

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN DUPLICATE *

(See other instructions on reverse side)

FORM APPROVED
OMB NO. 1004-0137
Expires: February 28, 1995

COPY

5. LEASE DESIGNATION AND SERIAL NO.
SF-078194

6. INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME
LUDWICK 18

8. FARM OR LEASE NAME, WELL NO.
16M

9. API WELL NO.
30-045-29566

10. FIELD AND POOL, OR WILDCAT
BLANCO MESA VERDE

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA

2 SEC. 31, T30N-R10W

12. COUNTY OR PARISH
SAN JUAN COUNTY

13. STATE
NM

WELL COMPLETION OR RECOMPLETION REPORT AND LOG *

1a. TYPE OF WELL

OIL WELL ☐ GAS WELL ☒ OTHER

b. TYPE OF COMPLETION:

NEW WELL ☒ WORK OVER ☐ DEEP-EN ☐ DIFF. RESVR. ☐ OTHER

2. NAME OF OPERATOR

CONOCO INC.

3. ADDRESS OF OPERATOR

10 Desta Drive, Ste. 100W Midland, Texas 79705-4500 (915) 686-5424

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements) *

At surface 1005' FSL - 1850' FEL, UNIT LETTER O
At top prod. Interval reported below
At total depth

14. PERMIT NO.

DATE ISSUED

15. DATE SPUDDED
5/8/98

16. DATE T.D. REACHED
5/16/98

17. DATE COMPL. (Ready to prod.)
6-22-98 5/9/98

18. ELEV. (DF, RKB, RT, GR, ETC) *
5932' GL

19. ELEV. CASINGHEAD

20. TOTAL DEPTH, MD & TVD
6924'

21. PLUG, BACK T.D. MD. & TVD
6891'

22. IF MULTIPLE COMPL. HOW MANY *

23. INTERVALS DRILLED BY
ROTARY CABLE
TOOLS ☒ TOOLS ☐

24. PRODUCING INTERVAL(S) OF THIS COMPLETION - TOP, BOTTOM, NAME (MD AND TVD)

4354' - 4916' Blanco Mesa Verde

25. WAS DIRECTIONAL SURVEY MADE

26. TYPE ELECTRIC AND OTHER LOGS RUN

CBL

27. WAS WELL CORED

28. CASING RECORD (Report all string set in well)

| CASING SIZE/GRADE | WEIGHT, LB/FT | DEPTH SET (MD) | HOLE SIZE | TOP OF CEMENT, CEMENTING RECORD | AMOUNT PULLED |
|-------------------|---------------|----------------|-----------|---------------------------------|---------------|
| 9-5/8" | 36# | 287' | 12-1/4" | 200 SX | |
| 7" | 23# | 2723' | 8-3/4" | 320 SX | |
| 4-1/2" | 10.5/9.5# | 6902' | 6-1/4" | 460 SX | |

29. LINER RECORD

| SIZE | TOP (MD) | BOTTOM (MD) | SACKS CEMENT * | SCREEN (MD) | SIZE | DEPTH SET (MD) | PACKER SET (MD) |
|------|----------|-------------|----------------|-------------|--------|----------------|-----------------|
| | | | | | 2-3/8" | 4294' TEST | |
| | | | | | | 6742' FINAL | |

31. PERFORATION RECORD (Interval, size and number)

Menefee - 4354' - 4486' (23 shots)
Point Lookout - 4635' - 4916' (30 shots)
(2800'-2801' (2), 4340' (2), 4500' (2), 4620' (2) Squeeze Perfs)

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

| DEPTH INTERVAL (MD) | AMOUNT AND KIND OF MATERIAL USED |
|---------------------|----------------------------------|
| | |
| | |
| | |

33. * PRODUCTION

DATE FIRST PRODUCTION 6/8/98 PRODUCTION METHOD (Flowing, gas lift, pumping - size, and type of pump) Flowing WELL STATUS (Producing or shut-in) P

DATE OF TEST 6/12/98 HOURS TESTED 24 CHOKE SIZE 1/2" PROD'N FOR TEST PERIOD 2 OIL - BBL 1056 MCFD GAS - MCF 1 WATER - BBL 1 GAS - OIL RATIO

FLOW. TUBING PRESS 160# CASING PRESSURE 400# CALCULATED 24 - HR RATE 2 OIL - BBL 1056 MCFD GAS - MCF 1 WATER - BBL 1 OIL GRAVITY - API (CORR)

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)

V

TEST WITNESSED BY
GENARIO MAEZ, FLINT ENG. / CONST.

