

DRILLING AND COMPLETION HISTORY

CONSOLIDATED OIL & GAS, INC.

HOYT NO. 2-5

Rio Arriba County, New Mexico
March 12, 1964

LOCATION: 1968' FSL, 1286' FWL, Section 5
T26N-R4W, NMPM

ELEVATIONS: 7284' GL
7295' KB

SPUD: January 21, 1964

DRILLING COMPLETED: February 2, 1964
WELL COMPLETED: February 18, 1964

TOTAL DEPTH: 8515' (Driller), 8521' (Logger)
8478' PBTB

CASING:

Surface: 13 3/8" 40# casing set at 304' with 270 sx.
 2% CaCl₂ cement.

Intermediate: 8 5/8" 32# set at 4312' KB with 295 sx.
 50/50 Pozmix, 4% gel and 90 sx. regular
 2% CaCl₂ cement.

Production: 5 1/2" 15.5# casing set at 8513' KB, top
 of liner at 4209', cemented with 415 sx.
 Class C, 12% gel, followed by 50 sx.
 of Class C, 4% gel.

TUBING:

 2 1/16" IJ tubing set in Model D packer
 at 7905', bottom tubing at 8188'

 1 1/2" IJ tubing set in Model J packer
 at 7685'

 1" IJ tubing set at 6070'

LOGS: Welex Radioactivity Log

CORES & DRILLSTEM TESTS: None

FORMATION TOPS: (Log)

Pictured Cliffs	4016'	(+3279)
Cliffhouse	5690'	(+1605)
Pt. Lookout	6162'	(+1133)
Tocito	7736'	(- 441)
Graneros Sand	8224'	(- 929)
Dakota	8337'	(-1042)

PRODUCING PERFORATIONS:

<u>MV</u>	<u>GALLUP</u>
6092' - 6104'	7740' - 7749'
6206' - 6210'	7756' - 7763'
6228' - 6238'	
6252' - 6256'	<u>DK</u>
6262' - 6266'	8234' - 8263'
6278' - 6282'	8369' - 8383'



TREATMENT:	MV	Sand water frac with 100,000# sand and 86,500 gal. water.
	Gallup	Sand oil frac with 25,000# sand and 60,150 gal. oil.
	DK	Sand water frac with 100,000# sand and 99,100 gal. water.

INITIAL POTENTIAL:

MV	Flow volume thru 3/4" choke: 1463 MCFD Calculated Absolute Open Flow Potential: 3467 MCFD
Gallup	Flow volume thru 3/4" choke: 2177 MCFD
DK	Flow volume thru 3/4" choke: 5232 MCFD

WELL:

HOYT NO. 2-5

FIELD:

1286' FWL, 1968' FSL, Section 5-T26N-R4W

COUNTY:

Blanco Mesaverde, Basin Dakota

ELEVATIONS:

Rio Arriba STATE: New Mexico

7284' GL

7295' KB

1/20/64

Moving in rotary rig.

1/21/64

Drilled 300' 12 1/4" hole. Preparing to ream out to 17" and run surface pipe.

1/22/64

Depth 340'. Ran 10 joints 13 3/8" to 304', set at 304'. Cemented with 270 sx. 2% CaCl₂. Circulated cement. Job Completed at 3:30 p.m. Pressured to 1000#, held OK.

1/23/64

Depth 1800'. Dev. 1/4° at 798', 1/4° at 1290', 3/4° at 1610'. Mud 8.9. Vis. 32. Water loss 10. Mud cake 1/32.

1/24/64

Depth 2850'. Present operation, drilling with Bit 3. Dev. 1 1/2° at 2530'. Mud 9.2. Vis. 37. Water loss 8.2. Mud cake 1/32.

1/25/64

Depth 3500', present operation, drilling. Mud 9.2. Vis. 36. Water loss 11.4. FC 1/32. Dev. 1° at 3015'.

