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District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☒ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number 30-015-44913	2 Pool Code 96718	3 Pool Name Loco Hills; Glorieta-Yeso
4 Property Code 302499 326601	5 Property Name GISSLER FEDERAL	6 Well Number 16H
7 OGRID NO. 328947	8 Operator Name Spur Energy Partners, LLC	9 Elevation 3889'

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	6	17S	30E		1550	SOUTH	170	EAST	EDDY

11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	5	17S	30E		1655	SOUTH	122	EAST	EDDY

12 Dedicated Acres 160	13 Joint or Infill	14 Consolidation Code	15 Order No.
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No allowable will be assigned to this completion until all interest have been consolidated or a non-standard unit has been approved by the division.

GEODETIC DATA NAD 83 GRID - NM EAST SURFACE LOCATION (SL) 1550 - FSL/170 - FEL (SEC. 6) N 678968.5 - E 642672.8 LAT: 32.8605735° N LONG: 104.0033335° W LAT: 32.5138.0855° N LONG: 104.0011.9299° W KICK OFF POINT (KOP) 1741 - FSL/254 - FEL (SEC. 6) N 677150.1 - E 642547.7 LAT: 32.8610285° N LONG: 104.0037194° W LAT: 32.5138.9550° N LONG: 104.0013.3895° W MD = 3.840.00 / TWD = 3.827.11 FIRST TAKE POINT (FTP) 1750 - FSL/175 - FEL (SEC. 5) N 677179.4 - E 643016.5 LAT: 32.8611504° N LONG: 104.0021924° W LAT: 32.5140.1616° N LONG: 104.0007.8925° W MD = 4.666.00 / TWD = 4.468.88 LAST TAKE POINT (LTP) 653 - FSL/235 - FEL (SEC. 5) N 677088.5 - E 647888.6 LAT: 32.8608577° N LONG: 103.9853265° W LAT: 32.5139.0877° N LONG: 103.9810.7754° W MD = 9.543.00 / TWD = 4.561.50 BOTTOM HOLE (BH) 1655 - FSL/172 - FEL (SEC. 5) N 677090.4 - E 648002.5 LAT: 32.8608618° N LONG: 103.9859554° W LAT: 32.5139.1027° N LONG: 103.9809.4365° W MD = 9.637.00 / TWD = 4.538.49	CORNER DATA NAD 83 GRID - NM EAST A: FOUND BRASS CAP "1914" N 675387.8 - E 637653.6 B: FOUND BRASS CAP "1914" N 678025.5 - E 637653.4 C: FOUND BRASS CAP "1914" N 680665.9 - E 637654.6 D: FOUND BRASS CAP "1916" N 680673.4 - E 640190.1 E: FOUND BRASS CAP "1916" N 680680.6 - E 642829.7 F: FOUND BRASS CAP "1916" N 680688.3 - E 645470.0 G: FOUND BRASS CAP "1916" N 680696.5 - E 648110.9 H: FOUND BRASS CAP "1916" N 678076.6 - E 648121.2 I: FOUND BRASS CAP "1916" N 675436.4 - E 648128.9 J: FOUND BRASS CAP "1916" N 675428.2 - E 645488.7 K: FOUND BRASS CAP "1916" N 675419.9 - E 642848.2 L: FOUND BRASS CAP "1916" N 675403.7 - E 640208.3 M: CALCULATED CORNER N 678059.3 - E 642836.9 CALCULATED POINTS 1: N 678050.7 - E 641519.1 2: N 676731.2 - E 641523.7 3: N 676739.6 - E 642843.6 4: N 676756.5 - E 648122.0	17 OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling. Order heretofore entered by the division. Signature: <u>Sarah Chopra</u> Date: <u>3/12/2020</u> Printed Name: <u>Sarah Chopra</u> E-mail Address: <u>schopra@spur-energy.com</u>
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LOT 4 38.82 Ac.	LOT 3 39.78 Ac.	LOT 2 39.63 Ac.	LOT 1 39.48 Ac.	LOT 4 39.41 Ac.	LOT 3 39.43 Ac.	LOT 2 39.45 Ac.	LOT 1 39.47 Ac.	
LOT 5 37.03 Ac.	DETAIL "A"				18 SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. 8-30-2017 Date of Survey Signature and Seal of Professional Surveyor: <u>Robert M. Howett</u> 19680 Certificate Number 12/10/18 AS DRILL			
LOT 6 37.17 Ac.					LOT 7 37.51 Ac.			

