

# DRILLING AND COMPLETION HISTORY

CONSOLIDATED OIL & GAS, INC.

O'SHEA 1-3

San Juan County, New Mexico

July 19, 1961

Location:	1813' F/SL & 1875' F/WL, Section 3 T31N-R13W,N.M.P.M.																										
Elevation:	5818' Ground 5830' K.B. - all measurements from K.B.																										
Spud:	May 12, 1961																										
Drilling Completed:	June 6, 1961																										
Well Completed:	June 19, 1961																										
Total Depth:	6900' Drilled 6886' Plug Back																										
Casing:																											
Surface:	9 5/8", 32.30# H-40 cemented at 194' w/175 sx 2% CaCl <sub>2</sub> cement.																										
Production:	5 1/2", 15.5 & 17# J-55 Cemented at 6900' w/100 sx 50/50 Pozmix and 130 sx with 1# HAL additive #9/sx and 200 sx 50/50 Pozmix thru stage collar at 4793'.																										
Tubing:	MV - 1" Jalcon weld hung at 4433' DK - 1 1/2" IJ J-55 hung at 6617'																										
Logs:	Welex Induction Electric Log																										
Cores and Drillstem Tests:	None																										
Formation Tops: (Log)	<table border="0"> <tr> <td>Pictured Cliffs</td> <td>2050'</td> <td>(+3780')</td> </tr> <tr> <td>Mesaverde</td> <td>3666'</td> <td>(+2164')</td> </tr> <tr> <td>Cliffhouse</td> <td>3760'</td> <td>(+2070')</td> </tr> <tr> <td>Menefee</td> <td>3913'</td> <td>(+1917')</td> </tr> <tr> <td>Pt. Lookout</td> <td>4486'</td> <td>(+1344')</td> </tr> <tr> <td>Mancos</td> <td>4827'</td> <td>(+1003')</td> </tr> <tr> <td>Greenhorn</td> <td>6546'</td> <td>(- 716')</td> </tr> <tr> <td>Dakota</td> <td>6658'</td> <td>(- 828')</td> </tr> </table>			Pictured Cliffs	2050'	(+3780')	Mesaverde	3666'	(+2164')	Cliffhouse	3760'	(+2070')	Menefee	3913'	(+1917')	Pt. Lookout	4486'	(+1344')	Mancos	4827'	(+1003')	Greenhorn	6546'	(- 716')	Dakota	6658'	(- 828')
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Treatment:	<p>Sand-water frac:</p> <p>Mesaverde: 100,000#(20-40 mesh) sand, 100,000 gal. water</p> <p>Dakota: 69,000#(40-60 and 20-40 mesh) sand, 87,000 gal. water, 1000 gal. acid in two stages.</p>																										
Initial Potential:	MV	<p>Flow volume thru 3/4" choke: 735 MCFD</p> <p>Calculated Absolute Open Flow Potential: 1480 MCFD</p>																									
	DK	<p>Flow volume thru 3/4" choke: 1825 MCFD</p>																									

WELL: O'SHEA NO. 1-3  
1813' F/SL & 1875' F/WL, Sec. 3-31N-13W  
 FIELD: Blanco Mesaverde and Basin Dakota  
 COUNTY: San Juan STATE: New Mexico  
 ELEVATIONS: 5818' GD  
5830' KB

5/12/61

Moving on rotary tools.

5/13/61

Drilled 200'. 13 3/4" hole ran 181' - 9 5/8 set at 194 KB. Cemented with 175 sx reg cement 2% CaCl<sub>2</sub> - plug down 2 a.m. WOC.

5/14/61

Depth 905'. Drilled 705'. Shale. Drilling with Bit No. 1. Drilling with water. Dev. 1/2° at 720'.

5/15/61

Depth 2125'. Drilled 1220'. Sand and shale. Drilling with Bit No. 3. Mud. 9. Vis. 32. Dev. 1/2° at 1600'.

