

DRILLING AND COMPLETION HISTORY

CONSOLIDATED OIL & GAS, INC.

A. GROSS NO. 1-9

San Juan County, New Mexico
August 10, 1961

Location: 1650' F/SL, 1850' F/WL, Section 9
T31N-R13W, N.M.P.M.

Elevation 5862' Ground
5874' K.B. - all measurements from K.B.

Spud: June 26, 1961

Drilling Completed: July 16, 1961
Well Completed: July 24, 1961

Total Depth: 6900' Drilled
6874' Plug Back

Casing: Surface: 10 3/4" 32.75# H-40 cemented at 176'
w/150 sx. 2% CaCl₂ cement.

Production: 5 1/2", 14# & 15.5# J-55 cemented at
6897' w/125 sx. 50% Strata-Crete 4% gel
cement. Thru stage collar at 4800' w/150
sx 4% gel cement.

Tubing: 1 1/2" EUE J-55 hung at 6639'

Logs: Lane Wells Induction Electric & Acoustilog

Cores and Drillstem Tests: None

Formation Tops: (Log)

Pictured Cliffs	1986'	(+3888)
Mesaverde	3590'	(+2284)
Cliffhouse	3650'	(+2224)
Menefee	3800'	(+2074)
Pt. Lookout	4455'	(+1419)
Mancos	4800'	(+1074)
Greenhorn	6535'	(- 661)
Dakota	6650'	(- 776)

Producing Perforations: 6664' - 6684'
6691' - 6698'
6713' - 6719'
6732' - 6744'
6794' - 6802'
6856' - 6864'

Treatment: Sand water frac w/120,500# (20-40 & 40-60)
mesh sand, 130,000 gal. slicked water, 1000
gal. acid.

Initial Potential: Flow volume thru 3/4" choke: 1,855 MCFD
Calculated Absolute Open Flow Potential:
2,260 MCFD.

WELL: A. GROSS NO. 1-9
(1650' FSL & 1850' FWL, Sec. 9-31N-13W)
 FIELD: Basin - Dakota
 COUNTY: San Juan STATE: New Mexico
 ELEVATIONS: 5862 GD
5874 KB

6/23/61

Moving on rotary rig.

6/26/61

Drilling the rat hole.

6/27/61

TD 178'. WOC.

Spudded in at 10:00 a.m. Drilled 178' 15" hole - ran 164' 10 3/4" - set at 176' KB. Cemented with 150 sx regular 2% CaCl₂. Plug down 8 p.m. 6/26/61.

6/28/61

T. Depth 1545'. Drilled 1341'. Sand and shale. Drilling with Bit 2. Dev. 1/2° at 637' - 3/4° at 1100'.

6/29/61

Depth 2304'. Drilled 564'. Sand and shale. Drilling with Bit No. 3

6/30/61

Depth 2976'. Drilled 672'. Sand and shale. Drilling with Bit No. 5. Mud 8.8. Vis 33. Water loss 12. 4% oil. 1° dev. at 2500'.

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7/1/61

Depth 3445'. Drilled 415'. Sand and shale. Tripping for Bit 7. Mud 9.3. Vis. 34. Water loss 10. Dev. 3/4° at 3305'.

7/2/61

Depth 3679'. Drilled 234'. Sand and shale. Drilling with Bit 9. Mud 9.3. Vis. 33. Water loss 10.

7/3/61

Depth 3882'. Drilled 203'. Sand and shale. Drilling with Bit 11. Mud 9.2. Vis. 32. Water loss 11. 5% oil. Dev. 1° at 3800'.

7/4/61

Depth 4245'. Drilled 353'. Sand and shale. Drilling with Bit 12. Mud 9.4. Vis. 37. Water loss 7.5. Dev. 1° at 3800'.

7/5/61

Depth 4520'. Drilled 285'. Sand and shale. Drilling with Bit 14. Mud 9.4. Vis. 34. Water loss 9.5. Dev. 1 1/4° at 4330'.

7/6/61

Depth 4794'. Drilled 265'. Sand and shale. Drilling with Bit 15. Mud 9.4. Vis. 32. Water loss 15. 7% oil.

7/7/61

Depth 5032'. Drilled 228'. Sand and shale. Tripping for Bit 17. Mud 9.4. Vis. 32. Water loss 11. 7% oil.

7/9/61

Depth 5670'. Drilled 320'. Sand and shale. Drilling with Bit 19. Mud 9.4. Vis. 37. Water loss 10. 7% oil. Dev. 1° at 5560'.