Job No.: LS170855302

Intent ☐ As Drilled ☒

API #
30-015-44913

Operator Name:
SPUR ENERGY PARTNERS, LLC

Property Name:
GISSLER FEDERAL

Well Number
16H

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
I	6	17S	30E		1741	SOUTH	294	EAST	EDDY
Latitude					Longitude				NAD
32.8610985					-104.0037194				NAD83

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
L	5	17S	30E		1759	SOUTH	175	WEST	EDDY
Latitude					Longitude				NAD
32.85611504					-104.0021924				NAD83

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
I	5	17S	30E		1653	SOUTH	236	EAST	EDDY
Latitude					Longitude				NAD
32.860877					-103.9863265				NAD83

Is this well the defining well for the Horizontal Spacing Unit? ☐

Is this well an infill well? ☐

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #

Operator Name:

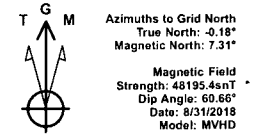
Property Name:

Well Number

KZ 06/29/2018



Project: Eddy County, NM (NAD27 NME)
Site: Gissler Federal
Well: 16H
Wellbore: OH / 63247
Design: Plan 5 08-21-18
Rig: Double K7



RKB @ 3706.00usft (Double K7)

3689.00

WELL DETAILS

*N-S	*E-W	Northing	Easting	Latitude	Longitude
0.00	0.00	676904.89	601493.80	32° 51' 37.65006 N	104° 0' 10.09912 W

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	*N-S	*E-W	Dleg	TFace	Vsect	Target	Tie In	Annotation
1	3556.00	4.63	335.53	3545.67	178.13	-125.74	0.00	0.00	-121.82			KOP, Begin 11.00°/100' Build
2	3814.65	4.63	335.53	3801.48	196.99	-134.32	0.00	0.00	-129.98			Hold 45.00° Inc at 91.75° Azm
3	4243.64	45.00	91.75	4189.11	208.79	16.87	11.00	120.15	23.43			Begin 11.00°/100' Build
4	4443.64	45.00	91.75	4330.53	204.47	160.22	0.00	0.00	164.65			LP, Hold 88.92° Inc, Begin 2.00°/100' Turn
5	4842.91	88.92	91.75	4483.00	193.52	518.55	11.00	0.00	522.65			Hold 90.90° Azm
6	4885.24	88.92	90.90	4483.80	192.54	560.85	2.00	-89.91	564.93			TD at 9677.23
7	9677.23	88.92	90.90	4574.00	117.01	5351.40	0.00	0.00	5352.68			

DESIGN TARGET DETAILS

Name	TVD	*N-S	*E-W	Northing	Easting	Latitude	Longitude
FTP v2 - Gissler Federal 16H	4483.00	101.31	268.60	677006.20	601763.40	32° 51' 38.64415 N	104° 0' 6.93469 W
BH/LTP v2 - Gissler Federal 16H	4574.00	117.01	5351.40	677021.90	606845.20	32° 51' 38.63774 N	103° 59' 7.35642 W

First Phoenix MWD Survey

FORMATION TOP DETAILS

No formation data is available

LEGEND

- 16H, OH / 63247, Surveys (Double K7) V0
- 13H, OH, Surveys V0
- 15H, OH / 62808, Surveys (Double K7) V0
- #40H, WB1, Plan #1 12-18-13 V0
- Plan 5 08-21-18

Map System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone Name: New Mexico East 3001