1/26/64

Depth 3945', present operation, drilling. Mud 9.2. Vis. 38. Water loss 8.8. FC 1/32. Dev. 1° at 3245', 1 1/4° at 3698'.



WELL:

HOYT NO. 2-5

1/27/64

Depth 4110'. Mud 9.0. Vis. 42. Water loss 10. FC 1/32. Dev. 1 1/2° at 3965'. Spent 3 hours reaming after. Lost approximately 300 bbls. mud at 4077', 9:45 p.m., regained full circulation at 5:00 a.m.

1/28/64

Depth 4310'. Present operation, laying down drill collars. Mud 9.3. Vis. 70. Water loss 4.4. Mud cake 2/32. Dev. 3/4° at 4242'. TD'd intermediate, made short trip, circulated for 1 1/2 hours.

1/29/64

Depth 4310'. Ran 135 joints 8 5/8" 32# casing, total of 4313.77' with float collar at 4277.15' KB. Treated 300 bbls. mud with 0.06 gal./bbl. Hydrazine. Cemented with 295 sx. 50/50 Pozmix with 4% gel and 90 sx. regular 2% CaCl₂. Full circulation throughout job. Bumped plug with 1500# at 3:05 p.m. Pressured to 1000#. Present operation, blowing down.

1/30/64

Depth 5300'. Present operation, drilling with gas. 1 3/4° at 4740', 1° at 5150'.

1/31/64

Depth 6274'. Present operation, drilling with gas. Dev. 1° at 5423', 1/2° at 5900', 1° at 6275'. Note: Had small show of gas at 6274', too small to measure.

2/1/64

Depth 7750'. Present operation, drilling with gas. Dev. 1/2° at 6677', 3/4° at 7115', 3/4° at 7170', 3/4° at 7295', 3/4° at 7419', 1° at 7543'. No increase in natural flow.

2/2/64

Present operation, logging. TD 8515', gauged well while rigging up to log - 1000 MCFD.

2/3/64

Ran 133 joints 5 1/2" 15.5# casing, total 4304', set at 8513' KB. Float collar at 8478', top of liner at 4209'. Cemented with 1415 sx. Class C with 12% gel,

WELL:

HOYT NO. 2-5

2/3/64 Cont'd.

tailed in with 50 sx. of Class C with 4% gel. Plug down at 3:30 p.m. on 2/2/64.

2/4/64

Waiting on completion rig.

2/5/64

Moving in completion rig.

2/6/64

Moved in completion rig, going in hole with 2 7/8" tubing and bit. Depth 3900', no cement to this depth.

2/7/64

Finished picking up tubing and going in hole. Went to top of liner at 4209'. No cement. Loaded hole and pressured up to 1500 PSI. Held OK. Pulled 7-7/8" bit and ran 4-3/4" bit. Went into liner top. Pressured up to 3,000#. Bled off. Pumping in two barrels per minute at 2600#. Ran 8-5/8" packer. Set at 100'. Pressured upon back side. Packing on wellhead leaking. Pulled blow out preventer and spool. Replaced packing. Held OK. Going in hole to squeeze liner top.

2/8/64

Set packer at 4070'. Pressured to 2700# on back side. Pumped in 3 BPM at 2500#. Pumped 75 sx. regular with 2% CaCl. Squeezed in four stages. Squeeze pressure, 3000#. Released and repressured to 3000#. Held OK. Job complete at 11:45 a.m. Drilled 90' of cement. Pressured up to 3000#. Held OK. Drilled 7' of cement in top of liner. Present operation, going in to clean out to float collar.

2/9/64

Cleaned out to PBTD. Pressured up to 3500#. Held OK. Blew well down with gas. Rigged up and ran correlation log. Present operation, going in hole to perforate DK.

WELL:

HOYT NO. 2-5

2/10/64

Jet perforated four per foot, 8234'-8263' and 8369'-8383'. No gas until last run. Gauged 250 MCFD. Hooked up Halliburton with four HT-400's. Loaded hole and treated with 100,000 lb. of sand. Job complete at 11:45 a.m. Started blowing down. Well unloaded with 21 stands in. Cleaned out to PBTD. Gauged 3000 MCFD, present operation, cleaning up well.