5/16/61

Depth 2773'. Drilled 648'. Sand and shale. Tripping for plug bit. Mud 8.9. Vis. 33. Water loss 16%. Dev. 3/4° at 2700'.

5/17/61

Depth 3237'. Drilled 464'. Sand and shale. Tripping for Bit No. 6. Mud 9. Vis. 34. Water loss 11.

5/18/61

Depth 3391'. Drilled 154'. Sand and shale. Working on pump. Mud 9.3. Vis. 34. Water loss 10.

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5/19/61

Depth 3529'. Drilled 138'. Sand and shale. Making a trip. Mud 9.3. Vis. 34. Water loss 10.

5/20/61

Depth 3732'. Drilled 212'. Sand. Trip for Bit No. 10. Mud 9.4. Vis. 37. Water loss 11.

5/21/61

Depth 3826'. Drilled 94'. Shale. Drilling with Bit No. 12. Mud 9.3. Vis. 37. Water loss 11.

5/22/61

Depth 3993'. Drilled 169'. Sand. Making trip for Bit No. 15. Mud 9.1. Vis. 37. Water loss 11.4. Dev. 1° at 3965'.

5/23/61

Depth 4028'. Drilled 35'. Sand. Drilling with Bit 16. Mud 9.1. Vis. 38. Water loss 12.

5/24/61

Depth 4300'. Drilled 272'. Sand and shale. Drilling with Bit 17. Mud 9.4. Vis. 35. Water loss 12.

5/25/61

Depth 4570'. Drilled 270'. Sand and shale. Drilling with Bit 19. Mud 9.4. Vis. 34. Water loss 11.

5/26/61

Depth 4760'. Drilled 190'. Sand and shale. Drilling with Bit 20. Mud 9.4. Vis. 34. Water loss 14.

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5/27/61

Depth 4980'. Drilled 220'. Sand and shale. Drilling with Bit 22. Mud 9.3. Vis. 35. Water loss 12.

5/28/61

Depth 5260'. Drilled 280'. Sand and shale. Drilling with Bit 23. Mud 9.3. Vis. 35. Water loss 16. Dev. 1 1/4° at 5080'.

5/29/61

Depth 5484'. Drilled 224'. Sand. Making trip for Bit 25. Mud 9.3. Vis. 35. Water loss 17.

5/30/61

Depth 5810'. Drilled 326'. Sand and shale. Drilling with Bit 26. Mud 9.6. Vis. 36. Water loss 13.6.

5/31/61

Depth 6210'. Drilled 400'. Sand and shale. Drilling with Bit 27. Mud 9.5. Vis. 35. Water loss 12.6.

6/1/61

Depth 6538'. Drilled 328'. Sand and shale. Drilling with Bit 28. Mud 9.5. Vis. 38. Water loss 11.4.

6/2/61

Depth 6701'. Drilled 163'. Sand and shale. Tripping for Bit 30. Mud 9.4. Vis. 47. Water loss 12.

6/3/61

Depth 6767'. Drilled 60'. Sand. Tripping for Bit 32. Mud 9.4. Vis. 50. Water loss 10.8. 7% oil.

6/4/61

Depth 6866'. Drilled 99'. Sand. Tripping for Bit 34. Mud 9.5. Vis. 70. Water loss 10.

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WELL: O'SHEA NO. 1-3

6/5/61

TD 6900'. Drilled 34'. Sand. Circulating for logs. Mud 9.6. Vis. 75. Water loss 9.

6/6/61

TD 6900'. Running 5 1/2" production casing. Ran ES-Induction Log but because of hole conditions it was necessary to go back in with drill pipe and condition hole before running Sonic Log. All logs now secured.

6/7/61

TD 6901' by casing tally. WOC after cementing production casing. Released rotary rig yesterday p.m. Ran 5 1/2" J-55 production casing, detailed as follows from the bottom up:

81 joints - 17# - ST&C - 2634'; 129 joints - 15.5# - ST&C - 4177'; 3 joints - 15.5# - LT&C - 89'; for a total of 213 joints set at 6900' KB. Stage collar placed at 4793' KB with lower float collar at 6836' KB. A weavel plate was placed in shoe.

