

DRILLING AND COMPLETION HISTORY

CONSOLIDATED OIL & GAS, INC.

SOUTHERN UNION GOVERNMENT NO. 2-19

San Juan County, New Mexico

June 16, 1960

Location: 800' F/NL, 990' F/EL
Section 19, T31N, R12W, NMPM

Elevation: 5962' GD
5974' KB - All measurements from KB

Spud: April 29, 1960

Drilling completed: May 22, 1960
Well Completed: June 1, 1960

Total Depth: 6980' Drilled
6965' Plug Back

Casing:

Surface: 9-5/8", 36# H-40 cemented at 186' w/
135 sx 2% CaCl₂ cement.

Production: 5-1/2", 14, 15.5 & 17# J-55 cemented
at 6979' w/225 sx 6% gel cement thru
shoe, and 175 sx 50% pozmix, 12%
Gilsonite cement thru stage collar at
4912'. Top of cement - 4200' second
stage.

Tubing: 1-1/4" EUE CW hung at 6812'

Logs: Schlumberger Gamma Ray-Neutron

Cores and Drillstem Tests: None

Formation Tops: (Log)

Pictured Cliffs	2293'	(/ 3681')
Mesa Verde	3830'	(/ 2144')
Cliffhouse	3912'	(/ 2062')
Menefee	4018'	(/ 1956')
Pt. Lookout	4485'	(/ 1489')
Mancos	4840'	(/ 1134')
Greenhorn	6712'	(- 738')
Dakota	6828'	(- 854')

Producing Perforations: 6829'- 6866' 6891' - 6917'
6872'- 6878' 6944' - 6956'

Treatment: Sand-Water Frac w/90,000 lbs. 20-40
mesh sand, 91,000 gal. water, 750 gal.
MCA acid.

Initial Potential: Flow volume thru 3/4" choke, 2410 MCFD;
Calculated Absolute Open Flow Potential
4265 MCFD.

WELL: SOUTHERN UNION GOVERNMENT NO. 2 - 19
(800' F/NL and 990' F/SL of Section 19, T31N, R12W, N.M.P.M.)

FIELD: Undesignated Dakota

COUNTY: San Juan STATE: New Mexico

SPUD DATE: 4/29/60

ELEVATIONS: 5962' GD
5974' KB

4/30/60

Drilled 188' 13-3/4" hole. Ran 174' 9-5/8" casing set at 186' KB. Cemented with 135 sacks regular 2% CaCl. Plug down 6:00 a.m. Deviation 1/4 degree at 90'.

5/1/60

Drilling at 700'. Drilled 512', sand and shale. Presently drilling with Bit No. 1 using water. Deviation 1/4 degree at 520'.

5/2/60

Drilling at 1876'. Drilled 1176', sand and shale. Tripping for Bit No. 4, still using water. Deviation 1/2 degree at 950' and 3/4 degree at 1700'.

5/3/60

Drilling at 2650'. Drilled 774', sand and shale, using Bit no. 5. Mud 9.1 - 43. Deviation 3/4 degree at 2200'.

5/4/60

Drilling at 3200'. Drilled 550', sand and shale, using Bit No. 6. Mud 9.2 - 53. Water loss 8.2. Deviation 1 degree at 3110'.

5/5/60

Drilling at 3562'. Drilled 362', sand and shale. Drilling with Bit No. 8. Mud 9.3 - 56.

Page 2
See Page 3

WELL: SOUTHERN UNION GOVERNMENT NO. 2 - 19

5/6/60

Drilling at 3836'. Drilled 274', sand and shale. Presently tripping for Bit No. 10. Mud 9.3 - 54. Deviation 1 1/4 degree at 3810'.

5/9/60

Drilling at 4428 feet. Shale and sand. Drilled 300 feet. Drilling with bit No. 16. Mud weight 9.4, viscosity 60, water loss 6.

5/10/60

Drilling at 4700'. Drilled 282', sand and shale, with Bit No. 18. Mud 9.2 - 60. Water loss 6.2. Deviation 1 degree at 4500'.

