DRILLING AND COMPLETION HISTORY

CONSOLIDATED OIL & GAS, INC.

COMPASS NO. 1-22

San Juan County, New Mexico

May 9, 1961

Location:		1690' F/SL, 1986' F/EL Section 22-T31N-R13W, N.M.P.M.
Elevation:		5621' Ground 5633' K.B. - all measurements from K.B.
Spud:		March 26, 1961
Drilling Completed: Well Completed:		April 16, 1961 April 24, 1961
Total Depth:		6512' Drilled 6480' Plug Back
Casing:	Surface:	9 5/8", 32# H-40 cemented at 198' w/150 sx 2% $CaCl_2$ cement.
	Production:	5 1/2", 15.5# J-55 cemented at 6512' w/130 sx 6% gel 50-50 Pozmix cement thru shoe and 120 sx 4% gel 50-50 Pozmix cement thru stage collar at 4412'.
	Tubing:	1 1/2" IJ J-55 hung at 6369'.
Logs:		Schlumberger Gamma Ray-Neutron
Cores and Drillstem Tests:		None

Formation Tops (Log):

Pictured Cliffs	1688'	(+ 3945')
Mesaverde	3344'	(- 2289')
Cliffhouse	3425'	(+ 2208')
Menefee	3570'	(+ 2063')
Pt. Lookout	4180'	(+ 1453')
Mancos	4480'	(+ 1153')
Greenhorn	6225'	(- 592')
Dakota	6352'	(- 719')

Producing Perforations: 6369' - 6386' 6391' - 6415'
Notched: 6436' and 6437'

Treatment: Sand-water frac w/120,000# (20-40 & 40-60) mesh sand, 119,000 gal. water, 750 gal. acid.

Initial Potential: Flow volume thru 3/4" choke 1785 MCFD.
Calculated Absolute Open Flow Potential 2150 MCFD.

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(1690' F/SL & 1986' F/EL of Sec. 22-31N-13W, NMPM)

FIELD: Basin Dakota

COUNTY: San Juan STATE: New Mexico

ELEVATIONS: 5621' GD

5633' KB

3/26/61

Drilling surface hole at 80'.

3/27/61

Drilling at 782' with 7 7/8" bit. Drilled 213' of 13 3/4" hole. Set 9 5/8" surface casing at 198' KB - cemented with 150 sx regular cement.

3/28/61

Drilling at 1716' with Bit No. 3. Drilled 934'. Formation shale. Mud 9.1. Vis. 38. Dev. 1° at 982', 3/4° at 1480'. 16 1/2 hours drilling, 6 hours trips, 1 1/2 hours other.

3/29/61

Making trip at 2343' for Bit No. 5. Drilled 527'. Shale and sand. Vis. 39. Mud 9.4. Water loss 12. Dev. 3/4° at 2009'. 17 hours drilling, 5 hours trips, 2 hours other.

3/30/61

Drilling at 2815' with Bit No. 6. Drilled 472'. Shale and sand. Dev. 1 1/4° at 2600'. Mud 9.5. Vis 43. Water loss 7.2. 17 hours drilling, 4 1/4 hours trips, 2 3/4 hours other.

3/31/61

Tripping at 3085' for Bit No. 8. Drilled 270'. Shale and sand. Vis. 44. Mud 9.6. Water loss 7.3. 17 1/4 hours tripping, 5 1/4 hours trips, 1 1/2 hours other.

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4/1/61

Drilled to 3285' with Bit No. 9. Drilled 200'. Sand and shale. Mud 9.7. Vis. 44. Water loss 8.2. Dev. 3/4° at 3100'. 16 1/2 hours drilling. 4 1/2 hours trips. 3 hours other.

4/2/61

Depth 3483'. Drilled 198'. Sand and shale. Drilling with Bit No. 11. Mud 9.8. Vis. 42. Water loss 4.2. 3% oil.

4/3/61

Depth 3663'. Making trip for Bit No. 13. Mud 9.8. Vis. 43. Water loss 4.7. 4% oil. Dev. 1 1/4° at 3600'.

4/4/61

Depth 3936'. Drilled 274'. Sand and shale. Drilling with Bit No. 14. Mud 9.7. Vis. 44. Water loss 9. 4% oil.

4/5/61

Depth 4236'. Drilled 300'. Sand and shale. Drilling with Bit No. 16. Mud 9.6. Vis. 42. Water loss 12. 3% oil. Dev. 3/4° at 4135'.

4/6/61

Depth 4468'. Drilled 232'. Sand and shale. Making trip for Bit No. 18. Mud 9.6. Vis. 44. Water loss 10.

