	1815.5	1278.0	537.5	803	83.7
5								

INDICATED WELLHEAD OPEN FLOW 2,620 Mcfd @ 14.65 psia "a" = 0.978

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 27th. day of October, 19 66.

Witness (if any)

For Completion

Chris H. Boschen
For Company

Checked by

WORK SHEET FOR CALCULATING EQUIVALENT STATIC WELLHEAD PRESSURE

LEASE Adams WELL NO. 1-32(MT) FIELD Wildcat COUNTY Meade DATE October 21, 1966
 % CO₂ 0.04 G_m P_{cr} 651 T_{cr} 359 FLOW STRING 1½" Plastic Coated Tbg.
 % N₂ 9.87 H 4744 G_mH L/H 1 I.D. 1.061

LINE	RATE TRIAL	Shut-In		One		Two	Three		Four		
		1	2	1	2	1	1	2	1		
1	Q _m , M ² cfd			0.314	0.314	0.479	0.698	0.698	0.803		
2	T _w	520	520	520	520	520	520	520	520		
3	T _a	578	578	578	578	578	578	578	578		
4	T _e	549	549	549	549	549	549	549	549		
5	Z _e	0.775	0.822	0.850	0.829	0.831	0.837	0.840	0.845		
5a	T _e Z _e	425.5	451.3	466.7	455.1	456.2	459.5	467.2	463.9		
6	G _m H / T _e Z _e	7.693	7.253	7.512	7.703	7.508	7.578	7.453	7.445		
7	e ^s	1.334	1.313	1.325	1.335	1.325	1.329	1.322	1.322		
8	(1 - e ^{-s})	0.250	0.238	0.245	0.251	0.245	0.245	0.244	0.244		
9	P _f or P _c	1336.8	1347.4	1271.3	1266.5	1237.7	1159.4	1162.3	1120.3		
10	P _f ² or P _c ² (thous.)	1787.0	1815.6	1616.2	1604.1	1533.2	1344.2	1350.9	1255.1		
11	P _c			14.038	14.038	14.038	14.038	14.038	14.038		
12	F ₁ = F _c T _e Z _e / 540			12.132	11.831	11.860	11.945	12.145	12.060		
13	F ₁ Q _m			3.809	3.715	5.681	8.337	8.477	9.684		
14	V = (F ₁ Q _m) ² L/H			14.508	13.801	32.274	69.506	71.860	93.780		
15	R ² = V (1 - e ^{-s})			3.554	3.464	7.907	17.029	17.534	22.882		
16	P _w ² = P _f ² + R ²			1619.8	1607.6	1541.1	1361.2	1368.4	1278.0		
17	P _s ² = e ^s P _w ² (thous.)			2146.2	2146.2	2042.0	1809.0	1809.0	1575.0		
17a	P _f ² = e ^s P _c ² (thous.)	2383.9	2383.9								
18	P _a or P _f	1544	1544	1465	1465	1429	1345	1345	1255		
19	P _e	1440.8	1445.7	1368.2	1365.8	1333.4	1252.2	1253.7	1187.7		
20	P _r	2.21	2.22	2.10	2.10	2.05	1.92	1.92	1.824		
21	T _r	1.53	1.53	1.53	1.53	1.53	1.53	1.53	1.53		
22	Z _e	0.822	0.822	0.829	0.829	0.831	0.840	0.840	0.845		

WORK SHEET FOR CALCULATING EQUIVALENT STATIC WELLHEAD PRESSURE

LEASE Adams WELL NO 1-32(MT) FIELD Wildcat COUNTY Meade DATE October 21, 1966

% CO₂ 0.04 G_m P_{cr} 651 T_{cr} 359 FLOW STRING 1½" Plastic Coated Thg.

