DRILLING & COMPLETION HISTORY

CONSOLIDATED OIL & GAS, INC.

WILLIAMS NO. 1-24

San Juan County, New Mexico

October 24, 1963

Location:	1550' FNL; 790' FEL, Section 24, T31N, R13W, NMPM
Elevations:	GL 5850'; KB 5862' - all measurements from KB
Spud Date:	August 7, 1963
Drilling Completed:	August 29, 1963
Completion Date:	October 15, 1963
Total Depth:	6824'
Casing:	
Surface:	9-5/8" set at 210' with 100 sx regular cement with 2% $CaCl_2$.
Production:	5-1/2" set at 6814'. Used stage collar at 4858'. Cemented with 115 sx Diamix "A" and 111 sx regular cement around shoe; cemented with 37 sx Diamix "A" and 54 sx regular cement thru stage collar.
Tubing:	1-1/2" EUE landed in Baker Model "D" packer set at 6610' KB. 1" EUE landed at 4503'.
Logs:	Lane-Wells Gamma Ray / Neutron
Cores & Drillstem Tests:	None

Formation Tops: (Log)

Point Lookout	4470' (+1392')
Mancos	4765' (+1097')
Greenhorn	6574' (-712')
Dakota	6702' (-840')

Producing Perforations:

Mesaverde	Dakota
4562'-4584'	6708'-6739'
4607'-4622'	6762'-6770'
	6782'-6787'
	6814'-6824' O.H.

Treatment: (MV) Sand-Water frac with 100,000 pounds sand and 74,340 gallons water.

(DK) 500 gals. 15% HCl Acid in open hole section 6814'-24'. Frac perf. and open hole with 75,000 pounds sand and 96,196 gals. treated water.

Initial Potential: (DK) Flow volume thru 3/4" choke - 2002 MCFD

(MV) Flow volume thru 3/4" choke - 683 MCFD

Calculated Absolute Open Flow - 936 MCFD

WELL: WILLIAMS NO. 1-24

1550' F/NL & 790' F/EL, Section 24, T31N-R13W

FIELD: Basin Dakota

COUNTY: San Juan STATE: New Mexico

ELEVATIONS: 5850' GL

5862' KB

8/6/63

Rigging up rotary.

8/7/63

Drilled 210' 12 1/4" hole. 1/4° dev. at 100', 1/2° at 200'. Ran 7 joints of 7 5/8" casing. Set at 210' KB. Cemented with 100 sx. regular 2% $CaCl_2$. Plug down 3:30 a.m., 8-7-63. Cement did not circulate. Good circulation throughout job. Will dump some cement around top of casing.

8/8/63

Depth 806'. Drilled 596' sand and shale. Present operation - drilling with Bit 2 with water. 3/4° dev. at 700'.

8/9/63

Depth 2066'. Drilled 1260' sand and shale. Drilling with water. Present operation - drilling with Bit 3. 1/2° dev. at 2000'.

8/10/63

Depth 2621', drilled 543'. Drilling with Bit 5. Drilling with water.

8/11/63

Depth 3035', drilled 412' sand and shale. Present operation - fishing for cone. Lost cone off Bit 6. Drilling with water. Dev. 3/4° at 2800'.

8/12/63

Depth 3361'. Drilled 326' sand and shale. Present operation - drilling with Bit 8 with water. 3/4° dev. at 3300'.

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8/13/63

Depth 3715'. Drilled 354' sand and shale. Present operation - tripping for Bit 10. Drilling with water. 3/4° dev. at 3300'.

8/14/63

Depth 3976'. Drilled 261' sand and shale. Present operation - drilling with Bit 11 with water. 3/4° dev. at 3900'.

8/15/63

Depth 4207'. Drilled 231' sand. Present operation - tripping for Bit 13. Mud weight 8.8, vis. 36, water loss 9.6. 3/4° dev. at 3900'.

8/16/63

Depth 4596'. Drilled 389' sand and shale. Present operation - drilling with Bit 14. Mud weight 9.2, vis. 37, water loss 10. 1/2° dev. at 4550'.

8/17/63

Depth 4647', drilled 51' sand and shale. Present operation - drilling with Bit 15. Lost approximately 250 bbls mud at 4607'. Down 21 hours mixing mud and lost circulation material. Now drilling with full returns.

8/18/63

Depth 4848'. Drilled 201' formation sand and shale. Present operation - drilling with Bit 17. Mud weight 9.0, vis. 48, water loss 8.8.

8/19/63

Depth 5183'. Drilled 335'. Present operation - drilling with Bit 18. Mud weight 9, vis. 46, water loss 9. 3/4° dev. at 5050'.

8/20/63

Depth 5504'. Drilled 321' sand and shale. Have lost approximately 10 bbls of mud at 5504'. Pulled 10 stands of drill pipe. Preparing to break circulation. Mud weight 9, vis. 42, water loss 9.