4/7/61

Depth 4668'. Drilled 200'. Sand and shale. Drilling with Bit No. 19. Mud 9.8. Vis. 44. Water loss 11. 2% oil.

4/8/61

Depth 4982'. Drilled 300'. Sand and shale. Drilling with Bit No. 20. Mud 9.8. Vis. 47. Water loss 12%.

4/9/61

Depth 5288'. Drilled 320'. Sand and shale. Drilling with Bit No. 21. Mud 9.7. Vis. 47. Water loss

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4/10/61

Depth 5605'. Drilled 317'. Sand and shale. Tripping for Bit No. 23. Mud 9.7. Vis. 51. Water loss 8. 3% oil.

4/11/61

Depth 5870'. Drilled 265'. Sand and shale. Making trip for Bit No. 24. Mud 9.7. Vis. 58. Water loss 8. 3% oil. Down three hours with lost circulation at 5806'. Lost approximately 400 barrels.

4/12/61

Depth 6210'. Drilled 340'. Sand and shale. Drilling with Bit No. 25. Mud 9.8. Vis. 63. Water loss 8.6. 3% oil. Dev. 1° at 5906'.

4/13/61

Depth 6386'. Drilled 176'. Sand and shale. Drilling with Bit No. 27. Mud 9.6. Vis. 67. Water loss 10. 4% oil.

4/14/61

Depth 6458'. Drilled 72'. Sand. Drilling with Bit 29. Mud 9.8. Vis. 73. Water loss 10.

4/15/61

TD 6512'. Laying down drill pipe in preparation for running 5 1/2" production casing.

Ran Schlumberger radioactivity log at 6500'. Log indicates Dakota top at 6356' with approximately 100' of gross gas pay section. This compares favorably with and is quite analogous to the adjacent producing wells.

Drilled additional 5' - conditioned mud and hole and started laying down drill pipe.

4/16/61

TD 6512'. WOC (waiting on cement). MORT (moving off rotary tools). Ran 204 joints - 6503' 5 1/2" J-55-15.5# casing and set at 6512' KB (this after a 2'' cut off).

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4.16.61 (Cont'd)

PBTD - 6480'. Halliburton DV stage tool at 4412'. Four centralizers throughout Dakota and two centralizers throughout Mesaverde.

Lower stage - cemented with 80 sx 50/50 Pozmix with 6% gel with 1# HAL additive No. 9 per sack, followed by 50 sx regular cement with 6% gel. Good returns throughout job - bumped plug at 3000 PSIG - checked floats - OK.

Upper stage - cemented with 120 sx 50/50 Pozmix with 4% gel with 1# HAL additive No. 9 per sack. Bumped plug at 2000 PSIG - checked floats - OK.

4/20/61

Rigging up completion rig.

4/21/61

Preparing to perforate lower Dakota for first frac stage. Picked up 2 7/8" drill tubing and cleaned out to 6474'. Displaced 750 gal. 15% HCl on bottom and pulled tubing. Ran Schlumberger's correlation collar log.

4/22/61

Going in hole with 2 7/8" drill tubing to clean out sand and drill out bridge plug following two-stage Dakota frac as follows:

Perforated with new Schlumberger radial jet casing notcher with four holes placed in each of two horizontal planes at 6436' - 37'.

Lower Stage Frac

Soaked acid away slowly at 1600 PSIG after a 1900 PSIG initial breakdown. Started injecting at 2400 PSIG at 30 BPM with 3/4 pound sand per gallon gradually increasing to 1 1/4 pound per gallon. Rate increase to 36 BPM with pressure decrease to 2000 PSIG. Injected 20,000 pounds of 40-60 mesh sand followed by 40,000 pounds of 20-40 mesh sand under these conditions.

Stage Summary:
60,000 pounds sand. 60,000 gallons water - all water treated with fluid loss additive. 750 gallons 15% HCl. 2200 PSIG average. 36 BPM

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4/22/61 (Cont'd)

Lubricated in Baker magnesium bridge plug and set on wire line at 6430'. Had considerable difficulty getting plug to bottom because of floating frac sand resulting from formation flow back. Pressured on top of plug to 2000 PSIG. Perforated with 2 bullets and 2 jets per foot as follows: 6391' to 6415', 6369' to 6386'. Immediately after placing first perforations, had 400 PSIG on wellhead indicating vertical communication, probably through formation fractures.