Cemented around shoe opposite Dakota with 100 sx 50/50 Pozmix with 4% gel followed by 130 sx neat cement with 1# HAL additive No. 9 per sack. Bumped plugs at 1500 PSIG - checked float - OK.

Performed upper stage Mesaverde cement job by displacing 200 sx 50/50 Pozmix with 4% gel - bumped plug at 2000 PSIG.

6/8/61 to 6/13/61

Waiting on completion rig and pumping frac water to location. Expect to move on Wednesday, June 14, 1961.

6/14/61

Moving in completion rig.

6/15/61

Preparing to drill additional cement. Picked up drilling string. Drilled out cement to 5850' Welox measurements. Spotted 1000 gallons of acid on bottom. Pulled drill string. Ran Gamma Ray-Neutron logs by Lane-wells. Found discrepancy between Lane-wells and Welox of 6' deeper by Lane-wells.

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6/16/61

Preparing to perforate basal Dakota zone. Drilled out additional 10' of cement to PBD 6886 Gamma-Ray measurements after reversing out 1000 gal. of acid placed in hole. Replaced acid on bottom after drilling out cement. Changed perforation intervals to match new Gamma-Ray measurements.

6/17/61

Preparing to perform third stage frac on Dakota formation. Perforated 6865' to 6875' with 4 bullets and 2 jets per foot. Pumped in 1000 gal. 15% mud acid and soaked away in stages at 3000 PSIG with no breakdown. Attempted to establish a frac rate with one truck but it required 3500 PSIG at a rate of 3 BPM. Tried to put 750 gal. more into the formation and, while pumping acid toward perforations, pressure rose to 3750 PSIG and could not get the acid to the perforations. Shut off pump and pressure dropped from 3750 to only 3200 PSIG in 10 min. Bled pressure back to 2600 PSIG and lubricated in perforating gun and shot second stage perforations with 2 jets and 2 bullets per foot as follows: 6735' to 6747'; 6756' to 6760'; 6785' to 6793'; 6810' to 6817'. After initial perforations of second stage (6810' - 6817'), pressure dropped slowly from 2600 to 1400 PSIG; finished pumping 750 gal. of acid still in casing down to the new perforations. Put acid away in stages, soaking at 1300 and 1200 PSIG and put three frac trucks on at approximately 40 BPM at a 2500 PSIG pressure. Started mixing sand at 1# per gal. with the pressure at 2200 PSIG, and, after 10,000# of sand was mixed, pressure dropped to 2200 PSIG. Then started dropping balls at the following intervals: 10 balls at 20,000# sand, 10 balls at 30,000# sand, 10 balls at 40,000 pounds sand, 10 balls at 45,000# sand. Pressure remained the same during this time at 2200 PSIG with the rate gradually decreasing from 40 BPM to 33 BPM as job continued. A final 10 balls were dropped at 50,000# sand in and when balls reached perforations pressure rose to 2400 PSIG and then to 2500 PSIG with 55,000# sand into formation. Started flush at 2500 PSIG and pressure remained constant throughout flush. Standing pressure was 1700 PSIG in five minutes. Set Giberson magnesium bridge plug at 6732' KB.

## Job Summary

55,000# (30,000# 40-60 and 25,000# 20-40 mesh)  
67,000 gal. water treated w/J-101  
50 balls  
2200 - 2500 PSIG  
33 BPM

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6/18/61

Cleaning out sand and preparing to drill out Giberson magnesium bridge plug. Perforated third Dakota stage with 2 jets and 2 bullets per foot as follows: 6670' to 6710' and 6720' to 6724'. Saw a little indication of communication. Started fracturing at 2800 PSIG with five Allison trucks, mixing sand at 1/2# per gal. at rate of 50 BPM. After establishing fracturing rate at 2800 PSIG at 1/2# per gal, increased sand concentration to 1# per gallon with a pressure rise to 2900 PSIG. Increased concentration to 1 1/4# per gal. with frac rate still at approximately 50 BPM. Increased sand concentration to 1 1/2# per gal, but when 1 1/4# sand per gal. hit formation, started sanding out, so reduced concentration to 1# per gal. but had already sanded out with 20,000# of sand mixed and into the pipe with approximately 14,000# into the formation. Allowed sand to settle out and perforated Mesaverde.