8/21/63

Depth 5759'. Drilled 225' sand and shale. Present operation - drilling with Bit 21. Mud weight 9, water loss 10.2, approximate mud loss in 24 hours, 185 bbls at 5564'.

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8/22/63

Depth 6098'. Drilled 339' sand and shale. Present operation - drilling with Bit 23. Mud weight 9.1, vis. 44, water loss 10.2, dev. 3/4° at 6050'.

8/23/63

Depth 6424'. Drilled 326' sand and shale. Present operation tripping for Bit 25. Mud weight 9.2, vis. 47, water loss 10.

8/24/63

Depth 6662'. Drilled 238' sand and shale. Present operation - drilling with Bit 26. Mud weight 9.2, vis. 45, water loss 10. Drilling time indicates top of first Dakota at 6650'.

8/25/63

Depth 6698'. Drilled 36' sand and shale. Present operation - lost circulation 24 stands off bottom. Have lost approximately 175 bbls mud at this depth. Have full returns now. Will go back to bottom breaking circulation every three stands.

8/26/63

Depth 6750'. Drilled 52' sand. Mud weight 9, vis. 75, water loss 9.8. Circulated and conditioned hole, came out of hole, rigged up Lane Wells to run logs. Log instrument stopped at 6635'. Could not get any deeper. Got correlation on Green Horn. Present operation - going in to condition hole and drill 45 more feet.

8/27/63

Depth 6792'. Drilled 42' sand. Present operation - drilling with Bit 29. Mud weight 9.2, vis. water loss 9.9.

8/28/63

Depth 6805'. Drilled 13'. Conditioned hole. Came out of hole and logged. Went back in hole with drill pipe. Present operation - laying down drill pipe. Will be ready to run casing at 9 a.m. today.

8/29/63

Ran 197 joints 5 1/2" 17# J-55 casing (6810.21') plus stage collar and guide shoe (3.5') for a total of 6813.71 less 12' for KB or 6801.71 set @ 6813.71 KB. Float collar 6785.5 and stage collar @ 4858.14' KB. Cemented Dakota thru shoe with with 115 sx. Diamix, and 111 sx regular after preflushing with 50 sx CP 100.

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8/29/63 (con't)

Good circulation throughout job - bumped plug with 2000# - held okay. Plug down at 3 p.m. Cemented Mesaverde thru stage collar with 54 sx regular and 37 sx Diamix "A". Lost circulation when cement hit formation, regained circulation after 90 bbls displacement. Plug down at 6:30 p.m. Bumped plug with 2000# - held okay.

8/30/63

Ran temperature survey over Point Lookout. Top of cement - 4020'. Moved out rotary rig.

9/5/63

Waiting on completion rig.

9/26/63

Waiting on completion rig. Will start moving rig from Jicarilla today.

9/27/63

Will start rigging up completion rig this a.m.

9/28/63

Moved in completion rig. Rigged up. Picked up 2 3/8" completion string. Pressured up to 3000# on top of stage collar (4858'). Drilled stage collar at 4858', pressured up to 3000#, held okay. Present operation - preparing to drill float collar at 6785'. Down 6 hours due to motor trouble on light plant.

9/29/63

Drilled float collar @ 6785'. Drilled cement out of shoe joint, drilled shoe @ 6814'. Drilled new hole from 6814' to 6824'. Formation drilled @ rate of 30 minutes per foot. Circulated and cleaned hole. Spotted 500 gals 15% acid. Came out of hole with 4 3/4" bit. Rigged up Dowell to stage acid in to formation 6814' to 6824' (open hole)

1st stage: Breakdown pressure from 2800# to 2800#, rate 1 BPM @ 2800#. Let set 5 mins., pressure dropped to 1700#. 2nd stage: Breakdown pressure from 1700# to 2500#, rate 4 BPM @ 2500#. Let set 7 mins, pressure dropped to 400#. 3rd stage: Breakdown pressure from 400# to 3000#, rate of 14 BPM @ 3000#. Let set 17 mins., pressure dropped to 500#. Tried to get more pumps on: Could only pump in rate of 16 BPM @ 3000#. (could not frac) Rigged up Lane Wells. Perforated Dakota 4 per foot: 6787'-6782'; 6770'-6762'; 6739'-6708'.

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9/29/63

Break down 1 pump	2,400#	Break down and fill	62 bbls
All pumps on	2,500#	Flush	6,804 gals
Max. treating pressure	2,950#	Treating fluid 96,196 gals 7# J-114/1000 gals	
Min. treating pressure	2,400#	Sand:	75,000 lbs
Avg. treating pressure	2,600#	Injection rate: 48.1 BPM	
Final treating pressure	2,900#	Job complete @ 8:22 a.m., 9-29-63	
5 min. shut in pressure	1,750#		
Instant shut in pressure	1,750#		

Rigged up Lane Wells. Set bridge plug @ 4650'. Perforated Mesaverde 2 per foot 4622'-4607', 4584'-4562', Total 74 holes.

Rigged up Dowell to frac.

