

STATE CORPORATION COMMISSION OF KANSAS  
OIL & GAS CONSERVATION DIVISION  
WELL COMPLETION FORM  
ACD-1 WELL HISTORY  
DESCRIPTION OF WELL AND LEASE

ORIGINAL

Operator: License # 32119  
Name: Northern Natural Gas  
Address P.O. Box 178  
  
City/State/Zip Cunningham, KS 67035

Purchaser: N/A  
Operator Contact Person: Dan Dobbins

Phone ( 316 ) 298-6117  
Contractor: Name: Pratt Well Service  
License: 5893

Wellsite Geologist: None

Designate Type of Completion  
 New Well  Re-Entry  Workover  
 Oil  SWD  SLOW  Temp. Abd.  
 Gas  ENHR  SIGW  
 Dry  Other (Core, WSW, Expl., Cathodic, etc)

If Workover:  
Operator: Northern Natural Gas  
Well Name: Steffen 31-11  
Comp. Date 4-27-78 Old Total Depth 4106

Deepening  Re-perf.  Conv. to Inj/SWD  
 Plug Back  PBTD  
 Commingled  Docket No.   
 Dual Completion  Docket No.   
 Other (SWD or Inj?)  Docket No.   
7-21-98 8-6-98 8-10-98  
Spud Date Date Reached TD Completion Date

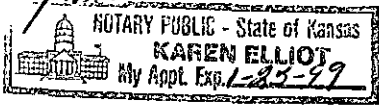
API NO. 15- 095-20,7080101 15-095-20708-01-09  
County Kingman  
NW - NW - NW - 31 Sec. 27S Rge. 10 X W  
344 Feet from S(N) (circle one) Line of Section  
282 Feet from E(W) (circle one) Line of Section  
Footages Calculated from Nearest Outside Section Corner:  
NE, SE, (NW) or SW (circle one)  
Lease Name Steffen Well # 31-11  
Field Name Cunningham  
Producing Formation Viola  
Elevation: Ground 1681 KB 1691  
Total Depth 5757 4061 TVD PBTD 5757 4061 TVD  
Amount of Surface Pipe Set and Cemented at 1426 Feet  
Multiple Stage Cementing Collar Used?  Yes  No  
If yes, show depth set  Feet  
If Alternate II completion, cement circulated from   
feet depth to  w/  sx cmt.  
Drilling Fluid Management Plan OWWD 12-4-98 LK  
(Data must be collected from the Reserve Pit)  
Chloride content 800 ppm Fluid volume 400 bbls  
Dewatering method used N/A  
Location of fluid disposal if hauled offsite:  
Operator Name Geary Mud Disposal  
Lease Name Gray License No. 284168  
 Quarter Sec. 15 Twp. 14N Rng. 7 E/W  
County Garfield, OK Docket No. 284168

STATE CORPORATION COMMISSION OF KANSAS  
OIL & GAS CONSERVATION DIVISION  
Wichita, Kansas  
NOV 25 1998  
11-20-98

INSTRUCTIONS: An original and two copies of this form shall be filed with the Kansas Corporation Commission, 130 S. Market - Room 2078, Wichita, Kansas 67202, within 120 days of the spud date, recompletion, workover or conversion of a well. Rule 82-3-130, 82-3-106 and 82-3-107 apply. Information on side two of this form will be held confidential for a period of 12 months if requested in writing and submitted with the form (see rule 82-3-107 for confidentiality in excess of 12 months). One copy of all wireline logs and geologist well report shall be attached with this form. ALL CEMENTING TICKETS MUST BE ATTACHED. Submit CP-4 form with all plugged wells. Submit CP-111 form with all temporarily abandoned wells.

All requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Signature Dan Dobbins  
Title Sr. Reservoir Analyst Date 11-18-98  
Subscribed and sworn to before me this 17<sup>th</sup> day of December, 19 98.  
Notary Public Karen Elliot  
Date Commission Expires January 25, 1999



K.C.C. OFFICE USE ONLY  
F  Letter of Confidentiality Attached  
C  Wireline Log Received  
C  Geologist Report Received  
Distribution  
 KCC  SWD/Rep  NGPA  
 KGS  Plug  Other (Specify)

**SIDE TWO**

Operator Name Northern Natural Gas Lease Name Steffen Well # 31-11  
 Sec. 31 Twp. 27S Rge. 10  East  West  
 County Kingman

**INSTRUCTIONS:** Show important tops and base of formations penetrated. Detail all cores. Report all drill stem tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface during test. Attach extra sheet if more space is needed. Attach copy of log.