35. LIST OF ATTACHMENTS

PERF AND FRAC SUMMARY

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED

Debra Bemenderfer

TITLE DEBRA BEMENDERFER, As Agent for Operator OFFICE JUNE 22, 1998

NMOCD

ACCEPTED FOR RECORD

JUL 08 1998

| 37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals; and all drill-stem, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressure, and recoveries): | | | | 38. GEOLOGIC MARKERS | | |
|--|-----|--------|-----------------------------|----------------------|-------------|-------------------------|
| FORMATION | TOP | BOTTOM | DESCRIPTION, CONTENTS, ETC. | NAME | MEAS. DEPTH | TOP TRUE VERT. DEPTH |
| | | | | OJO ALAMO | 1030' EST. | |
| | | | | KIRTLAND | 1169' EST. | |
| | | | | FRUITLAND FMA | 1982' EST. | |
| | | | | PICTURED CLIFFS | 2342' EST. | |
| | | | | CHACRA | 3064' | |
| | | | | U. CLIFFHOUSE | 3903' | |
| | | | | MSSV. CLIFFHOUSE | 4008' | |
| | | | | MENEFEE | 4048' | |
| | | | | POINT LOOKOUT | 4622' | |
| | | | | MANCOS | 5025' | |
| | | | | GALLUP | 5848' | |
| | | | | GREENHORN | 6576' | |
| | | | | GRANEROS | 6628' | |
| | | | | DAKOTA | 6690' | |

CONOCO, INC.
LUDWICK LS #16M
API# 30-045-29566
SEC. 31, T30N-R10W UNIT LETTER 'O'
1005' FSL & 1850' FEL

- 5/18/98 MIRU, NDWH & NUBOP
- 5/19/98 Tagged cement @ 6755', drilled cement to flat collar @ 6856'. Drilled up float collar @ 6856' and continued to drill cement to 6891'. Tested casing to 4200 psi. - OK.
- 5/20/98 Rig up Schlumberger, run TDT log from 6892' to 2693', fax log to Midland. Ran CBL log from 6140' to 2723', CBL showed no cement @ 6150'.
- 5/21/98 Run to PBTD @ 6891'. Rig up Blue Jet ran CBL from PBTD @ 6891' TO 4297' and from 2904' TO 2695'. CBL was run with 1000 psi.
- 5/26/98 Released Hallib Packer. POOH with packer and tag cement @ 6417'. Drilled cement to squeeze holes @ 6691'. Tested squeeze cement and casing to 4200 psi. - OK. Tagged PBTD @ 6891'.
- 5/27/98 Rig up Blue Jet. RIH with 3 1/8" HSC gun. Perf Dakota @ 6691-94-96-98-6704-08-25-27-31-33-51-53-55-57-59-61-63-65-67-69-71-77081-6803-16-18. Total holes 26. Hole size .32". Rig up BJ acidized Dakota with 500 gals 15% HCL acid with 40 ball sealers @ 15 BPM avg rate @ 2800 psi avg pressure. Max pressure 3950 psi. Well balled off. RIH with junk basket, retrieved 40 balls with 23 hits. Faced Dakota with 112,600# of 20/40 Ottawa sand @ 3500 psi avg treating pressure, @ 40 BPM avg rate. Max pressure 3950 psi. Max sand conc 3 #.gal. Total fluid pumped 79,800 gals of 15# X- LINK GEL. ISIP 2850 psi. RIH and set Hallib Fas Drill Plug @ 5100'. Tested plug and scg to 3500 psi.- OK. RIH and perf @ 4925' with 2 holes pumped down csg with 60 bbls, with no indication that it was trying to circulate out the 7 X 4 1/2" annulus. Perf @ 4620' with 2 holes.
- 5/28/98 RIH with Hallib Cement Retainer. Set retainer @ 4865'. Stung out of retainer and pumped down tbg, hand circulation inside the 4 1/2" csg. 4 1/2" loaded with 14 bbls. Stung back into retainer. Pumped 50 sks of 50/50 Poz mix with 4#sk Gilsonite. Pumped @ 3 bpm @ 1000 psi. Stung out and dumped 1 bbl cement on top of retainer. POOH with tbg. Wait 3 hrs. on cement. RIH with 3 7/8" bit and tbg, did not tag any cement inside 4 1/2" csg. Run tbg to 4644' and spot 11 sks of Class h cement over top perf. Pull up to 4296' and reversed out. Pressured to 2000 psi and shut down. Approx cement top @ 4459'.
- 5/29/98 RIH and Tag cement @ 4433'. Drill cement to 4512'. Test cement to 3000 psi -OK. Perf 2 holes @ 4500'. Pump in holes @ 1 BPM @ 1100 psi, with no circ to 7" csg. Perf 2 holes @ 4340'. Pump in both sets of squeeze holes @ 1 BPM @ 1500 psi. RIH with Hallib Cement Retainer, set retainer @ 4452'. Pump down tbg into bottom holes @ .4 BPM @ 1700 psi. and .9 BPM @ 2000 psi. Pump down 4 1/2" csg into top holes @ 1.1 BPM @ 1800 psi, still no circulation to 7" csg. Prep to squeeze, pump 5 bbl fresh water pad, pump 35 sks. Class H cement, displaced with 17.5 bbls water. 4 1/2" standing full of water, showed no signs of circulation. Tagged cement inside tbg @ 4042', Tbg has 369' of cement inside the tbg. Cut 2 3/8" tbg @ 4022'.
- 5/30/98 Fishing for tubing.

