

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

RECEIVED  
BLM

5. LEASE DESIGNATION AND SERIAL NO.  
SF-078194

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME  
LUDWICK LS

8. FARM OR LEASE NAME, WELL NO.  
21M

WELL COMPLETION OR RECOMPLETION REPORT AND LOG \*  
98 JUN -5 PM 1:31

1a. TYPE OF WELL  
OIL WELL  GAS WELL  OTHER   
070 FARMINGTON, NM

b. TYPE OF COMPLETION:  
NEW WORK DEEP- DIFF.  
WELL  OVER  EN  RESVR.  OTHER

2. NAME OF OPERATOR  
CONOCO INC.

9. API WELL NO.  
30-045-29565

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

10. FIELD AND POOL, OR WILDCAT  
Blanco Mesa Verde

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements) \*  
At surface 820' FNL - 1605' FWL, UNIT LETTER C  
At top prod. Interval reported below  
At total depth

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA  
SEC. 31, T30N-R10W

14. PERMIT NO. DATE ISSUED

12. COUNTY OR PARISH  
SAN JUAN COUNTY

13. STATE  
NM

15. DATE SPUDDED  
4-15-98

16. DATE T.D. REACHED  
5-3-98

17. DATE COMPL. (Ready to prod.)  
6/2/98

18. ELEV. (DF, RKB, RT, GR, ETC) \*  
6086'

19. ELEV. CASINGHEAD

20. TOTAL DEPTH, MD & TVD  
7092'

21. PLUG, BACK T.D. MD. & TVD  
7092'

22. IF MULTIPLE COMPL. HOW MANY \*  
2

23. INTERVALS DRILLED BY  
ROTARY  CABLE   
TOOLS  TOOLS

24. PRODUCING INTERVAL(S) OF THIS COMPLETION - TOP, BOTTOM, NAME (MD AND TVD) \*  
4422' - 5041' BLANCO MESA VERDE

25. WAS DIRECTIONAL SURVEY MADE

26. TYPE ELECTRIC AND OTHER LOGS RUN  
Cement Bond Log, Dual Burst Thermal Time Decay Log

27. WAS WELL CORED

28. CASING RECORD (Report all strings 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#	262'	12-1/4"	135 SX	
7"	23#	2812'	8-3/4"	340 SX	
4-1/2"	9.5#/10.5#	7092'	6-1/4"	415 SX	

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT *	SCREEN (MD)

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
2-3/8"	4800' (test)	
	6904' (final)	DHC# 1915

31. PERFORATION RECORD (Interval, size and number)  
OIL CON. DIV.

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

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED

33. \* DIST. 3 PRODUCTION  
DATE FIRST PRODUCTION ~~5-26-98~~ 6/2/98  
PRODUCTION METHOD (Flowing, gas lift, pumping - size, and type of pump)  
FLOWING  
WELL STATUS (Producing or shut-in)  
Producing DHC #1915

DATE OF TEST 5/30/98	HOURS TESTED 24 hrs	CHOKE SIZE 1/2"	PROD'N FOR TEST PERIOD →	OIL - BBL 0	GAS - MCF 2200 MCFGPD	WATER - BBL 2	GAS - OIL RATIO
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FLOW. TUBING PRESS 350#	CASING PRESSURE 640# SICP	CALCULATED 24 - HR RATE →	OIL - BBL 0	GAS - MCF 2200 MCFGPD	WATER - BBL 2	OIL GRAVITY - API (CORR)
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34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)  
VENTED

TEST WITNESSED BY  
Wes Herrera w/ Big A Well Service

35. LIST OF ATTACHMENTS  
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 Conoco Inc. DATE JUNE 3, 1998

ACCEPTED FOR RECORD

JUN 18 1998

FARMINGTON DISTRICT OFFICE

\* (See Instructions and Specs for Additional Data on Reverse Side)

NMOCD

BY *[Signature]*

COP

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; covered intervals; and all drill-stem, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries):		38. GEOLOGIC MARKERS	
FORMATION	TOP	DESCRIPTION, CONTENTS, ETC.	BOTTOM
		NAME	MEAS. DEPTH
			TRUE VERT. DEPTH
		CLIFFHOUSE	4083'
		CLIFFHOUSE-massive	4167'
		MENEFE	4206'
		POINT LOOKOUT	4770'
		GALLUP	6029'
		GREENHORN	6770'
		GRANEROS	6830'
		DAKOTA	6887'

