

DRILLING AND COMPLETION HISTORY

CONSOLIDATED OIL & GAS, INC.

WILMERDING NO. 1-9

San Juan County, New Mexico
December 28, 1961

Location: 4090' F/NL, 1750' F/EL, Section 9
T31N-R13W, N.M.P.M.

Elevation: 5817' GD
5829' KB - all measurements from KB

Spud: October 11, 1961

Drilling Completed: October 30, 1961
Well Completed: November 12, 1961

Total Depth: 6801' Drilled
6780' Plug Back

Casing: Surface: 3 5/8" 32.75# H40 cemented at 190'
w/140 sx. regular cement with 2% CaCl₂

Production: 3 1/2" 15.5# J-55 S.T. & C. cemented
at 6800' w/125 sx. regular with 4% gel &
1/2 cu. ft. Strata-Crete per sack, thru
stage collar at 4767' w/100 sx. regular
with 50-50 Pozmix and 4% gel. Squeezed
shoe w/16 sx.

Tubing: DK 2 1/2" V-50 IJ set in Baker Model "D"
Packer at 6590'.

MV 1" EUE Hung at 4443'.

Logs: Lane-Wells Gamma Ray Neutron & Cementron

Cores & Drillstem Tests: None

Formation Tops: Log

Pictured Cliffs	2034'	(+3795)
Cliffhouse	3628'	(+2201)
Menefee	3768'	(+2061)
Pt. Lookout	4451'	(+1378)
Mancos	4794'	(+1035)
Greenhorn	6508'	(- 679)
Dakota	6621'	(- 792)

Producing Perforations:

Dakota	Mesaverde
6635' - 6649'	4462' - 4475'
6654' - 6662'	4482' - 4496'
6670' - 6678'	4508' - 4520'
6690' - 6695'	4536' - 4544'
6712' - 6718'	4572' - 4577'
6742' - 6748'	4610' - 4614'
6754' - 6756'	4633' - 4638'
6774' - 6778'	4653' - 4657'

Treatment: DK Sand-water frac w/100,000# 20-40 & 10-20
mesh sand, 103,000 gal. water treated with
Dowell J-101, 90 frac balls.

MV Sand-water frac w/100,000# 20-40 mesh
sand, 72,000 gal. water, 1,000 gal. acid
125 frac balls.

Initial Potential: DK Flow volume thru 3/4" choke: 1080 MCFD

MV Flow volume thru 3/4" choke: 344 MCFD
Calculated Absolute Open Flow Potential:
852 MCFD

WELL: WILMERDING NO. 1-9
1090' F/NL & 1750' F/SL, Sec. 9, T31N-R13E
 FIELD: Basin Dakota & Blanco Mesaverde
 COUNTY: SAN JUAN STATE: NEW MEXICO
 ELEVATIONS: 5817' GD
24' KB

10/9/61

Moving in equipment, operation shut down, too wet.

10/10/61

Too wet to rig up.

10/11/61

Moving in, rigging up rotary tools.

10/12/61

Preparing to run surface casing. Spudded at 11:59 p.m. 10/11/61. Drilled 190' of 13 3/4" hole. Formation - boulders and shale. Lost circulation temporarily at 22'. Dev. 1/4" at 89'.

10/13/61

Depth 910'. Drilling with Bit 1, sand and shale. Dev. 1" at 700'. Set 178' of 9 5/8" surface casing at 190' KB. Cemented with 140 sx. regular cement with 2% CaCl₂. Good circulation throughout job. Plug down 5:30 a.m.

10/15/61

Depth 2120'. Drilling with Bit 3. Drilled 1200'. Shale. Dev. 1" at 1625'. 3/4" at 1650'. Drilling with water.

10/17/61

Depth 2640'. Drilling with Bit 5. Drilled 720' of shale. Dev. 1 1/2" at 2720'. Drilling with water.

10/18/61

Depth 3347'. Tripping for Bit 7. Drilled 547'. Sand and shale. Dev. 5/4" at 3230'. Drilling with water. Used 12 gal. Sur-Ten.

10/19/61

Depth 3643'. Drilled 256'. Sand and shale. Tripping for Bit 9. Drilling with water.

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10/18/61

Depth 3930'. Drilling with Bit 11. Drilled 287'. Sand. Drilling fluid-water.