% N₂ 9.87 H 4744 G_mH L/H 1 I.D. 1.061

LINE	RATE TRIAL	Shut-In		One		Two	Three		Four		
		1	2	1	2	1	1	2	1		
1	Q _m , M ² cfd			0.314	0.314	0.479	0.698	0.698	0.803		
2	T _w	520	520	520	520	520	520	520	520		
3	T _a	578	578	578	578	578	578	578	578		
4	T _e	549	549	549	549	549	549	549	549		
5	Z _e	0.775	0.822	0.850	0.829	0.831	0.837	0.840	0.845		
5a	T _e Z _e	425.5	451.3	466.7	455.1	456.2	459.5	467.2	463.9		
6	G _m H/T _e Z _e	7.693	7.253	7.512	7.703	7.508	7.578	7.453	7.445		
7	e ^s	1.334	1.313	1.325	1.335	1.325	1.329	1.322	1.322		
8	(1 - e ^{-s})	0.250	0.238	0.245	0.251	0.245	0.245	0.244	0.244		
9	P _i or P _c	1336.8	1347.4	1271.3	1266.5	1237.7	1159.4	1162.3	1120.3		
10	P _i ² or P _c ² (thous.)	1787.0	1815.6	1616.2	1604.1	1533.2	1344.2	1350.9	1255.1		
11	P _c			14.038	14.038	14.038	14.038	14.038	14.038		
12	F ₁ = F _c T _e Z _e / 540			12.132	11.831	11.860	11.945	12.145	12.060		
13	F ₁ Q _m			3.809	3.715	5.681	8.337	8.477	9.684		
14	Y = (F ₁ Q _m) ² L/H			14.508	13.801	32.274	69.506	71.860	93.780		
15	R ² = Y (1 - e ^{-s})			3.554	3.464	7.907	17.029	17.534	22.882		
16	P _w ² = P _i ² + R ²			1619.8	1607.6	1541.1	1361.2	1368.4	1278.0		
17	P _s ² = e ^s P _w ² (thous.)			2146.2	2146.2	2042.0	1809.0	1809.0	1575.0		
17a	P _i ² = e ^s P _c ² (thous.)	2383.9	2383.9								
18	P _a or P _f	1544	1544	1465	1465	1429	1345	1345	1255		
19	P _e	1440.8	1445.7	1368.2	1365.8	1333.4	1252.2	1253.7	1187.7		
20	P _r	2.21	2.22	2.10	2.10	2.05	1.92	1.92	1.824		
21	T _r	1.53	1.53	1.53	1.53	1.53	1.53	1.53	1.53		
22	Z _e	0.822	0.822	0.829	0.829	0.831	0.840	0.840	0.845		

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

FORM G-2
8-7-58

TYPE TEST: ☒ Deliverability ☒ Open Flow TEST DATE: 10/22/66

COMPANY: Horizon Oil & Gas Co. and Edwin L. Cox LEASE: Adams WELL NO.: 1-32 (UT)

COUNTY: Meade LOCATION: So. of Plains, Kans. SECTION: 32 TWP: 34S RNG: 30W ACRES: -

FIELD: Wildcat RESERVOIR: Lansing Lm. PIPELINE CONNECTION: -

COMPLETION DATE: - PLUG BACK TOTAL DEPTH: 4782' PACKER SET AT: (None effects this zone)

CASING SIZE: 5-1/2" WT.: 15.50 I.D.: 4.950 SET AT: 6000' PERF.: 4540 TO: 4545

TUBING SIZE: 1-1/2" WT.: 2.7# I.D.: 1.610 SET AT: 4596 (Plastic Coated) PERF.: TO: None

TYPE COMPLETION (Describe): Triple - 3 strings of 1 1/2" tubing TYPE FLUID PRODUCTION: oil

PRODUCING THRU: 1-1/2" Plastic Coated Tubing RESERVOIR TEMPERATURE F: 107 BAR. PRESS - P₀: 14.4 Psia

GAS GRAVITY - G_g: 0.718 % CARBON DIOXIDE: 0.07 % NITROGEN: 15.51 API GRAVITY OF LIQUID: 44.4 @ 60 F

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

SHUT-IN PRESSURE: SHUT IN: Oct. 14 1966 AT 2:00 PM TAKEN: Oct. 21 1966 AT 8:00 AM (AM) (PM)