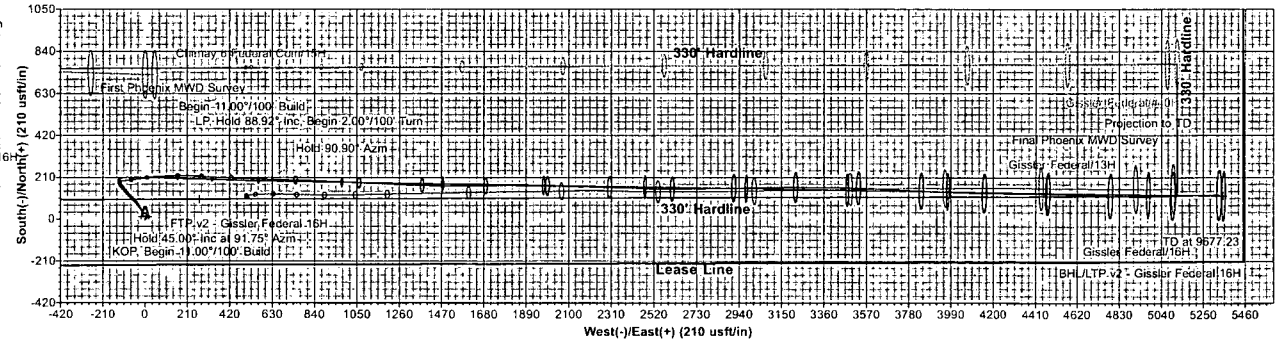
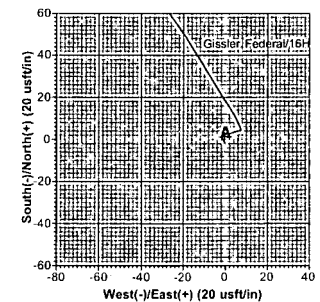
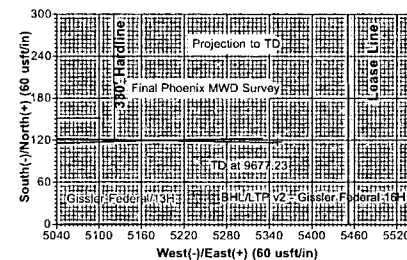
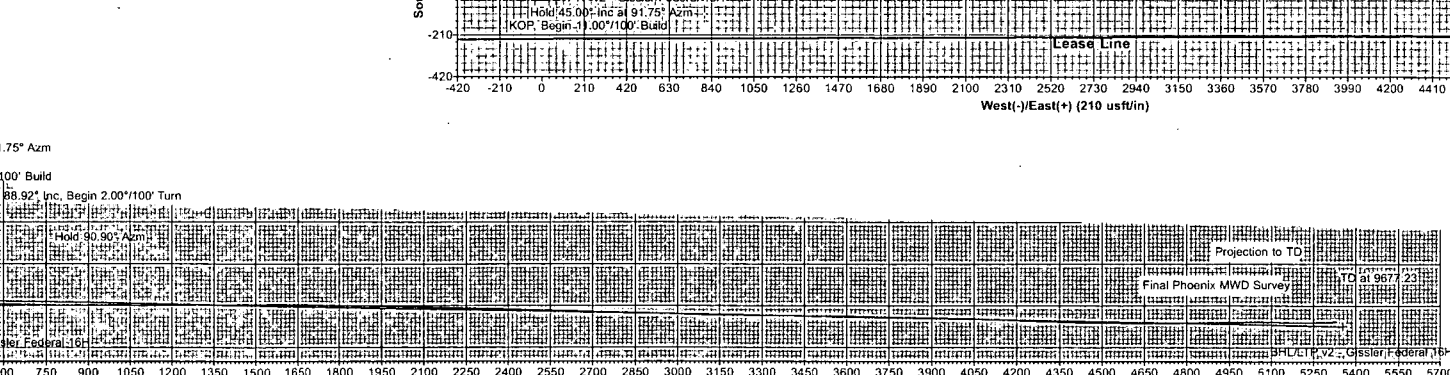
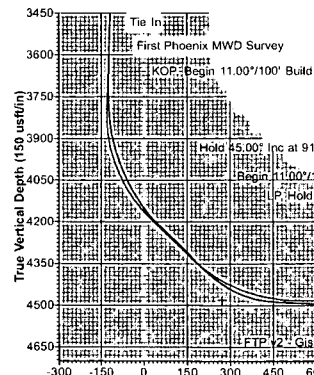
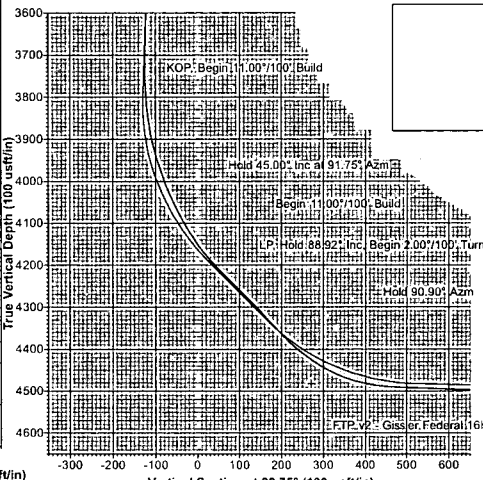
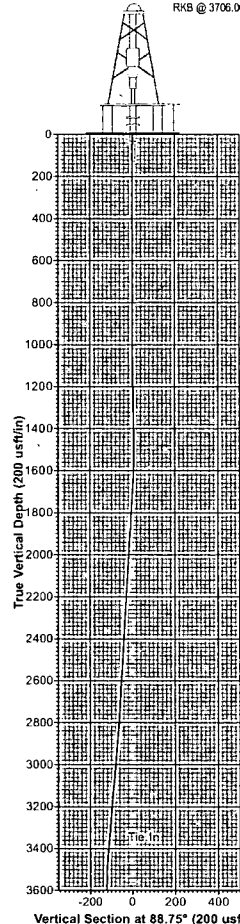
Local Origin: Well 16H, Grid North