10/19/61

Depth 4251'. Drilling with Bit 13, drilled 315'. Sand and shale. Dev. 1" at 4000'. Mudded up at approximately 4000'. Mud 8.4. Vis. 48. Water loss 6. Mud cake 1/32. 6% oil. PH 9. Sand content 1/7%.

10/20/61

Depth 4500'. Drilling with Bit 14. Drilled 255'. Sand and shale. Mud 8.6. Vis. 42. Water loss 6.5. Mud cake 2/32. 6% oil. PH 9. 1/2% sand.

10/21/61

Depth 4705'. Drilling with Bit 16. Drilled 205' of sand. Mud 9.2. Vis. 40. Water loss 6.5. Mud cake 2/32. 6% oil. Sand content 1/2% Dev. 1 1/4" at 4510'.

10/22/61

Depth 4890'. Drilled 185' of sand and shale. Drilling with Bit 18. Vis. 39. Mud 9.1. Water loss 6.5. 6% oil. PH 9.5

10/23/61

Depth 5235'. Drilling with Bit 19. Vis. 39. Mud 9.3. PH 8.5. 6% oil. Dev. 1 3/4" at 4950'.

10/24/61

Depth 5566'. Drilled 331' of sand and shale. Tripping for Bit 21. Mud 9.3. Vis. 40. Water loss 7. Mud cake 2/32. 6% oil. PH 8.5.

10/25/61

Depth 5931'. Drilling with Bit 22. Drilled 365' of sand and shale. Dev. 1 1/4" at 5580'. Mud 9.4. Vis. 43. Water loss 5. Mud cake 2/32. 6% oil. PH 8.5.

10/26/61

Depth 6321'. Drilling with Bit 23. Drilled 390' of sand and shale. Mud 9.4. Vis. 46. Water loss 8. Mud cake 2/32. 5% oil.

10/27/61

Depth 6653'. Tripping for Bit 25. Drilled 324' of sand and shale. Mud 9.4. Vis. 50. Water loss 8. 5% oil. Lost 200 bbls. mud at 6640'. Estimated top of Dakota from drilling time, 6631'.

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10/28/61

Depth 6726'. Drilling with Bit 26. Drilled 73' of sand. Mud 9.6. Vis. 59. Water loss 7. Mud cake 2/32. 5% oil. Lost 160 bbls. mud at 6653'.

10/29/61

Depth 6787'. Logging. Drilled 61' of sand. Mud 9.5. Vis. 62. Water loss 5.5. 2/32 mud cake. 5% oil.

10/30/61

Depth 6795'. Drilled 8' of shale. Logging with density tool, estimate start running casing at 10 a.m. Ran Gamma Ray Neutron TD 6787', top of Graneros 6634'. Lost approximately 8 hours due to logging panel break down. Attempted to run Gamma Density log tool, would not work. Went in hole, drilled 8', came out laying down drill pipe.

10/31/61

WOC. Rigging down rotary rig. Rigged up, ran Lane Wells Densilog over MV and DK. Loggers TD 6800'. Ran 211 joints 5 1/2" J-55 U.S. S.T. & C. casing (6789.02'), set at 6800.02' KB. TD by pipe tally 6801.02' KB. Float shoe at 6798.02', float collar at 6732.61', stage collar at 4767.38'. Cemented DK with 125 sx. regular cement with 4% gel and 1/2 cu. ft. Strata-Crete per sack, good circulation throughout job, bumped plug with 2000 PSIG at 4 p.m., released pressure float held OK. Cemented MV with 100 sx. regular cement with 50/50 Pozmix and 4% gel, good circulation throughout job, bumped plug with 2000 PSIG at 7:45 p.m., released pressure, float held OK. Released rig at 8 p.m.

11/1/61

Waiting on completion rig.

11/2/61

Waiting on completion rig.

11/3/61

Waiting on completion rig.

11/4/61

Waiting on completion rig.

11/5/61

Waiting on completion rig.

11/6/61

Moving on completion rig. this p.m.

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11/7/61

Picking up work over string. Moved in completion rig yesterday p.m. Rigged up derrick. Shut down over night.

11/8/61

Rigging up to run Cementon to determine possible bottom of cement. Rigged up, drilling out stage collar, tested to 1600 PSIG. Drilled out float, had no cement below the float. Tested casing, pumped out of casing 2 1/2 bbls. per minute at 2600 PSIG. Note: When casing was run displacement was off 4 bbls. It was over displaced 4 bbls. before the plug bumped, this creates a possibility that behind the pipe approximately 50' up, there could be no cement.

