

DATE January, 1957

THE OHIO OIL CO

HISTORY OF OIL OR GAS WELL

FIELD La Plata
Blanco PoolWELL NO. 1 LEASE Ohio Gov't. Sec. 18 BLOCK SEC. 18 TWP. 31N R. 12WSTATE New Mexico PARISH San Juan910' from North line
920' from East line

MEASUREMENTS
TAKEN FROM

K.B. ELEV. 5942'
Mat ELEV. 5930.7'
TOP OF OIL STRING
TOP OF ROTARY TABLE ELEV. _____
GRD. OR MAT ELEV. _____

HISTORY PREPARED BY George SusichTITLE Petroleum Engineer

IT IS OF THE GREATEST IMPORTANCE TO HAVE A COMPLETE HISTORY OF THE WELL. USE THIS FORM IN REPORTING THE HISTORY OF ALL IMPORTANT OPERATIONS AT THE WELL, TOGETHER WITH THE DATES THEREOF, INCLUDING SIZE OF HOLE, SIZE AND NUMBER OF SITS, COMPLETE DESCRIPTION OF CASING, CEMENTING, FISHING OR DRILLING DIFFICULTIES, SURVEYS, ALL TESTS, ALL COMPLETION OPERATIONS AND PROCEDURE, ETC.

DATE	
<u>1956</u>	Fleeger Riley Contractor Unit 15 Rig.
11/20/56	MIRT
11/21	RURT, Raised mast, broke tour.
11/22	T.D. 235' Drilled rat hole and mouse hole, drilled 235' - 15" surface hole, dev. at 200' (3/4°).
11/23	T.D. 235' Ran 7 jts 10-3/4", 32.75# 8R H 40 new casing: 216.48 net landed below KB <u>11.80</u> landed bottom - 228.28 K.B. Cemented with 160 sacks, reg bulk with 2% gel, had poor returns in cellar. Displaced casing with 23-1/2 bbls. H ₂ O. Plug down at 3:30 a.m. Top of plug at 219' K.B. WOC.
11/24	T.D. 915' WOC, Pressured casing with 500# for 1/2 hr., casing O.K. Found top of plug at 205'. Started drilling out at 3:30 a.m. Drilled ahead using native mud.
11/25	T.D. 1930' Drilling ahead with bit #2.
11/26	T.D. 2494' Drilling ahead with bit #3, twisted off at 2494' left 6 singles and 6 drill collars in hole, came out of hole to retrieve fish. Ran junk sub, did not retrieve any iron.
11/27	T.D. 2728' Went in hole with overshot, retrieved fish at 6:30 a.m., left part of overshot grapple in hole. Drilling ahead with bit #4. Ran junk sub, did not retrieve any iron. Ran Deviation Survey at 2900' - 0°.
11/28	T.D. 3002' Drilling ahead, made trip for bit #5, changed heads and liners in pump. Picked up 3 more drill collars. Mixed some mud.
11/29	T.D. 3480' Drilling ahead, made trip for bit #6, stuck drill pipe, worked same free, mixed mud, came out of hole. Drilled out bridges to bottom.
11/30	T.D. 3655' Drilling ahead, made trip for bit #7.

- 12/1/56 T.D. 3826' Drilling ahead, found tight hole 1415' - 1915'. Made trip for bit #8, repaired draw works.
- 12/2 T.D. 3881' Drilling ahead, made trip for bit #9, coming out of hole using rotary to break tool joints, pin dropped out of lead tongs allowing tongs to spin, "cleaned floor of hands", hurt 2 men, 1 in hospital with jaw injuries. Went back to bottom, twisted off at 3881', left 8 drill collars in hole, came out of hole to retrieve fish, retrieved fish at 11:30 p.m.
- 12/3 T.D. 3922' Drilling ahead, made trip for bit #10, twisted off at 3922' left 6 drill collars in hole, came out of hole to retrieve fish.
- 12/4 T.D. 4061' Retrieved fish on morning tour, drilling ahead with bit #11. Made trip for bit #12.
- 12/5 T.D. 4303' Drilling ahead, made trip for bit #13, strapped pipe out of hole. Drls. T.D. 4093', strap 4093'. No correction.
- 12/6 T.D. 4540' Drilling ahead.
- 12/7 T.D. 4565' Drilled to 4565', circulated 2 hr., came out of hole for Schlumberger. Came out of hole, left 2'-7" drill collars on bottom. Went in hole with overshot to retrieve fish. Came out of hole with fish, went in hole with bit to condition hole, circulated 1 hr., came out of hole for Schlumberger. Ran Schlumberger ES & Micrologs from surface to 4564'. Schlumberger tops:

Fruitland	1776' (+4166')
Pictured Cliffs	2230' (+3712')
Cliff House	3862' (+2080')
Menefee	4098' (+1844')

Schlumberger	T.D. 4564'
Drillers	T.D. 4565'

- 12/8 T.D. 4565' Went back in hole with bit, circulated 1 hr., came out of hole laying down drill pipe. Rigged up to run casing. Ran 121 jts 7" - 23# 8R J 55 casing.