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- 6/1/98 Tagged fish @ 4031'. Cut tbg @ 4152'. POOH with all tbg. Redressed cutting tool and RIH with same tool string and made cut @ 4278'. POOH with all tools, with 4 more jts of 2 3/8" tbg filled with cement.
- 6/2/98 Circ Clean. Tag fish @ 4378' POOH w/fish.
- 6/3/98 Tbg to set Pkr @ 4213'. MI RU BJ Services. Pump 3 bbls 1% KCL to circ up 7", Established rate of 2 1/2 bpm @ 1000#. Pumped 5 bbls fresh wtr pad. Started cement. Pumped 53 bbls (150 sx), 35/65/8% gel + 2% CAC12, 12#/gal. 2 - 2.5 bpm @ 1000#. & 12.6 bbls class H neat, 15.6#/gal. 1 -1.5 bpm @ 1500#. Displaced w/19 bbl 1% KCL. Left about 1/2 bbl in csg. SI @ 1200#.
- 6/4/98 Would not hold press @ 300#. RTTS Pkr, POOH w/tbg, LD Pkr. Tag cement @ 4284'. Drill out to retainer. Test squeeze perfs @ 4340 to 2000#. OK. Drill out retainer @ 4452'. Drill out to 4474'. POOH w/tbg to change bit. RIH drill out to 4514' Test to 2000#. OK
- 6/5/98 Drill out cement from 4537' to squeeze perf @ 4620'. Test Csg to 2000#. Drill out retainer @ 4865; drill out to squeeze perf @ 4929. Test Csg to 2000#. Tag fill @ 5190', circ hole.
- 6/8/98 MI RU Blue Jet. RIH w/wireline to run CBL from 5084'. 1st cement @ 4985' TOC @ 3635' KB. PU 3 1/8" HCS perf gun w/DP charges. RIH to perf as follows: 4635', 47', 50', 5s', 57', 59', 70', 81', 86', 88', 93', 96', 98', 4702', 04', 09', 32', 50', 60', 62', 84', 4820', 32', 34', 50', 68', 94', 97', 4913', & 4916'. 30 shot total, 0.32" hole. POOH w/wireline. PU 4 1/2" Haliburton. RTTS Pkr, RIH w/140 jts tbg to set Pkr @ 4432'. MI RU BJ Services Pumped breakdown & acid as follows: Start pad, 12 bbls 1% KCL; break @ 1200#. Estab 3.8 bpm. Start 15% HC1, 500 gal, @ 3 bpm. Dropping 45, 1.3 sp ball sealers. Flush w/28 bbls KCL. Min TP-575#. Max TP-3700#. Avg. TP-1400#. Avg inj rate 3.5 bpm. ISDP 1000#. Final SI press 500#. 10 min-0#. Did not ball off 100%; got good ball action. PU 18 Jts RIH TO 4965' to knock off balls.
- 6/9/98 MI RU BJ Services. Frac'ed Point Lookout (MV0 as follows: 250 bbl pad, 75276 gal "slick wtr" w/84000# 20/40 AZ. Min TP= 1095. Max TP= 1650#. Avg. TP= 1300#. Treat FL inj rate = 48 bpm. Max sand conc. = 2#/gal. Flush w/74 bbls. Rate 46.3 bpm. ISDP= 0#. Final SI= 9#. MI RU Blue Jet Perforators. PU 4 1/2" Haliburton Composite plug. RIH w/wireline to set plug @ 4586' KB. POOH w/setting tool. Press test plug to 3500#. PU 3 1/8" HSC perf gun w/DP charges; RIH to perf Menefee 9MV0 as follows: 23 shots total. 0.32" holes. 4354', 56', 60', 65', 67', 69', 89', 97', 99', 4413', 15', 17', 19', 21', 38', 40', 42', 44', 46', 80', 82', 84', & 86',. POOH w/wireline. RU BJ Services. Break down & acidize as follows: Start 12 bbl pad; broke @ 1400#. Rate 7.5 bpm. Start 500 gal 15% HCL @ 8 bpm. Dropping 37, 1.3 sp ball sealers. Flush w/26 bbls KCL. Min TP= 1530#. Max TP= 3450#. Avg. inj =6 bpm. ISIP 3450#,. RU BJ to pump frac as follows: 68140 gal "slick wtr" w/64716# 20/40 AZ. *(Frac design was 74000#) Screened out. 238 bbl pad, 69 bbl flush. Min TP= 1530#, Max TP= 3153#, Avg. TP= 3000#. Inj rate for treat fluid = 39 bpm. Max sand conc.= 1.7#/gal Flush rate = 25.4 bpm. ISDP= 1441#. Final SI= 1313#. 5 MIN= 1351, 10 MIN= 1346#, 15 MIN= 1313#
- 610/98 RIH W/ 3 7/8" Mill to unload well to 4302' KB. Circ clean.