CONOCO, INC.  
LUDWICK LS #21M  
API# 30-045-29565

COPY

SEC. 31, T30N-R10W UNIT LETTER 'C'  
820' FNL & 1605' FWL

- 5/7/98 MIRU, tag at 4060', DO cement to first DV tool, DO DV tool, circ clean.
- 5/8/98 DO 2<sup>nd</sup> DV tool at 5896'. Tag up at 6967'. DO to 7015' circ. clean. Tagged up @7015'. DO junk iron & cement to Float Collar @ 7045' Circ wellbore clean. Press test.
- 5/9/98 RIH w/CBL-CVDL-GR-CCL logging tool. Log from 7036' to 2750' (will have to cement squeeze prior to completing PTLO & Menefee). Log from 7036' to 2811'.
- 5/11/98 RU BJ w/select—Fire, 1 JSPF perf gun. Perf @ 7030-28-18-6996-94-88-84-82-80-78-71-66-62-49-42-40-36-34-15-10-02-6900-6898-94-92-89, RU BJ Hughes. Press Test lines to 4800 psi, Pump 36 BBIs. 1% KCl H<sub>2</sub>O @ 12 BPM/1600 psi (Formation broke @ 3400 psi) Pump 12 BBIs. 15% HCl @ 7 BPM/1400 psi (Releasing 40 frac balls in stages of 4/BBIs.) Displace w/150 BBIs. 1% KCl H<sub>2</sub>O @ 14.5-0 BPM/1400-3200 psi. Good breakdown & ball action, did not ball off. ISIP: 700 PSI. RD BJ Hughes, RU BJ. Recovered 40 frac balls, 15 hits. RD BJ. Frac Dakota perfs (6889'-7030') pump 238 BBIs. 15# XL Low-Gel 1% KCl H<sub>2</sub>O @ 44 BPM/2905 psi, pump 249 BBIs. 15# XL Low-Gel 1% KCl H<sub>2</sub>O w/1.0 PPG 20/40 sand @ 44 BPM/2660 psi, pump 524 BBIs. 15# XL Low-Gel w/2.0 PPG 20/40 sand @ 41 BPM/3000 psi, pump 222 BBIs. 15# SL Low-Gel 1% KCl water w/3.0 PPG 20/40 sand @ 40 BPM/2995 psi, pump 77 BBIs. 15# XL Low-Gel 1% w/4.0 PPG 20/40 SDC sand & displace w/55 BBIs. 15# XL Low-Gel 1% KCl H<sub>2</sub>O @ 37-0 BPM/3150-3600 psi. Avg.: 42 BPM/300 psi. ISIP: 2200 psi, 200 PSI. RD BJ Hughes.
- 5/12/98 RD wellhead isolation tool, unload well, circ. wellbore clean, CO from 5262' to 5418', circ. wellbore clean & pumping 5 bbls, soapy 1% KCl.
- 5/13/98 Attempt to break circ. w/Weatherford, no success. Cont. POOH & found last tbg jt plugged w/frac sand & fines, unload well, CO from 5418' to 5627'.
- 5/14/98 Tag fill @ 5627', CO frac sand from 5627' to 5880'. Fell out of fill @ 5880', tag fill @ 7003'. CO fill from 7003' to 7045' (PBD), circ. well clean.
- 5/15/98 660 MCFGPD, 1 BOPD & 1 BWPD @ FTP of 105 psi & SICP of 305 psi thru ½" bean choke & 2" flowline to atmosphere. Witnessed by Wes Herrera/Efran Molina - Big A well Service. 5/14/98 flow data on ½" bean choke @ 6900'.
- 5/18/98 PU & RIH w/3-7/8" cement bladed bit, 4-½" csg scraper, XO, 1 stand 2-3/8" tbg & Sting float on 2-3/8" tbg to 7045' (PBD), no fill. POOH, RU BJ & RIH w/4-½" HOWCO Fas-Drill BP, set BP @ 5150'. Press test csg & BP w/2500 psi, RIH w/3-1/8" select-fire perf gun w/3 JSPF (0.7" OD). Perf @ 4900' & 4350' total: 6 perfs. POOH & RD BJ. Press test line to 4000 psi, OK. Pump 10 bbls 1% KCl H<sub>2</sub>O attempting to circ. thru squeeze perfs behind pipe. Lost returns after 1 bbl returned. Pump 5 bbls fresh H<sub>2</sub>O, mix & pump 50 sxs 50/50 "H" w/4% gel, 0.4% FL-52 & 2% KCl (Slurry Yield: 1.5 cuft/sx & Slurry weight: 13.0 PPG) & 25 sxs Class H w/8% Gypsum (Slurry Yield: 1.27 cuft/sx & Slurry Weight: 15.6 ppf) and displace w/ 20 bbls. Fresh H<sub>2</sub>O @ 3 BPM/1000 psi, sting out of retainer & reverse circ. tbg/csg clean w/80 bbls 1% KCl H<sub>2</sub>O @ 3.5 BPM/1000 psi, had no cement & about 1 bbls drilling mud in returns. RD BJ services & tbg swivel. POOH to 4360'. RU BJ services. Break circ. w/5 bbls fresh H<sub>2</sub>O. Pump 15 sxs Class H neat cement (Slurry Yield: 1.18 cuft/sx & Slurry Weight: 15.6ppf). Displace w/16 bbls fresh H<sub>2</sub>O