4562.76	Net
1.45	Baker float collar
1.65	Baker Whirler float shoe
4565.86	Total

Landed shoe at 4560' K.B. with collar at 4513.34. Spotted centralizer at 4551 K.B. Cemented with 700 sacks reg. cement by Rocky Mt. cementers. Displaced casing with 177 bbls. H₂O. Did not bump plug. Plug down at 7:00 p.m. Good circulating returns while cementing. PBTD 4511'. Estimated top of cement in annulus at 2100' K.B. Displaced 177 bbls. H₂O, found plug at 4120'. Ceased displacing. Final pressure 900#. WOC.

- 12/9 PBTD 4120' Ran Temp survey, found top of cement at 2000', PBTD at 4120'. Landed casing at 7:30 p.m. Rigging up to drill out with gas.

- 12/10 T.D. 4565' Picked up string of 3-1/2" drill pipe, blowing down hole, displacing water with gas.
- 12/11 T.D. 4484' Blew hole dry, started drilling out cement top of cement at 4120', drilled cement to 4560', drilled out float collar at 4513' and shoe at 4559', drilled ahead at 4565'.
- 12/12 T.D. 4670' Drilled to 4650', came out of hole to core, went in hole with D & S Core bbl., cut Core #1 4650' - 4653'. Core bbl. jammed, came out of hole. Went back in hole to cut Core #2, 4653' - 4677', cut 24' rec'd 24'.
- 12/13 T.D. 4845' Went in hole with core bbl. cut Core #3, 4677' - 4692'. Cut 15' rec'd 14'. Water coming in at 4691', jammed core bbl. at 4692'. Came out of hole with core. Went in hole to drill with bit. Blew hole dry (est. 10 gal. H₂O). Reamed rat hole from 4650' - 4692'. O ringed core head.
- 12/14 T.D. 4960' Drilled to 4960', blowing hole with gas, waiting on Schlumberger since 4:30 p.m. Schlumberger on location at 2:00 p.m. Came out of hole, ran Schlumberger logs as follows:
- | | |
|--|---------------|
| Gamma Ray | 2000' - 4968' |
| Induction log | 4560' - 4968' |
| Temp Log | 3500' - 4968' |
| Section Gauge | 4560' - 4968' |
| Drillers | T.D. 4960' |
| Schlumberger | T.D. 4968' |
| Top of Point Lookout at 4656' (+1286') | |
- 12/15 T.D. 4960' Finished running Schlumberger. Rigged up to run liner. Ran 18 jts 5" O.D., 15# J558 82 casing.
- | | |
|--------------------------------|---------------------|
| | 573.94 Net |
| Baker Whirler (Flapper) shoe | 1.33 |
| Burns spring type float collar | 1.26 |
| Burns Liner hanger | 4.23 |
| | <u>580.76 Total</u> |
- Landed shoe at 4953' K.B. with float collar at 4916.88. Spotted centralizers at 4558.92, 4655.93 & 4947. Cemented with 175 sacks reg. bulk cement with 4% gel. Pumped 20 bbls. gel water ahead of cement (1 sack gel/5 bbls. H₂O). Displaced 14# slurry with 41.5 bbls. H₂O. Bumped plug with 1000#. Set seal on Burns Delayed Setting Lead Seal Liner Hanger. Plug down at 2:00 p.m. Reversed out approximately 8 bbls. cement (40 sacks). Used 250% excess cement over calculated fill up. PBTD 4916' K.B. Used two cement trucks on operation, started filling annulus after displacing 3-1/2" drill pipe. It is believed that Schlumberger measurements are off 11', WOC. 578.26' net total overall 5" in well. Top of liner at 4372.24 Ohio measurements. Well making 7,740 Cfg/d before fracing.
- 12/16 PBTD 4925' WOC
- 12/17 PBTD 4925' Went in hole with bit touched top of plug at 4910' (Fleeger Meas.) Drilling cement stringers at 4814', drilled float collar and cement to 4914, blew out cement and water. Loaded hole with 75 bbls H₂O. Came