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- 6/11/98 Tag fill @4484'. Cleaned out to plug @4586'. Milled out plug. To tag @4864'. Cleaned out to 4958'.
- 6/12/98 Tag @ 4958'. Clean out to 5090' Circ. clean. Established stabilized rate. Installed ½" choke. Test for (MV): 160# @ tbg Thru ½" choke = 1056 MCF/D. 1 BWPD, & 2 BOPD.
- 6/15/98 MI RU Blue Jet. PU 4 1/2" Haliburton. Composite plug. RIH to set plug @ 3002'. POOH w/setting tool. Test plug to 2000#. OK. PU 3 1/8" gun w/4 DP charges. RIH to perf 4 ½" @ 2800' - 2801' KB. POOH release Blue Jet. Loaded hole & got circ. up 7" (2bpm @ 500#) PU Hali. 4 ½" RTTS Pkr.; RIH w/tbg to set Pkr @2597'. MI RU BJ. Established rate, 3 bpm @ 500#. Start w/10 bbl fresh wtr. Pump 75 sx class H neat cement (16 bbls). Avg inj rate 3 bpm @ 250#. Displaced 14 bbls fresh wtr 2.3 bpm @ 500#. ISIP 200#. SI well. Released BJ.
- 6/16/98 Release Pkr. POOH w/tbg, LD Pkr. PU 3 7/8" drill bit RIH w/tbg to tag cement @ 2724'. Drill good cement through 2800'. Press test 4 ½" csg. Will not hold. Hooked up to 7", press test. Holding good. Retest 4 ½", pumped into leak @ ½ bpm. PU Haliburton 4 ½" RTTS Pkr, set Pkr @ 2566'. MI RU BJ Services. Re-squeezed perf @ 2800' w/50 sacks, class H cement w/2% CAC12 as follows: Press backside to 300#, SI. Established rate w/5 bbl 1% KCL, 2.4 bpm @ 1200#. Pumped 2 bbl fresh wtr to start. Start 15.6#/gal cement, 10.5 bbl, 1.7 bpm @ 2500#. Start displacement, .5 - 2.0 bpm; locked up w/9 bbls gone. Verified no flow back, released Pkr & reverse circ out. Re-set Pkr, press. Up tbg 2750#. Cement moved. Squeezed in 1 bbl, hesitate 15 min. Squeezed ¼ bbl, hesitate 15 min. Squeezed 2/10 bbl, press @ 2000#, holding good.
- 6/17/98 Release RTTS packer, POOH w/ tubing. Tag cement @ 2623'. DO to 2820', test casing to 500#. DO to plug @ 3000', DO plug. Tag fill @5080'. CO to 5100'.
- 6/18/98 Tag plug @ 5100'. DO over DK, tag fill @ 6766'. CO to 6891'.
- 6/19/98 CO to 6891'.
- 6/22/98 Dakota test: 538 MCFD, 1 oil, 1/2bbl water, ¾" choke, tubing pressure @ 110#, casing pressure @ 450#. Witnessed by Genario Maez, Flint Eng. and Const. Final tubing set @ 6742' for DHC of MV and DK per order no. DHC#1912.