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for a balance cement plug from 4360' to 4135'. RD BJ services & POOH to 3973'. RU BJ & reverse circ. tbg/csg clean w/30 bbls 1% KCl H<sub>2</sub>O. Press test lines to 4000 psi. Squeeze 2 bbls cement (10 sxs) into perfs @ 4350' w/final squeeze press of 2500 psi. SI w/2500 psi, RD BJ.

- 5/19/98 POOH cement retainer stinger, DO cement from 4106' to 4360', fell out of cement. RIH to 4380' for safety. Reverse circ. wellbore clean. Press test squeezed perfs @ 4350' w/2000 psi in 500 psi increments for 5 min. each. RIH & tag cement retainer @ 4753'. RU BJ & w/ CBL-VDL-GR-CCL logging tool. Log from cement retainer @ 4753' to 3850'. Log showed good bond from cement plug squeeze @ 4350' from 4310' to 4356'. Tag cement retainer @ 4753', drill up cement retainer. RIH & tag up @ 4809', DO cement from 4809' to 4834', circ. wellbore clean.
- 5/20/98 DO cement from 4834' to 4930', falling out of cement, & tag BP @ 5150'. Reverse circ. wellbore clean. Press test squeezed perfs @ 4900', POOH, RU RIH w/CBL-VDL-GR-CCL logging tool. Log f/5150' to 4450', not present previously. POOH, RIH w/3-1/8" select-fire, 4 JSPF perf gun. Perf @ 4690' & 4422' total perfs: 8. POOH & RD BJ. RIH w/ 4-1/2" Model K-1 cement retainer & setting tool/stinger on 2-3/8" tbg. Set retainer @ 4563'. RU BJ press test lines to 4000 psi. Perform suicide cement squeeze thru perfs 2 4690' & 4422' as follows: Pump 5bbls fresh H<sub>2</sub>O spacer, mix & pump 50 sxs 50/50 "H" w/4% gel, 0.4% FL-52S & 2% KCl (slurry Yield: 1.5 cuft/sx & slurry weight: 13.4 PPG), mix & pump 25 sx Class H w/8% Gypsum (slurry Yield: 1.27 cuft/sx & slurry weight: 15.6 PPG) and displaced w/20 bbls 1% KCl h<sub>2</sub>O (lost returns after 18.5 bbls displacement). Sting out of retainer. Reverse circ. tbg & csg clean w/60 bbls 1% KCl. Had cement returns between @ 23 to 29 bbls H<sub>2</sub>O pumped. Also had drilling mud returns. RD BJ, mix & pump 15 sx Class h neat (slurry Yield: 1.09 cuft/sx & slurry weight: 16.2 PPG) and displace w/16 bbls to spot balanced cement plug from 4435' to 4210'. RD BJ 7 POOH to 4054'. RU BJ 7 reverse circ. tbg/csg clean w/40 bbls 1% KCl H<sub>2</sub>O. Press test lines to 4000 psi. Squeeze away 1/2 bbls w/a final squeeze press of 2500 psi.
- 5/21/98 DO cement from 4279' to 4454', falling out of cement. RIH to 4469' for safety. Rev. circ. wellbore clean. Press. Test squeezed perfs @ 4350' & 4422' w/2500 psi. Tag cement retainer @ 4653', DO cement retainer, tag cement, DO cement from 4653' to 4788', fell out of cement. Tag BP @ 5150'. POOH to 5110', displace wellbore w/ clean 1 % KCl H<sub>2</sub>O, press test all squeezed perfs w/500 psi, RU BJ & RIH w/ CBL-VDL-GR-CCL logging tool. Log from 5150' to 4000', good cement bond over zones of interest.
- 5/22/98 RU BJ, RIH w/decentralized 3-1/8", 1 JSPF, select-fire perf gun. Perf Point Lookout @ 5041-06-4993-84-38-32-21-04-4878-74-68-64-62-57-46-39-32-27-22-20-14-10-03-4794-92-85, total 26 perfs. RIH w/4-1/2" Full-Bore RP & pkr unloader on 2-3/8" tbg to 4721' & set pkr. SI press & monitor press w/BJ. Press test lines to 5000 psi, OK. Breakdown Point Lookout perfs as follows: pump 39 bbls 1% KCl. ISIP: 0 psi. Good ball action & breakdown, did not ball off. RD BJ, rel. pkr & RIH to 5070', knocking off frac balls. Press test lines to 5250 psi, frac Point Lookout perfs as follows: pump 238 bbls slick 1% KCl H<sub>2</sub>O @ 46 BPM/810 psi, pump 243 bbls slick 1% KCl H<sub>2</sub>O w/0.5 PPG 20/40 sand @ 45 BPM/1026 psi, pump 622 bbls slick 1% KCl H<sub>2</sub>O w/1.0 PPG 20/40 sand @ 48.6 BPM/1362 psi, pump 458 bbls slick 1% KCl H<sub>2</sub>O w/1.5 PPG 20/40 sand @ 49.5 BPM/1650 psi, pump 178 bbls slick 1% KCl H<sub>2</sub>O w/2.0 PPG 20/40 sand @ 49 BPM/2600 psi, pump 90 bbls slick 1% KCl H<sub>2</sub>O w/2.0 PPG 20/40 SDC sand @ 49 - 24 BPM/2600 - 685 psi & pump 70 bbls slick 1% KCl H<sub>2</sub>O 24 - 0 BPM/685 - PSI. ISIP: 0 psi, Avg.:

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48 BPM/1850 psi. RD BJ, RU BJ, RIH w/4-1/2" HOWCO Fas Drill- BP & set BP @ 4675'. Press test BP w/500 psi, OK> RIH w/decentralized 3-1/8", 1 JSPF, perf gun. Perf @ 4606-02-4600-4595-91-87-83-46-22-18-16-14-12-10-02-4497-88-45-38-36-28-26-22, total 23 perfs. POOH & RD BJ. Press test BP w/2000 psi, set pkr @ 4376'. Breakdown Menefee perfs as follows: pump 30 bbls 1% KCl H2O (formation broke @ 1400 psi), pump 12 bbls, 15% HCl (releasing 40 frac balls in stages) & displace w/40 bbls 1% KCl H2O. ISIP: 500 psi balled out & surge balls off once. Bled press off to flare pit. RD. RIH w/ pkr to 4629', knocking off frac balls. RU BJ, press test lines to 5700 psi. Frac Menefee perfs as follows: pump 200 bbls slick 1% KCl H2O @ 46 BPM/2070 psi, pump 243 bbls slick 1% KCl H2O w/0.5 ppf 20/40 AZ sand @ 46 BPM/1990 psi, pump 548 bbls slick 1% KCl H2O w/1.0 PPG 20/40 AZ sand @ 46 BPM/1950 psi, pump 407 bbls slick 1% KCl H2O w/1.5 ppf 20/40 AZ sand @ 46 BPM /2580 psi, pump 113 bbls slick 1% KCl H2O w/2.0 PPG 20/40 AZ sand @ 46 BPM/2500 psi, pump 103 bbls slick 1% KCl H2O. ISIP: 1200 psi, 5 min: 750 psi, 10 min: 730 psi & 15 min: 730 psi Avg.: 46 BPM/2150 psi, RD BJ.

- 5/26/98 Unload well, tag fill @ 4523', CO from 4523' to 4670', circ. well clean, POOH w/EOT to 4428' & land same.
- 5/27/98 Continue Drywatching
- 5/28/98 1/2" choke, FTP/SICP: 120 psi/300 psi, Menefee production test: 750 MCFGPD, 0 BOPD & 21 BWPD.
- 5/29/98 Break Circ. Tag fill @ 4645' to 4675' (BP). Drill up HOWCO Fas-Drill BP @ 4675'. RIH to 4981'. Tagged up on junk BP. BP to 5023', CO from 5023' to 5054', circ. well clean, Land EOT @ 4808', flow well on 1/2" bean choke.
- 5/30/98 FTP/SICP: 350 psi/640 psi 8 hr stabilized flow test on Point Lookout/Menefee: 2200 MCFGPD, 0 BOPD, 2 BWPD @ 350 psi FTP, 640 psi SICP thru 1/2" bean choke & 2' flowline to atmosphere @ 4808'. Witness by Wes Herrera & Efrian Molina - Big A Well Service.
- 6/1/98 Tag fill @ 5039, CO from 5039' to 5150' w/ foam. DU HOWCO Fas-Drill BP @ 5150'. RIH & tag up @ 7021', CO from 7021' to 7046'. Land EOT 6903.62' KB, SN @ 6902.12' KB.
- 6/2/98 RD Big A Rig 10, Release rig, turn well over to production.