## Job Summary:

14,000# (20-40 mesh) sand  
20,000 gal. clear water  
45 BPM  
2800 - 3500 PSIG.

Perforated Mesaverde with 2 bullets per foot from: 4489' to 4512'; 4536' to 4540'; 4546' to 4548'; 4580' to 4589'; 4645' to 4653'; 4696' to 4701'; 4720' to 4723' (Lane-Wells' Radioactivity Log reference). Started pumping water with five trucks at 61 BPM at 2700 PSIG. Mixed 1/2# per gallon with concentration of 20-40 sand and pressure dropped to 2600 PSIG and to 2400 PSIG by the time 10,000# had been mixed. Increased concentration to 1 pound per gallon and pressure dropped to 1800 PSIG by the time 50,000# of sand had been mixed and pumped in. Started dropping balls - 30 balls after 50,000# sand, dropped 20 balls at 60,000#, pressure rose from 1800 to 2100 PSIG; dropped 10 balls at 70,000# sand, pressure rose to 2300 PSIG; dropped 7 balls at 75,000#, pressure rose to 2500 PSIG; dropped 10 balls at 90,000#, pressure rose from 2500 PSIG to 3000 PSIG. Pressure rose to 3500 PSIG by the time 100,000# had been mixed but broke back at 3000 PSIG during flushing operations. Completed flushing operations at 3000 PSIG. Initial rate of frac job was at 61 BPM with the average of 50 BPM as the pressure increased and 70,000# of sand had been pumped into the formation. Flushed at the rate of 45 BPM. Standing pressure was 600 PSIG in 5 min. and it dropped to 250 PSIG in 15 min. Released all trucks and com-

WELL: O'SHEA NO. 1-3

6/18/61 (Cont'd)

## Job Summary:

100,000# (20-40 mesh) sand  
100,000 gal. clear water  
77 balls  
48 BPM  
2200 PSIG.

6/19/61

Running 1 1/2" tubing for Dakota completion string. Cleaned out 1300' of frac sand, drilled bridge plug; lost approximately 1000 barrels of water into the Mesaverde formation prior to drilling bridge plug. Finished cleaning out frac sand to total depth. Set Giberson Type "A" wire line packer at 6617' KB by Lane Wells' Gamma Ray measurements and started picking up 1 1/2" tubing.

6/20/61

Shut in for brief pressure build up and additional subsequent blowing for clean up.

Landed Dakota tubing in permanent completion tubing packer at 6617' KB as follows: 210 joints plus 10' of subs of 1 1/2" IJ tubing equalling 6608' plus a 6' x 2" EUE pup above locator sub - tubing string set with 7000# weight on locator sub.

Ran Mesaverde tubing as follows: 149 joints of 1" - 1.7# - J-55 - Jalcon Weld - 50 - 4432' set at 4433' KB. Jet collars (4/64") at 3748' and 3285' KB.

Dakota had 300 PSIG tubinghead pressure immediately after landed tubing. Opened Dakota and allowed to flow and clean up for about 20 hours - after which time it was making 1100 MCFD. Well still bringing lots of frac water. Released rig yesterday p.m.

6/21/61

Dakota shut in. Have been blowing intermittently for clean up.

Mesaverde blowing and cleaning up frac water on its own. Mesaverde natural flow was instigated with the aid of Dakota supply gas for about two hours.

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6/24/61

Shut in both zones this a.m. for seven-day pressure build up and subsequent potential and packer leakage testing.