FLOW TEST: STARTED: Oct. 21 1966 AT 7:00 (AM) (PM) TAKEN: Oct. 22 1966 AT 12:00 Noon (AM) (PM)

OBSERVED DATA

DURATION OF SHUT-IN 162 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 WELL-HEAD PRESS. psig	(P _w)(P _t)(P _c) psia	TUBING WELL-HEAD PRESS. psig	(P _w)(P _t)(P _c) psia	DURATION HOURS	LIQUID PROD. Bbls.
SHUT-IN						1223	1237.4	1126	1140.4	162	
FLOW	3/8	290		81		1166	1180.4	1038	1052.4	17	12.53

RATE OF FLOW CALCULATIONS

COEFFICIENT (F _p)(F _d) Mcfd	(METER) (PROVER) PRESSURE psia	EXTENSION $\sqrt{P_m \times h_w}$	GRAVITY FACTOR F _g	FLOWING TEMP. F _t	DEVIATION FACTOR F _{pv}	RATE OF FLOW R Mcfd	GOR	G _m
2.439	304.4		1.180	0.9804	1.024	880	49,748	

(OPEN FLOW) (DELIVERABILITY) CALCULATIONS

$(P_0)^2 = 1531.2$		$(P_w)^2 = 1393.3$		$P_d = 80$		$\% (P_c - 14.4) + 14.4 = 992.8$		$(P_0)^2 = 0.207 \times 985.7$	
$\frac{(P_0)^2 - (P_a)^2}{(P_c)^2 - (P_d)^2}$		$\frac{(P_0)^2 - (P_w)^2}{(P_c)^2 - (P_d)^2}$		$\frac{P_c^2 - P_a^2}{P_c^2 - P_w^2}$		LOG []		n *	
						n x LOG []		ANTILOG	
								OPEN FLOW DELIVERABILITY EQUALS R x ANTILOG Mcfd	
1531.0		137.9		11.1022		1.04541		0.645	
545.5		137.9		3.9558		0.59723		0.645	
								0.67429	
								4.7238	
								4,157	
								2,136	
								2.4278	
								2,136	
								Mcfd @ 14.65 psia	
								DELIVERABILITY 2,136	
								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 27th day of October, 1966

HORIZON OIL & GAS CO.

Witness by: Bob Griffith, Allen Pettell

Chris H. Bosker

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

FORM G-2
8-7-58

TYPE TEST: ☒ Deliverability ☒ Open Flow TEST DATE: 10-22-66

COMPANY: **Horizon Oil & Gas Co. & Edwin L. Cox** LEASE: **Adams** WELL NO.: **#1-32 (MT)**

COUNTY: **Meade** LOCATION: **So. of Plains** SECTION: **32** TWP: **34S** RNG: **30W** ACRES:

FIELD: **Wildcat** RESERVOIR: **Kansas City** PIPELINE CONNECTION: **-----**

COMPLETION DATE: PLUG BACK TOTAL DEPTH: **5700'** PACKER SET AT: **4782'**

CASING SIZE: **5 1/2"** WT.: **15.50** I.D.: **4.950** SET AT: **6000** PERF.: **@ 4832** TO:

TUBING SIZE: **1 1/2"** WT.: **2.7** I.D.: **1.610** SET AT: **4782 (Plastic Coated)** PERF.: TO: **None**

TYPE COMPLETION (Describe): **Triple - 3 strings of 1 1/2" Tbg.** TYPE FLUID PRODUCTION: **Oil**

PRODUCING THRU: **1 1/2" Plastic Coated Tubing** RESERVOIR TEMPERATURE °F: **118** BAR. PRESS - P_a: **14.4 Psia**

GAS GRAVITY - G_g: **0.690** % CARBON DIOXIDE: **0.04** % NITROGEN: **9.87** API GRAVITY OF LIQUID: **37.8° API @ 60° F**

VERTICAL DEPTH (H): **4744'** TYPE METER CONN.: (PROVER) SIZE: **2"**

SHUT-IN PRESSURE: SHUT IN **October 14,** 19 **66** AT **2:00** (PM) TAKEN **Oct. 21** 19 **66** AT **8:00** (AM) **NOON**

FLOW TEST: STARTED **October 21,** 19 **66** AT **6:30** (PM) TAKEN **Oct. 22** 19 **66** AT **12:00** (PM) **NOON**

OBSERVED DATA

DURATION OF SHUT-IN **162** HR.