11/9/61

Rigging up to run cement log. Drilled stage collar at 4767', drilled float collar at 6732'. Bottom of good cement at 6740', 160' off bottom. Ran Halliburton DC cast iron retainer and set at 6781'. Pressured annulus to 2850 PSIG, held OK. Pumped in tubing at 3 bbls. per minute at 2500 PSIG. Started 50 sx. regular cement. Cement started around shoe at 2250 PSIG. Squeezed 15 1/2 sx., pressure increased to 2600 PSIG. Stopped pumping, pressure then came back to 2500 PSIG. Pumped 1/4 bbls., pressure increased to 3000 PSIG. Pulled out of retainer and reversed cement out. Job completed at 5 p.m. Spotted 1000 gal. 15% mud acid, came out of hole, 12 hours WOC. Will perforate after 18 hours.

11/10/61

Cleaning out sand at 4485'. Ran cement log. Found change in cement log in that cement log indicated cement was up 50' from bottom after squeeze around shoe.

Dakota perforations-
2 bullets and 2 jets

6635' - 6649'
 6654' - 6662'
 6670' - 6678
 6690' - 6695'
 6712' - 6718'

5 bullets and 6 jets

6742' - 6745'
 6754' - 6756
 6774' - 6778'

Perforated as follows: Soaked away mud acid in three stages 20 minutes apart. Initial breakdown 1400# to 1000#. Took acid at 1/2 BPM at 700#.

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11/10/61 Cont'd.

Dakota frac as follows:

Sand - 90,000# of 20-40 mesh. 10,000# of 10-20 mesh.
103,000 gas. water treated with Dowell J-101. Average rate 44.6 BPM.
Minimum pressure - 2000#. Maximum pressure - 3100#. Dropped 90 frac
balls in 8 stages. No apparent ball action. Instant shut in - 1600#.
Fifteen minute shut in - 1400#. Set magnesium plug at 4700#.

Perforated lower Mesaverde zone at 4653' - 4657' with 2 bullets
per foot. Pumped down 1000 gal. 15% acid. Perforated as follows
with 2 bullets per foot: 4462' - 4475'; 4482' - 4496'; 4508' - 4520';
4536' - 4544'; 4572' - 4577'; 4610' - 4614'; 4633' - 4638'.
Soaked away acid in three separate stages 20 minutes apart.
2300 - 1100 PSIG. Injection pressure 900#. Fraced Mesaverde
as follows: All pumps on at 2100 PSI - 48 BPM. Started sand at
1# per gallon for four minutes. After four minutes went to 1 1/2#
sand per gallon. Pressure 2000 PSI. Rate 49 BPM.

Sand in - lbs.	Pressure - PSI	Rate - BPM	Balls Dropped
10,000	1900	50	
20,000	1800	54	15
30,000	1800	54	10
(Pressure increased to 2500 PSI)			
40,000	1900	51.6	5
49,000	1900	53	10
60,000	1950	50	10
68,000	1950	50	10
75,000	1900	52	10
78,000	1900	52	10
80,000	1900	52	10
85,000	1900	52	10
90,000	2000	49	10
95,000	2050	48	10
97,000	2100	47.5	5

After 100,000# sand in, started flush. Pressure 2100 PSI.
Completed flush at 2100 PSI. Instant shut in - 1000 PSI.
Fifteen minute shut in - 800 PSI.

Frac summary: 100,000# 20-40 mesh sand. 72,000 gal. water. Average
rate 49.7 BPM. Minimum treating pressure 1800 PSI. Maximum creating
pressure 7100 PSI. Dropped 125 frac balls in thirteen separate stages.
No apparent ball action. Left well shut in one hour. Bled back 160
barrels water. Water slightly gas cut. Went in hole with tubing.
Found top sand at 4485'.

11/11/61

Running 1 1/2" tubing, subbing out to land in packer. Drilled bridge
plug at 4700', cleaned out to PRTD of 6780'. Circulated hole clean,
laid down 2 1/2" tubing, set Baker Model "D" packer at 6590' KB,
(top of DK perforations at 6635'). Lost approximately 240 bbls. of
water while cleaning out.