Loaded Hole		Initial injection rate	53 BPM
One pump	1700#	Max. injection rate	64 BPM
8 pumps	2100#	Min. injection rate	35 BPM
Initial treat. pres.	2900#	Avg. injection rate	55.6 BPM
Max. treat. pres.	3200#	Final injection rate	37 BPM
Min. treat. pres.	2100#	Sand	20,000# 40-60
Avg. treat. pres.	2600#		80,000# 20-40
Final Treat. pres.	3100#	Treat. fluid	99,100 gal.
Instant shut in Pres.	2100#	Additives	400# FR4
Hydraulic HP	3546	Sand Density	0.99 lb/gal.
Job complete - 11:45 a.m.		Over flush	None
		Balls	160 RB 75's

2/11/64

Blew and cleaned well to 4 p.m. Well gauged 3.5 MMCF. Waited on Welex four hours. Set magnesium bridge plug at 7880'. Started in hole with perf gun. Well started making 200 MCFD. Set another bridge plug at 7850', well still making 200 MCFD. Loaded hole with water, pressured to 3500 psi, held OK. Present operation, blowing down.

2/12/64

Blew well down to bridge plug at 7850'. Pulled out of hole, rigged up Welex. Perforated 2 per foot from 7740'-7749' and from 7756'-7763'. Making small amount of gas - too small to measure. Present operation, preparing to frac Gallup.

2/13/64

Fraced Gallup. Well started unloading. Have recovered 706 bbls. frac oil. Well still unloading, almost solid stream of oil. No appreciable gas at this time.

WELL:

HOYT NO. 2-5

2/13/64 Cont'd.

Hooked up Halliburton 3 HT-400's, loaded hole.

Broke	3100 psi	Initial injection rate	41 BPM
1 pump	2700 psi	Max. injection rate	42 BPM
all pumps	2700 psi	Min. injection rate	20 BPM
Initail Tub.	2900 psi	Avg. injection rate	40 BPM
Max. tub. pres.	2900 psi	Final injection rate	42 BPM
Min. tub. pres.	2700 psi	Sand	25,000 lb. 20-40
Avg. tub. pres.	2740 psi	Additives	1500 lb. Mark II Adomite
Final tub. pres.	2700 psi	Balls	15 RB 75's
ISIP	1450 psi	Total Fluid	60,150 gal.
7 min. SIP	1400 psi	Treat.	31,000 gal.
Hydraulic HP	2686	Flush	8,400 gal.
Job complete 8:53 a.m.		Oil	51,750 gal.

2/14/64

Cleaned out to bridge plug at 7850'. Gauged Tocito, 1100 MCFD. Came out of hole. Rigged up Welex. Set bridge plug at 6350' KB. Perforated two per foot, 6278'-6282', 6262'-6266', 6252'-6256', 6228'-6238', 6206'-6210', 6092'-6104'. Had 500' of fluid in hole while perforating, rigged up Halliburton four HT 400's. Loaded hole.

1 pump	1200 psi	Initial injection rate	70 BPM
7 pumps	1250 psi	Max. injection rate	87 BPM
Initial tubing pres.	1400 psi	Min. injection rate	50 BPM
Max. tubing pres.	2400 psi	Avg. injection rate	80 BPM
Min. tubing pres.	1200 psi	Final injection rate	56 BPM
Avg. tubing pres.	1800 psi	Sand	100,000 lbs. 20-40
Final tubing pres.	2400 psi	Additives	None
ISIP	Vacuum	Balls	65 RB 75's
Hydraulic HP	3431	Overflush	1,000 gal.
Job complete at 8:50 p.m.		Treat. fluid	86,500 gal.
		1# 12,000 gal.	
		1 1/2# 26,000 gal.	
		2# 50,000 gal.	