SHUT-IN OR FLOW	ORIFICE SIZE in.	PRESSURE (PROVER) psig	DIFF. in. (h _w)(h _d)	FLOWING TEMP. t	WELL-HEAD TEMP. t	CASING WELL-HEAD PRESS.		TUBING WELL-HEAD PRESS.		DURATION HOURS	LIQUID PROD. Bbls.
						psig	(P _w)(P _t)(P _c) psia	psig	(P _w)(P _t)(P _c) psia		
SHUT-IN						1333.0	1347.4	1316.0	1330.4	162	
FLOW	3/8"	206		78				1021.0	1035.4	17 1/2	8.35

RATE OF FLOW CALCULATIONS

COEFFICIENT (F _b)(F _d) Mcfd	(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 R Mcfd	GOR	G _m
2.439	220.4		1.204	0.9831	1.018	648	56,594	0.743

(OPEN FLOW) (DELIVERABILITY) CALCULATIONS

$(P_e)^2 = 1815.5$		$(P_w)^2 = 1297.2$		$P_d = 80$	%	$(P_c - 14.4) + 14.4 = 1080.8$		$(P_d)^2 = 1168.1$
$\frac{(P_e)^2 - (P_d)^2}{(P_e)^2 - (P_w)^2}$	$(P_e)^2 - (P_w)^2$	$\frac{P_e^2 - P_a^2}{P_e^2 - P_w^2}$	LOG []	"n"	$n \times \text{LOG []}$	ANTILOG	OPEN FLOW DELIVERABILITY EQUALS R x ANTILOG Mcfd	
1815.3	518.3	3.5024	0.54437	0.978	0.53239	3.4071	2,208	
647.4	518.3	1.2491	0.09660	0.978	0.09447	1.2430	805	
OPEN FLOW		2,208	Mcfd @ 14.65 psia		DELIVERABILITY		805	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 **27th.** day of **October**, 19 **66.**

HORIZON OIL & GAS CO.

Chris A. Boser

Witness (if any)

STA. OF KANSAS - CORPORATION COM. SION
MULTIPOINT BACK PRESSURE TEST

FORM CG-1

TYPE TEST: ☒ Initial ☐ Annual ☐ Special TEST DATE: Nov. 14, 1966

COMPANY: Horizon Oil & Gas Co. & Edwin L. Cox LEASE: Adams WELL NO.: 1-32 (LT)

COUNTY: Meade LOCATION: So. of Plains, Kansas SECTION: 32 TWP: 34S RNG: 30W ACRES: "

FIELD: Wildcat RESERVOIR: Morrow SS PIPELINE CONNECTION: -

COMPLETION DATE: PLUG BACK TOTAL DEPTH: 5865' PACKER SET AT: 5700'

CASING SIZE: 5-1/2" WT.: 15.50 ID: 4.950 SET AT: 6000' PERF.: 5826 TO: 5827

TUBING SIZE: 2-3/8" WT.: 4.70 ID: 1.995 SET AT: 5700 PERF.: NONE TO: "

TYPE COMPLETION (Describe): Triple 3 strings of 1 1/2" TYPE FLUID PRODUCTION: trace

PRODUCING THRU: 1 1/2" - 2-3/8" combination string RESERVOIR TEMPERATURE F: 124 BAR PRESS - P_a: 14.4 P_{sia}

GAS GRAVITY - G_g: 0.672 % CARBON DIOXIDE: 0.21 % NITROGEN: 3.43 API GRAVITY OF LIQUID: -

VERTICAL DEPTH (H): 5693 TYPE METER CONN.: - METER (PROVER) SIZE: 2"

REMARKS:

OBSERVED DATA

DURATION OF SHUT-IN 113 HR.