- 12/17 Cont. out of hole to perforate. Perforated casing from 4875' - 4890' with 60 - E bullets (4/ft.) by Lane Wells. Checked Ohio collars 3' low and checked Schlumberger collar log collars 2.5' high. Perforated casing using Schlumberger Collar log - PBTD 4925' by Lane Wells on Schlumberger collars. Hung up perf gun at 4862', worked gun free. Sand water frac from 4875' - 4890' with 50,000#/(20-40) sand and 41,548 gal. Broke down formation with 3400#. Started out sand at 1#/gal. increased to 1-1/2#/gal. after 3 min. Pumped total 37,548 gal. water and 2162 gals. sand (47,500#) at 1200# in 14 min. Formation sand up with final pressure of 4000#. Estimate 25,500# sand in formation with 27,598 gals. water at average injection rate of 67.8 bbls. per min. at (1.08#/gal.). Estimate 21,000# sand left in casing. Flushed with 2000 gal. of H₂O when buildup occurred.
- 12/18 PBTD 4925' Went in hole with bit to clean out sand, blew well of water and sand, to 3420', plug bit, came out of hole. Unplugged bit of sand, went back in hole started blowing water at 2000', water coming into well bore from frac.
- 12/19 PBTD 4914' Cleaned out to 4914', loaded hole, came out of hole to perforate. Strapped pipe twice Fleege Riley measurements PBTD 4914', L.W. line truck measurements using Schlumberger collar log measurements PBTD 4925'. Went in hole with Baker Model "N" (Mag) retainer checked Ohio collars 2' low, Schlumberger collars 3' high, corrected measurements to Schlumberger collar log and set retainer at 4860'. Went in hole and perforated casing from 4805' - 4845' with 160 E bullets (4/ft.) by L.W., checked collars 4.5 high corrected to Schlumberger collar log and shot off same, checked retainer at 4860'. Sand water frac 4805' - 4840' with 34,300# sand with 32,500 gals. H₂O. Broke down formation with 3200# pumping at 1200#, started sand 3/4# at 1200#, pumped 5 min. increased sand to 1#/gal. at 1200#. Pumped 16 min. when formation sanding up. Had gradual build up to final of 4000#. Pumped total of 34,300# of sand with 32,500 gal. of H₂O (1.05#/gal.) with average injection rate of 54 bbl./min. in 16 min. Left an estimated 18,200# sand in casing. Pumped estimated 16,100# in formation. Treatment pressure 1200# for 13 min., gradual build to 4000# in last three min. of frac. Went in hole with bit to clean out sand. Blowing down well.
- 12/20 PBTD 4914' Finished cleaning out well, at 6:30 a.m. Morning tour crew walked off, waiting on crews, loaded hole with water, came out of hole to set retainer. Set Baker Model "N" Mag bridge plug at 4784'. Perforated casing from 4758' - 4772' with 56 E bullets by L.W. (4/ft.). Shot off Schlumberger collar log, rigged up to frac. Filled hole, attempted to break down perforations, could not break down formation with 4000#. Went in hole with drill pipe open ended, spotted 500 gals. 15% HCl acid. Spotted acid over perforations hydrastatic head broke down perforations. Pumped in with one T-10 at 800#. Came out of hole. Sand-water frac from 4758' - 4772' with 20,000# (40 - 60) and 33,600 gals. H₂O (.595#/gal) Treatment pressure first 5 min. 2300# broke back to 1200 during remainder of frac. Flushed sand with 8400 gal. Pumped total of 42,000 gals H₂O