5/11/60

Drilling at 4850'. Drilled 140', sand and shale. Presently drilling with Bit No. 19. Mud 9.2 - 68. Lost 600-700 barrels 4760' to 4800'.

5/12/60

Drilling at 4988'. Drilled 136', sand and shale. Present operation lost circulation, mixing mud. Bit No. 20 in the hole. Mud 9.1 - 68. Lost estimated 600 barrels mud yesterday.

5/13/60

Drilling at 5176'. Drilled 190', sand and shale. Presently drilling with Bit No. 21. Mud 9.1 - 68. Water loss 8.

5/14/60

Drilling at 5460' with Bit No. 22. Drilled 284' in shale and sand. Mud 9.1 - 62. Deviation 1 1/4 degrees at 5260'. Experienced slight lost circulation last 24 hours.

5/15/60

Drilling at 5713'. Lost estimated 500 barrels mud last 24 hours. Drilled 253', shale and sand. Mud 8.8 - 65. 50% lost circulation material.

5/16/60

Drilling at 5910'. Drilled 197', shale and sand. Presently tripping with Bit No. 24. Mud 9.1 - 65. Lost mud at 5890'.

WELL: SOUTHERN UNION GOVERNMENT NO. 2-19

5/17/60

Drilling at 6271'. Drilled 361', shale and sand. Presently drilling with Bit No. 25. Mud 9.1 - 76. Water loss 10. Mud cake 2/32nds. PH - 8.5.

5/18/60

Drilling at 6571'. Drilled 300', shale and sand. Presently drilling with Bit No. 26. Mud 9.1 - 80. Water loss 10. Mud cake 2/32nds. PH 8.5.

5/19/60

Drilling at 6831'. Drilled 261', sand and shale. Presently drilling with Bit No. 27. Mud 9 - 97. Water loss 10. Mud cake 2/32nds. PH 8.5. Lost 24 inches mud out of pit during the last 24 hours.

5/20/60

Drilling at 6898'. Drilled 67', sand. Presently tripping for Bit No. 29. Mud 9 - 89. Water loss 10. Mud cake 2/32nds. PH 8.9.

5/21/60

T.D 6980'. Circulating in preparation for logging. Mud 9.3 - 116 - 10.

5/22/60

T.D. 6980'. PBTD 6960'. Running casing. Ran Schlumberger Gamma Ray-Neutron Log to 6982' - Schlumberger depth.

5/23/60

WOC. Moving off rotary rig. Ran 5 1/4" casing yesterday as follows:

6982' (219 joints) of 17# - 15.5# - 14# J-55 casing set at 6979'. Cemented with 225 sacks with 6% gel. 75% to 100% returns throughout. Bumped plugs at 3,000 psig.

After 4 hours WOC, cemented Mesa Verde through DV stage collar at 4912'. Cemented with 175 sacks (50-50 pozmix with 12 1/2 lbs. Gilsontite per sack) with 4% gel. 100% returns throughout job. Bumped plugs OK.

Centralizers at 6965', 6825', 6735', 4949', 4843', 4650', 4585'. Umbrellas at 4949', 4650', 4585'. Casing detail from bottom up:

Page 4
See Page 5

WELL: SOUTHERN UNION GOVERNMENT NO. 2 - 19

5/23/60 - (Continued)

11 joints:	365' - 17#
140 joints:	4500' - 14#
67 joints:	2102' - 15.5#
1 joint:	15' - 17#

Measured upper stage cement top at 4200' by temperature survey.

Released rig at 3:00 p.m.

5/26/60

Going in hole with 2-7/8" tubing to drill out cement and clean to bottom. Moved on Cunningham completion rig yesterday p.m.

5/27/60

Pulling tubing preparing to perforate. Drilled stage collar and cleaned out cement stringers to PBTD 6965'. Displaced 750 gallons 17% Dowell Breakdown acid. Tested casing to 2800 psig.

5/28/60

Perforating for second stage frac. Perforated and performed first stage of frac as follows:

Perforated with 2 jets and 2 bullets per foot as follows:

6944' -	6956'
6891' -	6917'

Displaced acid into formation at slow soaking rate, beginning at 1375 psig and ending with 600 psig.