RATE NO.	ORIFICE SIZE in.	(METER) (PROVER) PRESSURE psig	DIEP. (h _w) (h _d)	FLOWING TEMP. t	WELL-HEAD TEMP. t	CASING WELL-HEAD PRESS.		TUBING WELL-HEAD PRESS.		DURATION HOURS	LIQUID PROD. Bbls.
						psig	(P _w)(P _t)(P _c) psia	psig	(P _w)(P _t)(P _c) psia		
SHUT IN								1620	1633.2	113	
1	5/16	241		64°	60°			1542	1555.2	1	-
2	5/16	295		60°	60°			1488	1501.2	1	Trace
3	5/16	542		64°	60°			1315	1328.2	1	Trace
4	1/2	270		61°	60°			1158	1171.2	1	Trace
5											

RATE OF FLOW CALCULATIONS

RATE NO.	COEFFICIENT (F _D) (F _P) Mcfd	(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 Mcfd	GOR	Q _m
1	1.714	254.2		1.220	0.9962	1.017	539	-	
2	1.714	308.2		1.220	1.0000	1.022	659	-	
3	1.714	555.2		1.220	0.9962	1.039	1,202	-	
4	4.388	283.2		1.220	0.9990	1.020	1,545	-	
5									

PRESSURE CALCULATIONS

RATE NO.	P _t psia	P _c psia	P _w psia	(P _c) ² THOUSANDS	(P _w) ² THOUSANDS	PLOTING POINTS		100 $\left[\frac{P_w - P_a}{P_c - P_a} \right]$
						(P _c) ² - (P _w) ² THOUSANDS	Q Mcfd	
1	1555.2	1633.2	1559.3	2667.3	2431.3	236.0	539	97.1
2	1501.2	1633.2	1507.6	2667.3	2272.8	394.5	659	92.2
3	1328.2	1633.2	1352.4	2667.3	1829.1	838.2	1,202	82.7
4	1171.2	1633.2	1217.3	2667.3	1481.8	1185.5	1,545	74.0
5								

INDICATED WELL-HEAD OPEN FLOW 3,000

Mcfd @ 14.65 psia

"n" = 0.792

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 17th day of November, 1966.

Witness (if any)

HORIZON OIL & GAS CO.

For Company

THURMOND-MCGLOTHLIN, INC.

Midcontinent Analytical Laboratory

BOX 1698 :: PHONE MO 5-5700 OR MO 4-7969

PAMPA, TEXAS 79066

FRACTIONAL ANALYSIS RESULTS SUMMARY

PERCENTAGE COMPOSITION

	Mol %	GPM	Liquid Volume %
Helium	0.16		
Carbon Dioxide	0.21		
Nitrogen	3.43		
Oxygen	0.00		
Methane C1	85.17	14.391	
Ethane C2	5.23	1.325	
Propane C3	3.45	0.943	
Iso-Butane C4	0.52	0.169	
N-Butane nC4	1.02	0.320	
Iso-Pentane iC5	0.25	0.091	
N-Pentane nC5	0.24	0.087	
Hexanes +C6	0.32	0.166	

SAMPLE IDENTIFICATION

Date Of Run November 15, 1966
 Horizon Oil & Gas Company
 Company & Edwin L. Cox
 Plant ~~xxx~~
 Lease Adams
 Sample of Well No. 1-32; Morrow Zone
 Pressure 270 # Prover & Sample
 Temperature Gas 64°F Atmos 68°F
 Gas (X) Liquid () Oil ()
 Secured By Horizon Date 11-14-66
 Sample Serial No. 2750
 Analysis No. 5635
 Run No. 3653
 Analysis Performed for _____