Latitude: 32° 51' 37.65006 N
Longitude: 104° 0' 10.09912 W

Grid East: 601493.80
Grid North: 676904.89
Scale Factor: 1.000

Geomagnetic Model: MVHD
Sample Date: 31-Aug-18
Magnetic Declination: 7.49°
Dip Angle from Horizontal: 60.66°
Magnetic Field Strength: 48195.355746nT

To convert a Magnetic Direction to a Grid Direction, Add 7.31°
To convert a Magnetic Direction to a True Direction, Add 7.49° East
To convert a True Direction to a Grid Direction, Subtract 0.18°





PHOENIX
TECHNOLOGY SERVICES

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FEB 19 2020

EMNRD-OCDARTESIA

COG Operating LLC

Eddy County, NM (NAD83 NME)

Gissler Federal

16H

OH

Survey: Phoenix MWD Surveys

Standard Survey Report

03 September, 2018





Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 16H
Project:	Eddy County, NM (NAD83 NME)	TVD Reference:	RKB @ 3706.00usft (Double K 7)
Site:	Gissler Federal	MD Reference:	RKB @ 3706.00usft (Double K 7)
Well:	16H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Double K 7)	Database:	USA Compass

Project	Eddy County, NM (NAD83 NME)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Gissler Federal				
Site Position:		Northing:	676,968.50 usft	Latitude:	32° 51' 38.06553 N
From:	Map	Easting:	642,672.80 usft	Longitude:	104° 0' 11.92987 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.18 °

Well	16H					
Well Position	+N/-S	0.00 usft	Northing:	676,968.50 usft	Latitude:	32° 51' 38.06553 N
	+E/-W	0.00 usft	Easting:	642,672.80 usft	Longitude:	104° 0' 11.92987 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,689.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	MVHD	8/31/2018	7.49	60.66	48,195.35571571