7/2/61

Shut in for additional seven-day pressure build up and performance of initial potential test for Mesaverde and final phase of Packer Leakage Test. Conducted first official potential test for Dakota and Dakota side of Packer Leakage Test yesterday with the following results (flow through 3/4" positive choke):

Time After Opening	DK		MV	
	Tubing PSIG	Temp. ° F.	Tubing PSIG	Casing PSIG
0 min.	2037	-	1120	1121
15	397	43	-	-
30	222	45	-	-
45	219	45	-	-
60	215	45	1125	1126
120	156	45	1125	1126
180	*123	46	1125	1126

\*Approx. 1850 MCFD. Still cleaning up frac water.

7/10/61

Shut in awaiting hook up. Completed initial official potential test of Mesaverde and final phase of packer leakage test on 7/8/61 with following results (flow through 3/4" positive choke):

Time After Opening Minutes	MV		Temp. ° F.	DK Tubing PSIG
	Casing PSIG	Tubing PSIG		
0	1133	1133	-	2037
15	1032	107	31	-
30	988	100	31	-
45	956	94	31	-
60	921	91	32	2039
120	876	51	35	2040
180	877	*38	37	2039

# OPEN FLOW TEST DATA

DATE 7-8-61

Operator Consolidated Oil & Gas, Inc.		Lease O'Shea 1-3	
Location 1813' FSL 1875' FWL		County San Juan	State New Mexico
Formation Mesaverde		Pool Blanco	
Casing: Diameter 5 1/2"	Set At: Feet 6900	Tubing: Diameter 1"	Set At: Feet 4433
Pay Zone: From 4489	To 4723	Total Depth: 6617 Pk	
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, 1133	PSIG	+ 12 = PSIA 50	Days Shut-In 14	Shut-In Pressure, Tubing 1133	PSIG
					+ 12 = PSIA 1145
Flowing Pressure: P 38	PSIG	+ 12 = PSIA 50		Working Pressure: P <sub>w</sub> 877	PSIG
					+ 12 = PSIA 889
Temperature: T 37	°F	n = 0.75		F <sub>pv</sub> (From Tables) 1,000	Gravity 0.700

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

$$Q = 14,1605 \times 50 \times 1.0229 \times .9258 \times 1,000 = \underline{\quad 735 \quad} \text{MCF/D}$$

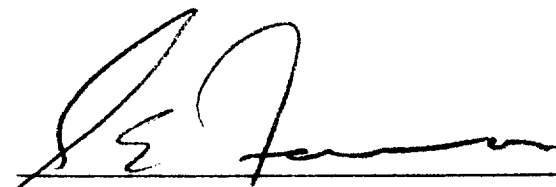
$$\text{OPEN FLOW} = Aof = Q \left( \frac{P_c^2}{P_c^2 - P_w^2} \right)^n$$

$$Aof = \left( \frac{1311025}{520704} \right)^n = 2.518^n$$

$$Aof = \underline{\quad 1480 \quad} \text{MCF/D}$$

TESTED BY Sanger

WITNESSED BY \_\_\_\_\_



# OPEN FLOW TEST DATA

DATE 7-1-61

Operator Consolidated Oil & Gas, Inc.		Lease O'Shea 1-3	
Location 1813' FSL 1875' FWL		County San Juan	State New Mexico
Formation Dakota		Pool Basin	
Casing: Diameter 5 1/2"	Set At: Feet 6900	Tubing: Diameter 1 1/2"	Set At: Feet 6617
Pay Zone: From 6670	To 6875	Total Depth: 6885 FB	
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, Mesaverde	PSIG + 12 = PSIA	Days Shut-In 7	Shut-In Pressure, Tubing 2037	PSIG + 12 = PSIA	2049
Flowing Pressure: P 123	PSIG + 12 = PSIA	135	Working Pressure: P <sub>w</sub> ---	PSIG + 12 = PSIA	
Temperature: T 46	°F n =	0.75	F <sub>pv</sub> (From Tables) 1.018	Gravity	0.70

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

$$Q = 14.1605 \times 135 \times 1.0137 \times .9258 \times 1.018 = 1825 \text{ MCF/D}$$

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

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

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

TESTED BY Sanger

WITNESSED BY