MESAVERDE

Breakdown 1 pump	1,550#	Breakdown and fill	1,260 gals
All pumps on	2,100#	Flush	1.0 bbls
Max. treating pressure	2,100#	Treating fluid 74,340 gals	
Min. treating pressure	1,550#	Sand:	100,000 lbs
Avg. treating pressure	1,900#	Injection rate: 64 BPM	
Instant shut in pressure	1,350#	Rubber balls:	40
5 min. shut in pressure	1,100#		
Final treating pressure	2,100#	Job complete @ 12:25 p.m., 9-29-63	

9/30/63

Set bridge plug at 4650'. Perforated and frac'd Mesaverde. Rigged up, started to blow down. Blew well down to 4650'. On plug at 11 p.m., 9-29-63. Blew well until clean of sand, making small amount of sand, gauged well, Mesaverde making 500 MCF. Drilled top off of plug at 4650', 3 a.m., 9-30-63. Present operation - pulling tubing to break circulation. Dakota water flooded gas out.

10/1/63

Pulled tubing up to 1500' from surface before able to break circulation. Started blowing down. Blew down to bridge plug (4650'). Finished drilling plug and blew and cleaned hole on down. Present operation - drilling on plug at 6750'. Plug hung up in perforations. Well still making lots of sand with heavy spray of water. Lack 64' of being to bottom of casing with bit. Will gauge well as soon as sand diminishes.

OPEN FLOW TEST DATA

DATE October 15, 1963

Operator: Consolidated Oil & Gas, Inc.		Lease: Williams	
Location: 1550'FNL, 790'FEL, Sec. 24, T31N, R13W		County: Rio Arriba	State: New Mexico
Formation: Dakota		Pool: Basin	
Casing: Diameter: 5-1/2"	Set At: Feet: 6814	Tubing: Diameter: 1-1/2"	Set At: Feet: 6606
Pay Zone: From: 6708	To: 6787	Total Depth: 6805	
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: 7	Shut-in Pressure, Tubing: PSIG: 1682	+ 12 = PSIA: 1694	
Flowing Pressure: P: PSIG: 137	+ 12 = PSIA: 149		Working Pressure: Pw: PSIG: ---	+ 12 = PSIA: ---	
Temperature: T: °F: 53	n = 0.75		Fpv (From Tables): 1.018	Gravity: 0.70 (est.)	

CHOKE VOLUME Q = C x P_t x F_t x F_g x F_{pv}

Q = 14.1605 x 149 x 1.0068 x .9258 x 1.018 = 2002 MCF D

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

Aof = $\left(\quad \right)^n$

Aof ____ MCF D

TESTED BY Clyde Phillips

WITNESSED BY

W. H. Williams, Chief Engineer

WELL WILLIAMS NO. 1-24

10/2/63

Pushed bridge plug on to TD (6824'). Blew and cleaned well. Gauged well, now making 2500 MCF. Laid down 2 3/8" tubing. Rigged up Lane Wells. Set Baker Model "D" packer at 6610' KB. Ran 1" and 1 1/2" tubing. Ran 202 joints 1 1/2" landed at 6606' KB. Ran 137 joints of 1" landed at 4503' KB.

10/3/63

OCT stopped leak in wellhead. Will pump out pump-plug this a.m.

10/4/63

Pulled out plug on Dakota. Blew and cleaned MV & DK. MV dry of moisture. DK - heavy sprays of water. Will blow and clean DK more today. After 15 hours shut in MV pressure, 965/965. DK tubing pressure, 1710#.

10/6/63

Shut in for tests.

OPEN FLOW TEST DATA

DATE October 15, 1963

Operator: Consolidated Oil & Gas, Inc.		Lease: Williams	
Location: 1550'FNL, 790'FEL, Sec. 24, T31N, R13W		County: Rio Arriba	State: New Mexico
Formation: Mesaverde		Pool: Blanco	
Casing: Diameter: 5-1/2"	Set At: Feet: 6814'	Tubing: Diameter: 1"	Set At: Feet: 4503
Pay Zone: From: 4562	To: 4622	Total Depth: 6805	
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: 1120	+ 12 = PSIA: 1132	Days Shut-in: 7	Shut-in Pressure, Tubing: PSIG: 1119	+ 12 = PSIA: 1131	
Flowing Pressure: P: PSIG: 39	+ 12 = PSIA: 51		Working Pressure: Pw: PSIG: 651	+ 12 = PSIA: 663	
Temperature: T: °F: 51	n = 0.75		Fpv (From Tables): 1.013	Gravity: 0.70 (est.)	

CHOKE VOLUME Q = C x P_t x F_t x F_g x F_{pv}

Q = 14.1605 x 51 x 1.0088 x .9258 x 1.013 = 683 MCF D

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

Aof = $\left(\frac{1,281,424}{841,855} \right)^n$ $1.522^{.75} = 1.37$

Aof 936 MCF D

TESTED BY Clyde Phillips

WITNESSED BY

W. H. Williams, Chief Engineer