Design	Surveys (Double K 7)				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	88.75	

Survey Program	Date 9/3/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	3,558.00	Scientific Gyro Surveys (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s
3,649.00	9,657.00	Phoenix MWD Surveys (OH)	MWD+HDGM	OWSG Rev.2 MWD + HDGM

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
3,558.00	4.63	335.53	3,545.67	178.13	-125.74	-121.82	0.00	0.00	0.00	
Tie In										
3,649.00	4.01	343.78	3,636.41	184.53	-128.15	-124.09	0.96	-0.68	9.07	
First Phoenix MWD Survey										
3,713.00	3.27	355.04	3,700.28	188.50	-128.93	-124.79	1.60	-1.16	17.59	
3,744.00	2.56	9.08	3,731.24	190.06	-128.90	-124.72	3.23	-2.29	45.29	
3,776.00	1.05	65.54	3,763.23	190.89	-128.52	-124.33	6.76	-4.72	176.44	
3,808.00	2.82	101.50	3,795.21	190.85	-127.48	-123.29	6.45	5.53	112.38	
3,840.00	5.76	95.20	3,827.11	190.55	-125.11	-120.92	9.29	9.19	-19.69	

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 16H
Project:	Eddy County, NM (NAD83 NME)	TVD Reference:	RKB @ 3706.00usft (Double K 7)
Site:	Gissler Federal	MD Reference:	RKB @ 3706.00usft (Double K 7)
Well:	16H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Double K 7)	Database:	USA Compass