7/10/61

Depth 6061'. Drilled 38'. Sand and shale. Trips for Bit 21. Mud 9.4. Vis. 37. Water loss 12. 6% oil. (Projected total depth about 6945'.)

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7/11/61

Depth 6365'. Drilled 314. Sand and shale. Drilling with Bit 22. Mud 9.5. Vis. 42. Water loss 11. 6% oil.

7/12/61

Depth 6680'. Drilled 325'. Drilling with Bit 23. Mud 9.4. Vis. 50. Water loss 7. Sand and shale. Lost 250 bbls. mud at 6672'.

7/13/61

Depth 6790'. Drilled 110'. Sand. Making trip for Bit 25. Mud 9.5. Vis. 52. Water loss 8%. Preliminary Dakota top picked at 6660' - projected total depth 6900'.

7/14/61

Depth 6883'. Drilled 93'. Sand. Tripping for Bit 27. Mud 9.4. Vis. 54. Water loss 5%.

7/15/61

TD 6900'. Logging. Drilled 17'. Sand. Mud 9.5. Vis. 55. Water loss 5. 6% oil.

7/16/61

TD 6900'. Moving off rotary rig - released at 8 a.m. WOC. (198 joints 5 1/2" J-55 ST&C casing set at 6897' KB). The casing weights from the top down were as follows: 26 joints - 820' of 15.5#, 110 joints - 4186' of 14#, 71 joints - 1891' of 15.5#.

Float collar was at 6850' and stage collar at 4800'. Centralizers and reciprocating scratchers were appropriately placed throughout Dakota and Mesaverde sections.

Cemented lower stage through shoe as follows: 125 sx reg cement with 50% Strata Crete No. 6 with 4% gel. Bumped plugs at 2000 PSIG - checked floats - OK. Good circulation throughout job.

Cemented upper stage through stage collar as follows: 150 sx reg cement with 4% gel. Bumped plugs at 2000 PSIG - released pressure and had successful indication that stage ports closed. Good returns throughout job.

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7/17/61

Waiting on completion rig.

7/19/61

Rigging up completion rig.

7/20/61

Pulling plugged bit. Picked up drill tubing and bit. Drilled out stage collar and cleared to float collars. Plugged bit drilling float collar.

7/21/61

Lubricating in bridge plug after performing lower stage frac.

Completed pulling plugged bit and re-entered hole - drilled float collar and hard cement to 6874' PBD. Displaced 1000 gal. 15% mud acid and pulled tubing string. Perforated with 2 bullets and 2 jets per foot - 6856' to 6864'. Put away acid in four 250 gal. slow soaking stages at 1/2 to 1 BPM. Had increasing injection pressures for each stage - these were 1300, 2600, 3000 and 3200 PSIG, respectively. The standing pressure was 1600 PSIG 30 min. after the last stage. Unsuccessful in getting injection rate above 1 BPM at 3200 PSIG with water.

Perforated with 2 bullets and 2 jets per foot - 6794' to 6802'. Attempted to frac this interval along with the lower interval 6856' to 6864' as follows: Started injecting at 12 BPM at 3400 PSIG with 1/4# sand per gallon increasing to 1/2# per gallon. Injected 5500# (40-60 mesh) sand at these conditions (believe all sand went in interval 6794' to 6802'). Flushed at 3600 PSIG. Standing pressure was 3200 PSIG immediately and 1700 PSIG in 3 1/2 hours.

7/22/61

Drilling on bridge plug at 6780' after cleaning out 40' of frac sand following upper stage frac.

Lubricated in magnesium bridge plug after lower stage frac and set at 6780'. Perforated with 2 bullets and 2 jets per foot as follows: 6664' to 6684', 6691' to 6698', 6713' to 6719', 6732' to 6744'. (No communication indicated with perforations below bridge plug.) Displaced 1000 gallons 15% mud acid to bottom.

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WELL: A. GROSS NO. 1-97/22/61 Cont'd.

While doing this, formation break down was encountered and the acid was displaced at 30 BPM at 1600 PSIG. Soaked acid away slowly on bottom. Performed upper stage frac as follows:

Stage Summary:

115,000# Sand (30,000# 20-40 & 85,000# 40-60 mesh)
115,000 gallons water (treated with Western Company's slickening agent)
70 balls
52 BPM
2050 to 2800 PSIG

Started injecting at 1600 PSIG at 30 BPM. Injected 25,000# of 40-60 mesh sand and 10,000# of 20-40 mesh sand with injection pressure of 2,000 to 2,100 PSIG at 52 BPM - dropped 10 balls - pressure was 2200 PSIG after additional 20,000# 20-40 mesh sand or total of 55,000# - Started with 40-60 mesh again at this point. Continued dropping balls in 10 ball stages until a total of 70 balls were injected by the time 100,000# of sand had been injected. At this time the injection pressure had slowly increased to 2800 PSIG. Continued injecting until a total of 115,000# of sand had been put away with ending pressure of 2850 PSIG - flushed with 200 barrels clear water. Standing pressure was 1500 PSIG in 20 minutes. Well was opened and allowed to flow back 4 1/2 hours after which time it died off. Went in hole with tubing and bit to clear to bottom and drill bridge plug.