2/15/64

Cleaned up MV, gauged 1600 MCFD. Drilled bridge plug at 6350', Gallup and Mesaverde gauged 2000 MCFD. Drilled bridge plug at 7750' and at 7780', pushed plugs to 8430'. Gauged well 7000 MCFD after blowing 2 hours. Present operation, laying down 2 1/2" tubing.

WELL:

HOYT NO. 2-5

2/16/64

Laying down completion string. Rigged up Welex. Set Model D packer at 7905'. Present operation, running 2 1/16" IJ tubing, DK string.

2/17/64

Have all three strings tubing landed. Getting ready to pump out pumpout plug.

Dakota - 2 1/16" IJ

1	Donut & changeover	2.50'	set @	12.50
237 jts.	2 1/16" tubing	7669.74'	"	7682.24
1 packer	Baker Model J	7.75	"	7689.99
1 joint	2 1/16" tubing	32.40	"	7722.39
1 sub	2 1/16" sub	4.00	"	7726.39
2 joints	2 1/16" blast	40.28	"	7766.67
4 joints	2 1/16" tubing	129.59	"	7896.26
1 seal	Baker seal ass'y.	4.00	"	7900.26
9 joints	2 1/16" tubing	291.72	"	8187.98

Gallup - 1 1/2" IJ

1	Donut & changeover	2.50	set @	12.50
1 joint	1 1/2" tubing	32.46	"	44.96
1 sub	1 1/2" sub	8.00	"	52.96
235 joints	1 1/2" tubing	7630.81	"	7683.77
1 latch ass'y.	Baker Latch Ass'y.	1.70	"	7685.47

Mesaverde - 1" IJ

1	Donut & changeover	2.50	set @	12.50
187 joints	1" tubing	6057.88	"	6070.38

2/18/64

MV 928/928. Gallup 1543#. Dakota gauged 3250 MCFD with spray of distillate after being open 17 hours.

2/19/64

Ran three hour test on Tocito. Final pressure through 3/4" choke - 120#.

WELL:

HOYT NO. 2-5

2/20/64

Shut in for test.

2/21/64

DK 1949#, GA 1761#, MV 1097/1097#, 3 hour test, 935 psi flowing casing, 61 psi flowing tubing 3/4" choke.

2/22/64

Shut in for test - final report.

OPEN FLOW TEST DATA

DATE March 5, 1964

Operator Consolidated Oil & Gas, Inc.		Lease Hoyt No. 2-5	
Location 1968'FSL, 1286'FWL, Sec. 5, T26N, R4W		County Rio Arriba	State New Mexico
Formation Mesaverde		Pool Blanco	
Casing: Diameter 5-1/2"	Set At: Feet 8513	Tubing: Diameter 1"	Set At: Feet 6070
Pay Zone: From 6092	To 6282	Total Depth: 8515	
Stimulation Method Sand Water Frac		Flow Through Casing	Flow Through Tubing X

Choke Size, Inches 0.75	Choke Constant: C 14.1605			
Shut-In Pressure, Casing, PSIG 1153	+ 12 = PSIA 1165	Days Shut-In 14	Shut-In Pressure, Tubing PSIG 1153	+ 12 = PSIA 1165
Flowing Pressure: P PSIG 97	+ 12 = PSIA 109		Working Pressure: P _w PSIG 947	+ 12 = PSIA 959
Temperature: T °F 50	n = 0.75		F _{pv} (From Tables) 1.014	Gravity 0.70 (est.)