Sand-water fraced as follows:

40,000 lbs. (20-40 mesh) sand
46,000 gal. water
750 gal. 17% Dowell Breakdown Acid
75 Balls
35 bpm
1900-2900 psig

Began injecting at 1900 psig at 38 bpm. After 20,000 lbs. sand, injection pressure was 1975 psig - dropped 25 balls - injection pressure 2050 after 28,000 lbs. sand - dropped 25 balls. Injection pressure 2300 psig after 36,000 lbs. sand - dropped 25 balls. Injection pressure

WELL: SOUTHERN UNION GOVERNMENT NO. 2-19

5/28/60 (Continued)

2900 psig after 40,000 lbs. sand. Ceased sand and flushed to perforations. Standing pressure 2100 psig after 30 minutes. Lubricated in bridge plug and set at 6885'.

5/29/60

Cleaning out frac sand. Completed second stage of perforating and fracing as follows:

Perforated with 2 jets and 2 bullets per foot as follows:

6872' - 6878'
6829' - 6866'

Sand-water fraced as follows:

50,000 lbs. (20-40 mesh) sand (44,000 lbs. in formation)
45,000 gal. water
100 Balls
33 bpm
1950-3700 psig

Began injecting at 1950 psig at 38 bpm. After 20,000 lbs. sand injected, pressure was 2100 psig - dropped 25 balls. After 28,000 lbs. sand, pressure was 2150 psig - dropped 25 balls. After 38,000 lbs. sand, pressure was still 2150 psig - dropped 25 balls - after 44,000 lbs. sand, pressure was 2400 psig - dropped 25 balls. When last balls hit, pressure increased rapidly to 2800 - 3000 psig and held steady for 2 minutes - pressure then rapidly increased to 3700 psig at which point a sand-out occurred. Ceased pumping. Standing pressure 1400 psig immediately and 600 psig in 5 minutes. Well shut in approximately 1 hour and then back flowed for 30 minutes.

Went in hole with 2-7/8" EUE tubing and proceeded to clean out frac sand.

5/30/60

Drilling on bridge plug junk at 6950'. Cleaned out 600' frac sand and drilled bridge plug. (Bridge plug found at about 6830', indicating it had floated uphole after second frac job.)

5/31/60

Swabbing. Cleaned out to PRTD 6965'. Landed 214 joints 1 1/2" EUE

WELL: SOUTHERN UNION GOVERNMENT NO. 2-19

5/31/60 - (Continued)

completion tubing at 6812' KB with jet collars at : 6303', 5798', 5291' - one joint 2" EUE at top.

6/1/60

Swabbing. Have swabbed approximately 18 hours. Stuck swab last night - retrieved and resumed swabbing. Casing pressure now 150 psig and well threatening to come in.

6/2/60

Blowing well for initial cleanup. Well came in about 11:00 p.m. and now flowing strong with heavy water fog - 2500 MCFD measured this morning.

6/3/60

Blowing well, which appears unusually strong. Flowing 3500 MCFD yesterday p.m. with heavy water spray and 1400 psig casing pressure.

6/4/60

Shut in for pressure buildup determination and Official Potential Test. Tested well Saturday after 24 hours shut-in. Tubing pressure 1787 psig. Casing pressure 1799 psig. Blew well through 3/4" choke, flowing through tubing with following results:

Time	Tubing Pressure	Casing Pressure	Temperature
60	291 psig	1505 psig	-
120	216	1453	-
180	189*	1403	60

*Actual choke flow rate was 2720 MCFD.

WELL: SOUTHERN UNION GOVERNMENT NO. 2-19

6/12/60

Shut in awaiting hookup. Ran Official Initial Potential Test yesterday:

3/4" Choke:

Time	Tubing Pressure	Casing Pressure	Temperature
- Hrs	1995 psig	1995 psig	-
1	239	1581	60
2	220	1513	62
3	* 194	1464	64
4	190	1417	60
5	177	1390	60
6	** 170	1376	60

* 2410 MCFD rate - Calculated Absolute Open Flow 4265 MCF/D

** 2120 MCFD rate