Drill Stem Tests Taken (Attach Additional Sheets.)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Log Formation (Top), Depth and Datum	<input type="checkbox"/> Sample
Samples Sent to Geological Survey	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Name	Top Datum
Cores Taken	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Electric Log Run (Submit Copy.)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
List All E.Logs Run:			

CASING RECORD <input checked="" type="checkbox"/> New <input type="checkbox"/> Used							
Report all strings set-conductor, surface, intermediate, production, etc.							
Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs./Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives
Conductor	20"	13 3/8"	48	90	Common	100	-----
Surface	12 1/4"	8 5/8"	22	1427	50-50 Poz	650	1/4# Flocele 3% CC
Production	7 7/8"	5 1/2"	15.5	4130	50-50 Poz	850	4% Gel 18% Salt 5# Gilonite

ADDITIONAL CEMENTING/SQUEEZE RECORD				
Purpose: Set Liner	Depth Top Bottom	Type of Cement	#Sacks Used	Type and Percent Additives
<input type="checkbox"/> Perforate <input type="checkbox"/> Protect Casing <input type="checkbox"/> Plug Back TD <input type="checkbox"/> Plug Off Zone	3732-4182	Standard	50	-----

Shots Per Foot	PERFORATION RECORD - Bridge Plugs Set/Type Specify Footage of Each Interval Perforated		Acid, Fracture, Shot, Cement Squeeze Record (Amount and Kind of Material Used) Depth	

TUBING RECORD		Size	Set At	Packer At	Liner Run	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Date of First, Resumed Production, SWD or Inj. Storage Well		Producing Method <input type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other (Explain)				
Estimated Production Per 24 Hours	N/A	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity

Disposition of Gas: **METHOD OF COMPLETION** **Production Interval**

Vented  Sold  Used on Lease  Open Hole  Perf.  Dually Comp.  Commingled \_\_\_\_\_

(If vented, submit ACO-18.)  Other (Specify) \_\_\_\_\_



Job Number: P98-119  
 Company: Netherland, Sewell & Associates, Inc.  
 Lease/Well: 31-11 Steffen  
 Location: Cunningham Gas Storage Field  
 Rig Name: Unknown  
 RKB: 1691'  
 G.L. or M.S.L.: 1681'

State/Country: Platt/Kingman Counties, Kansas  
 Declination: 6.56° East (est.)  
 Grid: Assumed True  
 File name: D:\98110\S\P98119\STEF3111.SVY  
 Date/Time: 18-Sep-98 / 04:43  
 Curve Name: Diamondback Surveys

ORIGINAL

Phoenix Drilling Services, Inc.

WINSERVE SURVEY CALCULATIONS  
 Minimum Curvature Method  
 Vertical Section Plane 352.00  
 Vertical Section Referenced to Wellhead  
 Rectangular Coordinates Referenced to Wellhead

RECEIVED  
 KANSAS CORP  
 10/1/98 3:11:39

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
<b>Tie In Point</b>									
3800.00	.24	325.57	3797.76	-74.41	2.69	-74.06	74.46	177.93	.00
3844.00	9.30	330.20	3841.56	-71.24	.87	-70.67	71.25	179.30	20.59
3876.00	19.80	336.80	3872.49	-64.00	-2.56	-63.02	64.05	182.29	33.17
3907.00	30.10	340.10	3900.56	-51.83	-7.29	-50.31	52.34	188.01	33.52
3939.00	38.70	349.70	3926.96	-34.39	-11.82	-32.41	36.37	198.97	31.70
3971.00	47.30	357.40	3950.36	-12.75	-14.15	-10.66	19.05	227.98	31.45
4003.00	57.00	356.70	3969.97	12.45	-15.46	14.48	19.85	308.86	30.36
4034.00	58.50	356.50	3986.51	38.62	-17.01	40.62	42.21	336.23	4.87
4066.00	60.90	355.70	4002.66	66.19	-18.90	68.17	68.83	344.07	7.80
4097.00	64.70	355.10	4016.83	93.66	-21.11	95.69	96.01	347.30	12.38