- 12/20 Cont. and 920 gal. sand in 16 min. Average injection rate 63.7 bbls./min. Final pressure 1500#.
- 12/21 Went in hole with Baker Model "N" Mag retainer and set same at 4730'. Set retainer using Schlumberger collar log collars. Perforated casing from 4656' - 4675' and 4685' - 4705' with 156 E bullets (4/ft.) by L.W. Shot casing using Schlumberger collar log. Sand water frac from 4656' - 4675' and 4685' - 4705' with 48,000# (20 - 40) sand and 62,000 gals. water. Broke down formation with 2000#. Ran 30,000# sand in 1st. stage with treatment pressure at 1100#. Pumped 88 rubber balls down well. 2nd stage broke down at 2000# with treatment pressure of 1800#. Final pressure 1800#. Flushed sand with 8400 gals. H₂O. Pumped total of 62,000 gals. H₂O and 2208 gals. of sand in 22 min. with average injection rate of 69.4 bbls/min. with sand at (.895#/gal.) Went in hole with bit and started blowing hole clean. Drilled out retainers at 4730' and 4784'.
- 12/22 PBTD 4914' Finished drilling out retainer at 4860', blew well clean of sand and water. Came out of hole laying down drill pipe. Rigged up to run tubing. Ran 159 jts 2-3/8" 4.7# H-40 8R tubing:
- | | |
|---------|-------------------|
| 4835.90 | Net |
| 30.04 | Anchor |
| 4865.94 | Total |
| 20.00 | Pups: 2-8', 1-4' |
| 4885.94 | Total |
| 10.80 | Landed below K.B. |
| 4895.74 | Land K.B. |
- Landed 18.26' off PBTD, found 8' of cavings on top of plug, released rig at 12:00 midnight. Shut in well at 10:00 p.m. Net overall tubing in well 4889 + 20' pups and two couplings transfer 426.46'.
- 12/23 PBTD 4914' Well shut-in for 10 hrs., blew same for 3 hrs. Shut-in at 11:00 a.m. Well had 850# casing. Blew well, making 2098 Mcfd through 1-1/2" side static nipple on tubing with 560# on casing after blow. Well making water at estimated rate of 1 bbl/hr.

1957
1/2

Ran one-point back pressure test. Well shut-in for 9 days. Shut-in pressures: Tubing 1070 psig; casing 1080 psig. Flowing Pressures: Tubing 352 psig; casing 800 psig. Flowing temperature, 73°F, Estimated gravity .68. Flow through 3/4" choke. Flow rate, 4964 Mcf/day through 3/4" choke. Calculated open flow, 8836 Mcf/day at 15.025 psia. Well making some water during test.

DATE January, 1957

THE OHIO OIL CO. LOG AND CORE RECORD

FIELD Blanco Pool
 WELL NO. 1 LEASE Ohio Gov't. Sec. 18 BLOCK SEC. 18 T 31N R 12W

 STATE New Mexico PARISH San Juan COUNTY San Juan

 910' from North line
920' from East line
K.B. ELEV. 5942'
 MEASUREMENTS
TAKEN FROM { TOP OF OIL STRING Mat ELEV. 5930.7' CORE DESCRIBED BY George Susich
TOP OF ROTARY TABLE ELEV. _____ TITLE Petroleum Engineer
GRD. OR MAT ELEV. _____

DEPTH		THICKNESS	DRILLED OR CORED	RECOVERY	DESCRIPTION
TOP	TO BOTTOM				
4650	4653	3'	Core #1	2-1/2	
4650	4650.5	1/2			sh, blk to gry, earthy
4650.5	4652.5	2			ss, gry to white vfg, tight, some laminations of blk sh.
4652.5	4653	1/2			No recovery.
4653	4677	24	Core #2	24	
4653	4654	1			ss, drk gry, mica, silic calc, hard and tight, no stain or odor.
4654	4658	4			ss, light gry, vfg mica, very tight.
4658	4660.5	2-1/2			ss, vfg, dead oil stain, thin laminations dk sh at 59.
4660.5	4677	16-1/2			ss, gry to light gry, vfg micaceous
4677	4692	15	Core #3	14	
4677	4691				ss, light gry, vfg salt and pepper grains tight.
4691	4692				No recovery.

MUD RECORD

<u>DATE</u>	<u>DEPTH</u>	<u>GEL</u>	<u>SODA ASH</u>	<u>ALKATAN</u>
11/28/56	2945	1000#	200#	100#
11/29/56	3342	3200#		100#
11/30/56	3655	1000#		100#
12/1/56	3736	2000#		100#
12/3/56	3916	1000#		100#
12/4/56	4061			100#
12/5/56	4303	1300#		100#
12/6/56	4540	1300#		150#