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
3,901.00	10.90	81.57	3,887.46	191.12	-116.35	-112.15	8.97	8.43	-22.34	
3,964.00	16.32	82.68	3,948.66	193.12	-101.67	-97.43	8.61	8.60	1.76	
4,027.00	21.54	83.55	4,008.24	195.55	-81.38	-77.10	8.30	8.29	1.38	
4,059.00	24.15	82.91	4,037.72	197.02	-69.05	-64.73	8.19	8.16	-2.00	
4,091.00	26.69	81.70	4,066.62	198.86	-55.44	-51.09	8.10	7.94	-3.78	
4,122.00	30.34	80.65	4,093.86	201.14	-40.82	-36.42	11.88	11.77	-3.39	
4,154.00	32.35	80.69	4,121.19	203.84	-24.39	-19.94	6.28	6.28	0.13	
4,182.00	34.68	80.50	4,144.53	206.37	-9.14	-4.64	8.33	8.32	-0.68	
4,213.00	38.18	81.89	4,169.47	209.17	9.05	13.61	11.60	11.29	4.48	
4,245.00	43.41	83.33	4,193.69	211.85	29.78	34.39	16.61	16.34	4.50	
4,277.00	45.66	86.88	4,216.50	213.75	52.13	56.78	10.48	7.03	11.09	
4,308.00	45.40	87.46	4,238.22	214.84	74.22	78.89	1.58	-0.84	1.87	
4,372.00	44.23	87.43	4,283.62	216.85	119.29	123.99	1.83	-1.83	-0.05	
4,434.00	42.99	87.54	4,328.51	218.73	162.01	166.74	2.00	-2.00	0.18	
4,466.00	42.63	88.60	4,351.98	219.46	183.74	188.49	2.52	-1.13	3.31	
4,498.00	45.33	90.30	4,375.01	219.67	205.96	210.70	9.21	8.44	5.31	
4,529.00	49.88	93.28	4,395.91	218.93	228.83	233.55	16.30	14.68	9.61	
4,560.00	53.55	94.61	4,415.11	217.25	253.10	257.78	12.31	11.84	4.29	
4,592.00	56.81	94.20	4,433.38	215.23	279.29	283.92	10.24	10.19	-1.28	
4,624.00	61.72	94.20	4,449.73	213.22	306.71	311.29	15.34	15.34	0.00	
4,655.00	67.23	93.45	4,463.08	211.36	334.61	339.14	17.91	17.77	-2.42	
4,686.00	72.35	92.70	4,473.79	209.80	363.65	368.14	16.67	16.52	-2.42	
4,718.00	77.99	91.77	4,481.97	208.60	394.55	399.01	17.85	17.63	-2.91	
4,750.00	83.31	91.49	4,487.17	207.70	426.10	430.53	16.65	16.63	-0.88	
4,813.00	88.18	92.86	4,491.84	205.32	488.86	493.22	8.03	7.73	2.17	
4,881.00	87.67	92.24	4,494.31	202.29	556.75	561.03	1.18	-0.75	-0.91	
4,944.00	88.48	91.81	4,496.42	200.07	619.67	623.89	1.46	1.29	-0.68	
5,007.00	89.05	91.62	4,497.78	198.18	682.63	686.79	0.95	0.90	-0.30	
5,070.00	88.41	91.50	4,499.18	196.47	745.59	749.70	1.03	-1.02	-0.19	
5,132.00	89.50	91.93	4,500.31	194.61	807.55	811.61	1.89	1.76	0.69	
5,196.00	90.19	92.04	4,500.48	192.40	871.51	875.50	1.09	1.08	0.17	
5,258.00	89.96	92.67	4,500.40	189.85	933.46	937.38	1.08	-0.37	1.02	
5,322.00	89.90	92.64	4,500.48	186.88	997.39	1,001.23	0.10	-0.09	-0.05	
5,385.00	89.61	92.85	4,500.75	183.87	1,060.32	1,064.08	0.57	-0.46	0.33	
5,447.00	89.96	92.44	4,500.98	181.01	1,122.25	1,125.93	0.87	0.56	-0.66	
5,510.00	90.72	92.42	4,500.61	178.34	1,185.19	1,188.80	1.21	1.21	-0.03	
5,573.00	90.55	92.62	4,499.91	175.57	1,248.13	1,251.66	0.42	-0.27	0.32	
5,636.00	90.82	92.24	4,499.16	172.89	1,311.07	1,314.53	0.74	0.43	-0.60	
5,699.00	90.81	91.27	4,498.26	170.97	1,374.03	1,377.43	1.54	-0.02	-1.54	
5,762.00	90.65	91.26	4,497.46	169.57	1,437.01	1,440.37	0.25	-0.25	-0.02	
5,825.00	90.56	91.17	4,496.79	168.24	1,499.99	1,503.31	0.20	-0.14	-0.14	
5,888.00	89.96	89.80	4,496.51	167.71	1,562.99	1,566.27	2.37	-0.95	-2.17	
5,951.00	89.22	89.52	4,496.96	168.08	1,625.99	1,629.26	1.26	-1.17	-0.44	