Upper Stage Frac

Started pumping in at 2600 PSIG at 32 BPM. Started 1/2 pound sand per gallon at 2600 PSIG, gradually lowering to 2400 PSIG. Increased concentration to 3/4 pound per gallon with 2350 PSIG at 36 BPM. Increased concentration to 1 pound per gallon with 2300 PSIG at 37 BPM by the time 20,000 pounds sand had been injected. Dropped 20 balls with no response. Increased said concentration to 1 1/4 pounds per gallon with 2300 PSIG at 37 BPM at the time 40,000 pounds sand injected. Dropped additional 20 balls and increased concentration to 1 1/2 pounds per gallon - this resulted in pressure increase to 2450 PSIG at 35 BPM - pressure gradually rose to 2500 PSIG throughout the remainder of job - 60,000 pounds 20 - 40 mesh sand total injected.

Stage Summary:

60,000 pounds sand. 59,000 gallons water - all treated with fluid loss additive. 40 balls. 2300 PSIG average. 35 BPM average.

4/23/61

Drilling on bridge plug. Five hours following frac well still had 500 PSIG wellhead pressure. Opened well and allowed to flow back while stripping clean-out tubing in hole. Well continued to show substantial natural life until the hole had been completely displaced with fresh water. During the said washing operations, washed about 50' of sand from top of bridge plug - lost considerable water to formation throughout this procedure.

4/24/61

Running 1 1/2" completion tubing. Completed drilling bridge plug and cleaned hole to 6465' - PBTD. Pulled and laid down clean-out tubing string.

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4/25/61

Blowing well for initial clean up. Ran completion tubing to 2000' and brought well in with supply gas from that point. Well came in after about five hours circulating at that depth with supply gas. Stripped to bottom and landed 1 1/2" - integral joint - Norris - 10 round as follows:
193 joints (6358') set at 6369'KB. Tubing landed open-ended with jet collars at 4666', 5156' and 5652'. Well appears to be good and strong.

4/26/61

Shut in. Tubing pressure 1530 PSIG - casing pressure 1500 PSIG after 19 hours shut in. Will blow today for additional clean up.

4/27/61

Shut in. Blew well four hours yesterday. Casing pressure was 550 PSIG at end of four hours with regulated flow of 2000 MCFD. Flow stream still very wet with frac water. Will run preliminary potential test today.

4/28/61

Blowing well for additional clean up. Ran preliminary three hour potential test with the following results: Surface pressures after 20 hours shut in - tubing 1780 PSIG, casing 1775 PSIG-after 1 hour flow the surface pressures were 1000 PSIG and 1060 PSIG for casing and tubing, respectively. After two hours 850 and 115 PSIG and after three hours 750 and 100 PSIG for casing and tubing, respectively. This indicates an actual flow of 1500 MCFD after three hours. The flow stream was quite heavily laden with frac water.

4/29/61

Shut in for seven-day pressure build up and subsequent official potential testing. Well was making 1000 MCFD after 30 hours continuous blowing to atmosphere. Shut in yesterday p. m.

Tubing Pressure - 1989 psig Casing Pressure 199[illegible] psig

	TP	CP	Ten[illegible]
15 min.	541	1724	[illegible]00
30 min.	475	1449	[illegible]0
45 min.	382	1259	[illegible]30
1 hour	316	1138	400
2 hours	181	1061	10
3 hours	121	939	20

Actual rate 1785 Calculated Absolute Open Flow 21[illegible] MCFD
Slugging first 1 1/2 hours. Started dry and steady in last 1 1/2 hours.

OPEN FLOW TEST DATA

DATE May 5, 1961

Operator: Consolidated Oil & Gas, Inc.		Lease: Compass No. 1-22	
Location: 1690' F/SL & 1986' F/EL		County: San Juan	State: New Mexico
Formation: Dakota		Pool: Basin	
Casing: Diameter: 5 1/2	Set At: Feet: 6512	Tubing: Diameter: 1 1/2	Set At: Feet: 6369
Pay Zone: From: 6369	To: 6437	Total Depth: 6512	6480 PB
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: 1995	+ 12 = PSIA: 2007	Days Shut-In: 7	Shut-In Pressure, Tubing PSIG: 1989	+ 12 = PSIA: 2001	
Flowing Pressure: P PSIG: 121	- 12 = PSIA: 133		Working Pressure: P_w PSIG: 939	+ 12 = PSIA: 951	
Temperature: T °F: 52	n = .75		Fpv (From Tables): 1.017	Gravity: .70	

CHOKE VOLUME = $Q = C \times P_t \times F_t \times F_g \times F_{pv}$

$Q = 14.1605 \times 133 \times 1.0078 \times .9258 \times 1.017 =$ 1785 MCF/D

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

$Aof = Q \left(\frac{4028049}{3146328} \right)^n = 1.28024$

Aof 2150 MCF/D

TESTED BY Leo Case

WITNESSED BY _____