7/23/61

Preparing to run completion tubing.

Completed drilling bridge plug and cleaned out to PBTD of 6874'. Lost estimated 200 barrels water while cleaning out through Dakota section. Pulled and laid down workover tubing string.

7/24/61

Well is blowing and cleaning to atmosphere. Flow rates have increased to 1300 MCFD but real wet - bringing lots of frac water.

Ran 1 1/2" integral joint completion tubing and landed as follows: 210 joints = 14' of pups - total of 6628' set at 6639' KB with jet collars at 5432', 4739' and 4235' KB.

Blew well for several hours with tubing at 2000' and supply gas pressure of 200 PSIG. Well came in looking very lively - stripped tubing to bottom. Well has now been flowing on its own for 18 hours.

WELL: A. GROSS NO. 1-97/27/61

Continuing to blow and clean the well. During overnight shut-in period built up to surface pressure of 1500 PSIG. The flow rate today is 1450 MCFD. The well appears to be getting stronger as it cleans up.

7/28/61

Flowing to atmosphere. After 13 hrs. gaged 714 MCF. Gag. 440#. Still wet with water and oil. Will be shut-in this a.m. Will run preliminary 3 hr. Monday. Then shut-in for seven day.

8/1/61

Shut-in for initial 7 day pressure build-up and initial official potential test. Secured following test yesterday thru 3/4" choke following 60-hr. shut-in period.

Time Min.	Gsg. PSIG	Tbg. PSIG	Temp. ° F.
0	1595	1585	
15	1250	385	40
30	995	318	42
45	885	247	42
60	768	185	43
120	716	91	46
180	663	* 83	47

* 1335 MCFD but still quite wet with frac water.

8/8/61

3 hr. test started yesterday - Initial shut-in 1797 PSIG, choke partially plugged 3/4 hr. after test. Well shut back in, will re-test today.

8/9/61

Secured following test yesterday.

Time Min.	Gsg. PSIG	Tbg. PSIG	Temp. ° F.
0	1700	1680	
15	1420	610	39
30	1210	353	42
45	1125	220	42
60	1055	195	40
120	870	140	45
180	810	125	44

At end of three hours rate 1,855 MCFD CAOP = 2260 MCFD

OPEN FLOW TEST DATA

DATE August 9, 1961

Operator Consolidated Oil & Gas, Inc.		Lease A. Gross	
Location 1650' FSL 1850' FWL 9-31N-13W		County San Juan	State New Mexico
Formation Dakota		Pool Basin	
Casing: Diameter 5 1/2"	Set At: Feet 6897'	Tubing: Diameter 1 1/2" IJ	Set At: Feet 6639'
Pay Zone: From 6664'	To 6864'	Total Depth: 6874 P.B.	
Stimulation Method Sand water frac		Flow Through Casing	Flow Through Tubing X

Choke Size, Inches 0.750		Choke Constant: C 14.1605			
Shut-In Pressure, Casing, PSIG 1700	+ 12 = PSIA 1712	Days Shut-In 7	Shut-In Pressure, Tubing PSIG 1680	+ 12 = PSIA 1692	
Flowing Pressure: P PSIG 125	- 12 = PSIA 137		Working Pressure: P _w PSIG 810	+ 12 = PSIA 822	
Temperature: T °F 44	n = 0.75		F _{pv} (From Tables) 1.018	Gravity 0.70	

CHOKE VOLUME = Q = C x P_i x F_i x F_g x F_{pv}

Q = 14.1605 X 137 X 1.0158 X .9258 X 1.018 = 1855 MCF/D

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

Aof = $\left(\frac{2,930,944}{2,255,260} \right)^n = Q1.2996^n$

Time Min.	Csg. PSIG	Tbg. PSIG	Temp. ° F.
0	1700	1680	
15	1420	610	39
30	1210	353	42
45	1125	220	42
60	1055	195	40
120	870	140	45
180	810	125	44

at end of three hours, rate 1,855 MCFD
CAof = 2,260 MCFD

Aof = 2260 MCF/D

TESTED BY Case

WITNESSED BY _____

George E. Farnan