NOV 17 1966

HORIZON OIL AND GAS CO.
SPEARMAN, TEXAS

GASOLINE CONTENT

	GPM
Based on Analysis	
Pentanes and Heavier	0.344
Butanes and Heavier	0.833

HEATING VALUE

B T U

Calorimeter 1113 water sat; 14.696 Psia & 60°F
 Calculated 1114 water sat; 14.696 Psia & 60°F

SPECIFIC GRAVITY

Measured	0.672
Calculated	0.673

Results of Analysis to:

Horizon Oil & Gas Company
P. O. Box 7
Spearman, Texas

REMARKS

5826 - 5827

5700 - Packer

1/2" Orifice 2" CEP

Analysis by: J. A. Holcomb

WORK SHEET FOR CALCULATING EQUIVALENT STATIC WELLHEAD PRESSURE

LEASE Adams WELL NO. 1-32(LT) FIELD Wildcat COUNTY Meade DATE Nov. 16, 1966

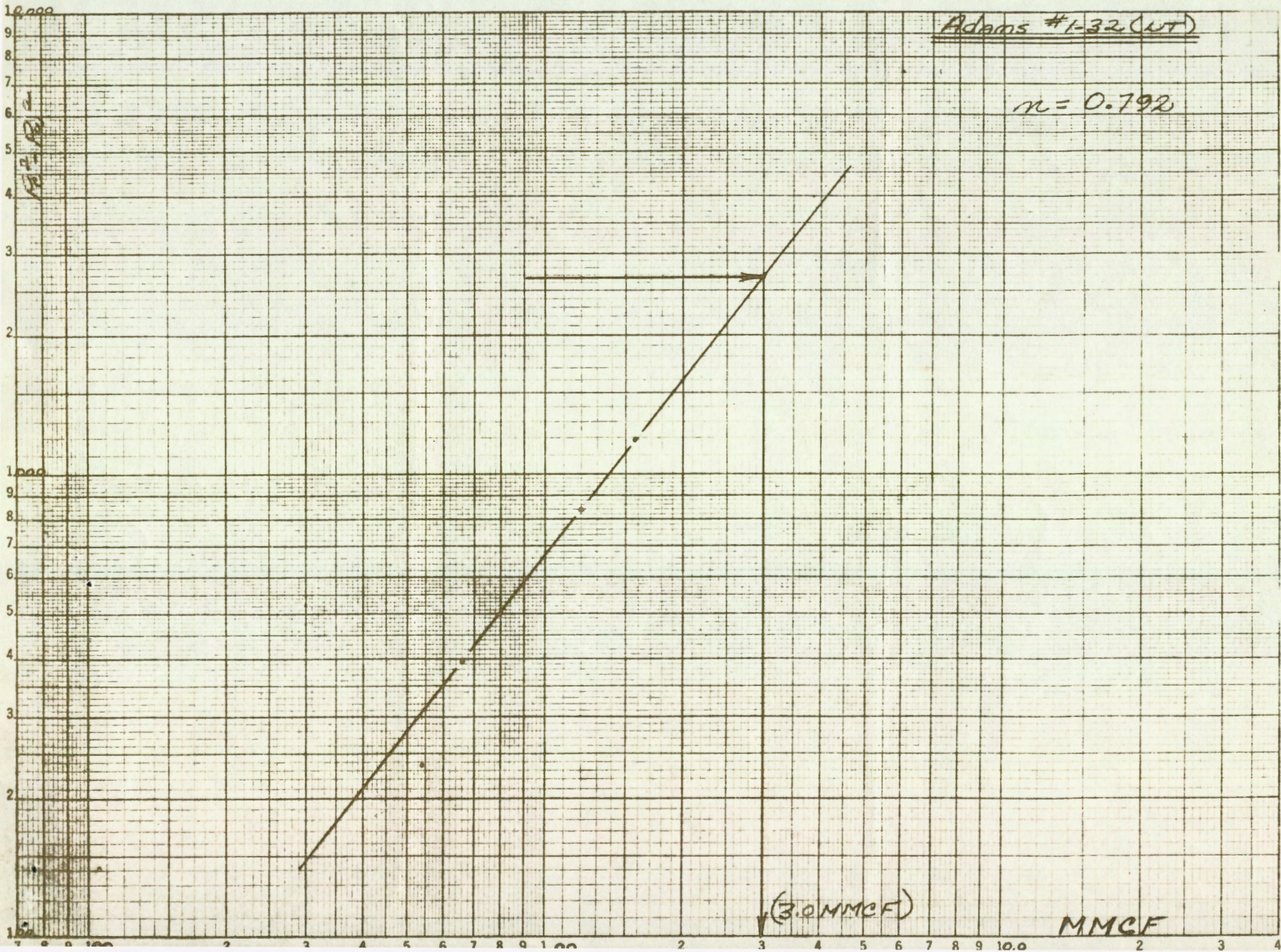
% CO₂ 0.21 G_m 0.672 P_{cr} 663 T_{cr} 373 FLOW STRING 1 1/2" - 2-3/8" combination string