$$\text{CHOKE VOLUME} = Q = C \times P_i \times F_i \times F_g \times F_{pv}$$

$$Q = 14.1605 \times 109 \times 1.0098 \times .9258 \times 1.014 = \underline{1463} \text{ MCF/D}$$

$$\text{OPEN FLOW} = Aof = Q \left(\frac{P_c^2}{P_c^2 - P_w^2} \right)^n$$

$$Aof = \left(\frac{1165^2}{1165^2 - 959^2} \right)^n = 3.1^{.75} = 2.37$$

$$Aof = \underline{3467} \text{ MCF/D}$$

TESTED BY Clyde Phillips

WITNESSED BY Ralph Abbott



W. H. Williams, Chief Engineer

OPEN FLOW TEST DATA

DATE March 5, 1964

Operator Consolidated Oil & Gas, Inc.		Lease Hoyt No. 2-5	
Location 1968' FSL, 1286' FWL, Sec 5, T26N, R4W		County Rio Arriba	State New Mexico
Formation Dakota		Pool Basin	
Casing: Diameter 5-1/2"	Set At: Feet 8513	Tubing: Diameter 2-1/16"	Set At: Feet 8188
Pay Zone: From 8234	To 8383	Total Depth: 8515	
Stimulation Method Sand Water Frac		Flow Through Casing	Flow Through Tubing X

Choke Size, Inches 0.75	Choke Constant: C 14.1605		
Shut-In Pressure, Casing, PSIG ---	+ 12 = PSIA ---	Days Shut-In 14	Shut-In Pressure, Tubing PSIG 2121
Flowing Pressure: P 368	+ 12 = PSIA 380	Working Pressure: Pw ---	+ 12 = PSIA ---
Temperature: T 57 °F	n = 0.75	Fpv (From Tables) 1.047	Gravity 0.70 (est.)

$$\text{CHOKE VOLUME} = Q = C \times P_i \times F_i \times F_g \times F_{pv}$$

$$Q = 14.1605 \times 380 \times 1.0029 \times .9258 \times 1.047 = \underline{5232} \text{ MCF/D}$$

$$\text{OPEN FLOW} = Aof = Q \left(\frac{P_c^2}{P_c^2 - P_w^2} \right)^n$$

$$Aof = \left(\frac{\quad}{\quad} \right)^n =$$

$$Aof = \underline{\hspace{2cm}} \text{ MCF/D}$$

TESTED BY Clyde Phillips

WITNESSED BY Ralph Abbott



W. H. Williams, Chief Engineer

OPEN FLOW TEST DATA

DATE February 27, 1964

Operator Consolidated Oil & Gas, Inc.		Lease Hoyt No. 2-5	
Location 1968' FSL, 1286' FWL, Sec. 5, T26N, R4W		County Rio Arriba	State New Mexico
Formation Gallup		Pool Undesignated	
Casing: Diameter 5-1/2"	Set At: Feet 8513	Tubing: Diameter 1-1/2"	Set At: Feet 7685
Pay Zone: From 7740	To 7763	Total Depth: 8515	
Stimulation Method Sand Oil Frac		Flow Through Casing	Flow Through Tubing X

Choke Size, Inches 0.75	Choke Constant: C 14.1605			
Shut-In Pressure, Casing, PSIG ---	+ 12 = PSIA ---	Days Shut-In 7	Shut-In Pressure, Tubing PSIG 1810	+ 12 = PSIA 1822
Flowing Pressure: P PSIG 150	+ 12 = PSIA 162		Working Pressure: Pw PSIG ---	+ 12 = PSIA ---
Temperature: T °F 56	n = 0.75		Fpv (From Tables) 1.021	Gravity 0.70 (est.)

$$\text{CHOKE VOLUME} = Q = C \times P_r \times F_r \times F_g \times F_{pv}$$

$$Q = 14.1605 \times 162 \times 1.0039 \times .9258 \times 1.021 = 2177 \text{ MCF/D}$$


$$\text{OPEN FLOW} = Aof = Q \left(\frac{P_c^2}{P_c^2 - P_w^2} \right)^n$$

$$Aof = \left(\frac{\quad}{\quad} \right)^n =$$

$$Aof = \quad \text{MCF/D}$$

TESTED BY Clyde Phillips

WITNESSED BY Ralph Abbott


W. H. Williams, Chief Engineer