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
4128.00	73.60	354.20	4027.85	122.48	-23.81	124.60	124.77	349.00	28.84
4160.00	81.50	354.00	4034.74	153.54	-27.02	155.80	155.90	350.02	24.70
4192.00	85.80	352.00	4038.28	185.09	-30.90	187.59	187.65	350.52	14.80
4223.00	85.50	351.10	4040.63	215.67	-35.44	218.50	218.56	350.67	3.05
4255.00	89.20	350.80	4042.11	247.23	-40.47	250.46	250.52	350.70	11.60
4286.00	89.30	352.20	4042.52	277.89	-45.05	281.45	281.51	350.79	4.53
4318.00	87.50	352.10	4043.41	309.57	-49.42	313.44	313.49	350.93	5.63
4349.00	87.60	351.70	4044.74	340.23	-53.78	344.41	344.46	351.02	1.33
4381.00	88.50	351.40	4045.82	371.87	-58.48	376.39	376.44	351.06	2.96
4412.00	89.60	352.70	4046.34	402.57	-62.77	407.38	407.43	351.14	5.49
4444.00	86.40	352.50	4047.45	434.28	-66.89	439.36	439.40	351.24	10.02
4476.00	86.50	352.30	4049.44	465.93	-71.11	471.30	471.33	351.32	.70
4507.00	87.20	352.30	4051.14	496.61	-75.26	502.25	502.28	351.38	2.26
4539.00	87.30	353.00	4052.68	528.31	-79.35	534.21	534.23	351.46	2.21
4570.00	88.00	353.30	4053.95	559.06	-83.04	565.18	565.19	351.55	2.46
4602.00	89.40	353.60	4054.67	590.84	-86.69	597.16	597.17	351.65	4.47
4633.00	88.80	354.40	4055.16	621.67	-89.93	628.13	628.14	351.77	3.23
4665.00	86.70	353.70	4056.42	653.47	-93.25	660.09	660.09	351.88	6.92
4696.00	86.90	352.10	4058.15	684.18	-97.07	691.03	691.04	351.92	5.19
4728.00	87.80	352.00	4059.63	715.84	-101.49	723.00	723.00	351.93	2.83
4759.00	87.80	352.10	4060.82	746.52	-105.78	753.98	753.98	351.94	.32
4790.00	87.20	352.80	4062.17	777.22	-109.85	784.95	784.95	351.96	2.97
4821.00	87.40	351.30	4063.63	807.89	-114.13	815.91	815.91	351.96	4.88
4851.00	88.00	350.90	4064.83	837.50	-118.77	845.88	845.88	351.93	2.40
4882.00	88.70	351.60	4065.72	868.13	-123.48	876.87	876.87	351.90	3.19
4914.00	89.60	351.20	4066.20	899.77	-128.27	908.86	908.86	351.89	3.08
4945.00	89.20	352.20	4066.52	930.44	-132.74	939.86	939.86	351.88	3.47
4976.00	88.80	352.20	4067.06	961.15	-136.95	970.85	970.86	351.89	1.29
5008.00	89.10	352.70	4067.65	992.87	-141.15	1002.85	1002.85	351.91	1.82
5039.00	90.50	353.70	4067.76	1023.65	-144.82	1033.84	1033.84	351.95	5.55
5071.00	89.50	352.70	4067.76	1055.42	-148.61	1065.83	1065.83	351.99	4.42
5102.00	90.20	352.80	4067.84	1086.17	-152.52	1096.83	1096.83	352.01	2.28

ORIGINAL

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
5133.00	89.70	353.10	4067.87	1116.94	-156.33	1127.82	1127.82	352.03	1.88
5164.00	90.30	353.20	4067.87	1147.72	-160.02	1158.82	1158.82	352.06	1.96
5195.00	90.20	354.20	4067.73	1178.53	-163.43	1189.80	1189.81	352.11	3.24
5227.00	90.50	354.60	4067.54	1210.37	-166.55	1221.77	1221.78	352.17	1.56
5258.00	90.90	354.00	4067.16	1241.22	-169.63	1252.75	1252.76	352.22	2.33
5290.00	90.00	352.90	4066.91	1273.01	-173.28	1284.73	1284.75	352.25	4.44
5320.00	87.90	353.10	4067.46	1302.78	-176.93	1314.72	1314.74	352.27	7.03
5352.00	88.60	353.30	4068.43	1334.54	-180.72	1346.70	1346.72	352.29	2.27
5383.00	87.30	352.40	4069.54	1365.28	-184.58	1377.68	1377.70	352.30	5.10
5415.00	86.50	352.30	4071.27	1396.94	-188.83	1409.63	1409.65	352.30	2.52
5446.00	86.00	351.30	4073.30	1427.56	-193.24	1440.56	1440.58	352.29	3.60
5478.00	88.30	350.90	4074.89	1459.13	-198.19	1472.52	1472.53	352.27	7.30
5508.00	93.90	349.80	4074.32	1488.69	-203.21	1502.49	1502.50	352.23	19.02
5539.00	92.60	349.80	4072.56	1519.15	-208.69	1533.41	1533.42	352.18	4.19
5571.00	90.90	349.20	4071.58	1550.60	-214.52	1565.37	1565.37	352.12	5.63
5602.00	90.90	348.30	4071.09	1581.00	-220.57	1596.31	1596.31	352.06	2.90
5632.00	92.10	348.30	4070.31	1610.37	-226.65	1626.24	1626.24	351.99	4.00
5663.00	94.00	347.40	4068.66	1640.63	-233.16	1657.11	1657.11	351.91	6.78
5694.00	93.90	348.10	4066.52	1670.85	-239.73	1687.95	1687.96	351.84	2.28
5725.00	94.90	349.70	4064.15	1701.18	-245.68	1718.82	1718.83	351.78	6.07

ORIGINAL

Projected Survey to TD									
5757.00	95.90	351.40	4061.13	1732.60	-250.91	1750.66	1750.68	351.76	6.14