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11/12/61

Swabbed Dakota tubing. Swabbed from 5000', fluid level 1800'.
Swabbed 120 bbls. water in 14 hours. Ran 203 joints 1 1/2" V-50
Aztec UJ tubing for a total of 6551.50', plus 22' of 1 1/2" subs,
plus 6.73' 2" EUE subs, total of 6580.23' tubing set at 6591.23'
KB. Landed tubing in packer at 6590', set down with 6000 PSIG
(1.23' compression in string). Ran 141 joints of 1" EUE tubing
for a total of 4431.37', plus 1' sub for total of 4432.37', set
at 4443.37' KB. Ran 2 4/64" jet collars at 3249' and 3752' KB.

11/13/61

Flowing back frac water, rate 612 MCFD plus 1/2" stream of water.
Swabbed till 12 noon, total water swabbed 150 bbls. Dakota kicked
off, released rig. Will kick off Mesaverde after Dakota cleaned
up some.

11/14/61

Dakota cycling into Mesaverde. Shut well in for 8 hours to build
well head. Shut-in tubing pressure after 8 hours 1640 PSIG.
Opened Dakota to atmosphere after 17 hours open making 680 MCFD
plus heavy spray of water, plus 1/4" stream.

11/15/61

Shut Dakota in to see if Mesaverde will flow by itself. Dakota
cycled into MV annulus over night, casing pressure 1100 PSIG,
making 390 MCFD, 3/4" stream of water.

11/16/61

After 10 1/2 hours shut-in, pressure on Dakota 1700 PSIG. Turned
into MV. At 8 a.m. MV gas too small to measure, making 1/2" stream
of water. Took Dakota out of M V at 2 a.m. and opened DK to atmos-
phere. Gage on Dakota at 8 a.m., gas too small to measure and
heavy spray of water. Put DK back into MV at 8 a.m. Believe
rage on Pitot tube frozen.

11/17/61

DK and MV shut-in to pressure up. Cycled DK into MV annulus for
9 hours, at end of 9 hours casing pressure 1050 PSIG, making 1"
stream of water and gas too small to measure. Opened DK to atmos-
phere, after 4 1/2 hours open DK making 550 MCFD plus heavy spray
of liquids and 1/2" stream of water. MV casing pressure 750 PSIG
and 1" stream of water, gas too small to measure. At 7 a.m. after
15 hours open DK was drier making 650 MCFD. MV dead with only 510
PSIG casing pressure.

WELL:

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11/18/61

Cycling with DK into MV annulus. After 12 hours shut-in on MV
575 PSIG casing pressure. Opened to atmosphere and it died
approximately 1/2 hour later, started cycling procedure again.

11/19/61

Still cycling, opened both zones to atmosphere. After 12 hours
MV 400 PSIG casing pressure, 1/2" stream of water, gas too small
to measure. DK 670 MCFD, medium spray.

11/20/61

Turned DK back into MV for 12 hours, opened both zones to atmos-
phere and after 12 hours open the DK making 610 MCFD. MV 450 PSIG
casing pressure, gas too small to measure, 1/2" stream of water.

11/21/61

Both sides shut-in. After 18 hours shut-in 500 PSIG pressure on
MV, 1620 PSIG on DK.

11/22/61

DK after 48 hours shut-in 1720 PSIG tubing pressure. MV after flowing
to atmosphere for 22 hours 480 casing pressure, occasional heavy
slug of water. Had gas burning and could not get measurement on it.
Shut-in for pressure build up.

11/23/61

24 hour shut-in casing pressure 485 PSIG, DK tubing pressure 1750
PSIG.

11/24/61

48 hour shut-in pressure 550 PSIG, opened MV to atmosphere. DK 4-
day shut-in tubing pressure 1780 PSIG.

11/25/61

DK shut-in. MV after 24 hours, 425 PSIG casing pressure, gas too
small to measure, occasional slug of water. Shut-in to pressure up.

11/26/61

Shut-in.

11/27/61

Shut-in.

WELL:

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11/28/61

DK shut-in, MV shut-in. Ran 3-hour potential on DK.

Time After Opening Minutes	Tubing Pressure PSIG	Temp. ° F.
0	1843	
15	224	39
30	157	39
45	130	41
60	127	41
120	87	41
180	39	41

Wet throughout test, approximately 1150 MCFD

11/30/61

DK and MV shut-in. MV shut-in casing pressure 860 PSIG, opened
to atmosphere. After 12 hours casing pressure 425 PSIG, gas too
small to measure, occasional slugs of water. Shut-in for pressure
build-up.

12/1/61

DK and MV shut-in. Ran 3-hour potential on DK.