BIT RECORD

WELL NAME & NO. Gov't. #1 Sec. 18

FIELD Blanco Pool

BY George Susich

Date	Run No.	Name of Bit	Size	Bit No.	Serial No. of Bit	Depth		Footage	Hours Run	Remarks
						From	To			
11/21/56	RR	Reed	15"			0	235	235	8 hr	
11/24/56	1	HTC OSC-3	8-3/4	1	81479	235	1284	1068	24	Dull
11/25/56	1	HTC OSC-J3	8-3/4	2	83944	1284	2059	775	15-1/4	Dull
11/26/56	1	HTC OSC-G1	8-3/4	3	83043	2059	2494	435	12	Pulled on fish
11/27/56	1	HTC OSC-3J	8-3/4	4	80934	2494	2945	451	24-1/2	Dull
11/27/56	1	HTC OSC-3	8-3/4	5	85529	2945	3342	397	11	Dull
11/29/56	1	HTC OSC-3	8-3/4	6	85528	3342	3552	210	12-1/2	Dull
11/30/56	1	HTC OSC-1G	8-3/4	7	81104	3552	3706	154	15	Dull
12/1/56	1	HTC OM	8-3/4	8	86253	3706	3856	150	15	Dull
12/2/56	1	HTC OM	8-3/4	9	86256	3856	3881	25	5-1/2	Pulled for fish
12/3/56	1	HTC W7	8-3/4	10	33739	3881	3922	41	7	Pulled for fish
12/4/56	1	HTC W7	8-3/4	11	15394	3922	4093	171	18	Dull
12/4/56	1	HTC OM	8-3/4	12	86252	4093	4303	210	12	Dull
12/6/56	1	HTC OSC-1G	8-3/4	13	81122	4303	4565	262	20-1/4	Dull
12/14/56	1	HTC W7R	6-1/4	14	38923	4565	4650	85	4	Good Condition
12/14/56	1	Truco	6-1/8	1	Contractor	4650	4692	42	8 A	0-ringed
12/16/56	1	HTC W7R	6-1/4		38923	4692	4960	208	12	Dull
12/16/56	1	HTC W7	4-1/2	15	42136					Clean out bit

NEW MEXICO OIL CONSERVATION COMMISSION

Form C-122

Revised 12-1-55

MULTI-POINT BACK PRESSURE TEST FOR GAS WELLS

Pool Blanco Formation Manzanero County San Juan
Initial X Annual _____ Special _____ Date of Test 1/2/57
Company The Ohio Oil Company Lease Gov't. Sec. 18 Well No. 1
Unit _____ Sec. 18 Twp. 21N Rge. 12W Purchaser _____
Casing 7" Wt. 234 I.D. _____ Set at 4800 Perf. _____ To _____
1 1/2" Wt. 154 I.D. 4572 to 4800 Set at _____ Perf. 4800-72; 4807-4708; 4752-72; 4808-45
Tubing _____ Wt. _____ I.D. _____ Set at _____ Perf. _____ To 4872-80
Gas Pay: From 4852 To 4890 L _____ xG _____ -GL _____ Bar.Press. _____
Producing Thru: Casing _____ Tubing X Type Well Single - Gas
Single-Bradenhead-G. G. or G.O. Dual
Date of Completion: _____ Packer _____ Reservoir Temp. _____

OBSERVED DATA

Tested Through (Prover) (Choke) (Meter) Type Taps _____

No.	Flow Data			Tubing Data		Casing Data		Duration of Flow Hr.
	(Prover) (Line) Size	(Choke) (Orifice) Size	Press. psig	Diff. h _w	Temp. °F.	Press. psig	Temp. °F.	
SI								
1.		<u>3/4</u>	<u>282</u>		<u>73</u>	<u>1872</u> <u>282</u>	<u>1890</u> <u>282</u>	<u>5 hrs.</u>
2.								
3.								
4.								
5.								

FLOW CALCULATIONS

No.	Coefficient (24-Hour)	$\sqrt{h_w p_f}$	Pressure psia	Flow Temp. Factor F _t	Gravity Factor F _g	Compress. Factor F _{pv}	Rate of Flow Q-MCFPD @ 15.025 psia
1.	<u>14.1848</u>		<u>284</u>	<u>.977</u>	<u>.9993</u>	<u>1.033</u>	<u>4864</u>
2.							
3.							
4.							
5.							

PRESSURE CALCULATIONS

Gas Liquid Hydrocarbon Ratio _____ cf/bbl.
Gravity of Liquid Hydrocarbons _____ deg.
F_c _____ (1-e^{-s})
Specific Gravity Separator Gas _____
Specific Gravity Flowing Fluid _____
P_c 1892 P_c² 1108

No.	P _w P _t (psia)	P _t ²	F _c Q	(F _c Q) ²	(F _c Q) ² (1-e ^{-s})	P _w ²	P _c ² -P _w ²	Cal. P _w	P _w / P _c
1.						<u>640</u>	<u>282</u>		
2.									
3.									
4.									
5.									

Absolute Potential: 2800 MCFPD; n .75
COMPANY The Ohio Oil Company
ADDRESS Box 120 - Gallup, New Mexico
AGENT and TITLE _____
WITNESSED _____
COMPANY _____

REMARKS

Well making some water during test.