% N₂ 3.43 H 5693 G_mH 3825.7 L/H 1 I.D. Calculated P_c = 15.585

LINE	RATE TRIAL	ONE		TWO		THREE		FOUR		
		1	2	1	2	1	2	1	2	
1	Q _m , M ³ /cid	.539	.539	.659	.659	1.202	1.202	1.545	1.545	
2	T _w	520	520	520	520	520	520	520	520	
3	T _a	584	584	584	584	584	584	584	584	
4	T _b	552	552	552	552	552	552	552	552	
5	Z _a	0.740	.781	0.784	0.786	0.802	0.800	0.808	0.816	
6	T _a Z _a	408.5	431.1	432.8	433.9	442.7	441.6	446.0	450.4	
7	G _m H / T _a Z _a	9.365	8.874	8.839	8.817	8.642	8.663	8.578	8.494	
8	e ^{-s}	1.421	1.395	1.393	1.392	1.383	1.384	1.379	1.375	
9	(1 - e ^{-s})	0.296	0.283	0.282	0.282	0.277	0.277	0.275	0.273	
10	P _f or P _c	1555.2	1555.2	1501.2	1501.2	1328.2	1328.2	1171.2	1171.2	
11	P _f ² or P _c ² (thous.)	2418.6	2418.6	2253.6	2253.6	1764.1	1764.1	1371.7	1371.7	
12	P _c	15.585	15.585	15.585	15.585	15.585	15.585	15.585	15.585	
13	P _f = F ₁ T _a Z _a / 540	11.790	12.442	12.491	12.523	12.777	12.745	12.872	12.999	
14	F ₁ Q _m	6.355	6.706	8.232	8.253	15.358	15.319	19.887	20.083	
15	Y = (F ₁ Q _m) ² L/H	40.386	44.970	67.766	68.112	235.868	234.672	395.493	403.327	
16	R ² = Y (1 - e ^{-s})	11.954	12.727	19.110	19.208	65.335	65.004	108.761	110.108	
17	P _w ² = P _f ² + R ²	2430.6	2431.3	2272.7	2272.8	1829.4	1829.1	1480.5	1481.8	
18	P _w ² = e ^s P _w ² (thous.)	3453.9	3391.7	3165.9	3163.7	2530.0	2531.5	2041.6	2037.5	
19	P _f ² = e ^s P _c ² (thous.)									
20	P _a or P _f	1858.5	1841.7	1779.3	1778.7	1590.6	1591.1	1428.8	1427.4	
21	P _c	1706.9	1698.4	1640.3	1640.0	1459.4	1459.7	1300.0	1299.3	
22	P _f	2.575	2.562	2.474	2.474	2.201	2.202	1.961	1.960	
23	T _r	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	
24	Z	.781	.781	0.786	0.786	0.800	0.800	0.816	0.816	

Adams #1-32 (UT)

$n = 0.792$



1000