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 16H
Project:	Eddy County, NM (NAD83 NME)	TVD Reference:	RKB @ 3706.00usft (Double K 7)
Site:	Gissler Federal	MD Reference:	RKB @ 3706.00usft (Double K 7)
Well:	16H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Double K 7)	Database:	USA Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,014.00	88.55	89.57	4,498.18	168.58	1,688.97	1,692.25	1.07	-1.06	0.08
6,075.00	88.71	90.02	4,499.64	168.80	1,749.95	1,753.22	0.78	0.26	0.74
6,136.00	88.90	89.98	4,500.91	168.80	1,810.94	1,814.19	0.32	0.31	-0.07
6,198.00	88.90	90.61	4,502.10	168.48	1,872.93	1,876.16	1.02	0.00	1.02
6,259.00	88.73	90.83	4,503.36	167.71	1,933.91	1,937.11	0.46	-0.28	0.36
6,320.00	88.76	90.89	4,504.70	166.80	1,994.89	1,998.05	0.11	0.05	0.10
6,382.00	88.55	91.11	4,506.16	165.72	2,056.86	2,059.99	0.49	-0.34	0.35
6,444.00	88.96	91.18	4,507.50	164.48	2,118.83	2,121.92	0.67	0.66	0.11
6,505.00	88.85	91.39	4,508.67	163.11	2,179.81	2,182.85	0.39	-0.18	0.34
6,566.00	88.78	91.71	4,509.93	161.46	2,240.77	2,243.76	0.54	-0.11	0.52
6,627.00	88.50	91.52	4,511.38	159.74	2,301.73	2,304.67	0.55	-0.46	-0.31
6,688.00	88.51	91.79	4,512.97	157.98	2,362.68	2,365.57	0.44	0.02	0.44
6,750.00	88.21	92.04	4,514.74	155.91	2,424.62	2,427.45	0.63	-0.48	0.40
6,812.00	88.11	91.79	4,516.73	153.84	2,486.56	2,489.32	0.43	-0.16	-0.40
6,873.00	88.48	91.32	4,518.55	152.18	2,547.51	2,550.22	0.98	0.61	-0.77
6,935.00	88.81	90.53	4,520.02	151.18	2,609.48	2,612.16	1.38	0.53	-1.27
6,996.00	88.71	88.96	4,521.34	151.45	2,670.46	2,673.13	2.58	-0.16	-2.57
7,057.00	88.55	88.75	4,522.79	152.67	2,731.44	2,734.12	0.43	-0.26	-0.34
7,118.00	88.62	88.83	4,524.30	153.96	2,792.40	2,795.10	0.17	0.11	0.13
7,179.00	88.58	89.12	4,525.79	155.05	2,853.37	2,856.08	0.48	-0.07	0.48
7,239.00	88.14	88.82	4,527.51	156.13	2,913.34	2,916.05	0.89	-0.73	-0.50
7,301.00	87.84	89.29	4,529.68	157.15	2,975.29	2,978.01	0.90	-0.48	0.76
7,362.00	87.30	88.79	4,532.27	158.17	3,036.23	3,038.96	1.21	-0.89	-0.82
7,423.00	88.59	88.95	4,534.46	159.37	3,097.18	3,099.92	2.13	2.11	0.26
7,484.00	89.36	89.52	4,535.55	160.19	3,158.16	3,160.90	1.57	1.26	0.93
7,545.00	89.64	89.70	4,536.08	160.60	3,219.16	3,221.90	0.55	0.46	0.30
7,606.00	89.41	89.81	4,536.59	160.86	3,280.16	3,282.88	0.42	-0.38	0.18
7,669.00	89.92	90.71	4,536.95	160.58	3,343.15	3,345.86	1.64	0.81	1.43
7,731.00	89.84	91.08	4,537.08	159.61	3,405.14	3,407.82	0.61	-0.13	0.60
7,794.00	89.31	90.86	4,537.55	158.54	3,468.13	3,470.77	0.91	-0.84	-0.35
7,857.00	89.67	91.54	4,538.11	157.22	3,531.12	3,533.71	1.22	0.57	1.08
7,920.00	89.33	92.85	4,538.66	154.81	3,594.07	3,596.59	2.15	-0.54	2.08
7,981.00	88.99	92.64	4,539.56	151.89	3,654.99	3,657.43	0.66	-0.56	-0.34
8,044.00	88.95	92.73	4,540.69	148.94	3,717.91	3,720.28	0.16	-0.06	0.14
8,107.00	88.78	93.14	4,541.94	145.71	3,780.82	3,783.09	0.70	-0.27	0.65
8,170.00	88.70	93.22	4,543.32	142.22	3,843.70	3,845.89	0.18	-0.13	0.13
8,232.00	88.51	92.13	4,544.83	139.33	3,905.62	3,907.73	1.78	-0.31	-1.76
8,296.00	88.71	91.61	4,546.38	137.24	3,969.56	3,971.61	0.87	0.31	-0.81
8,359.00	88.24	92.18	4,548.06	135.16	4,032.51	4,034.49	1.17	-0.75	0.90
8,422.00	88.01	91.25	4,550.12	133.27	4,095.44	4,097.38	1.52	-0.37	-1.48
8,483.00	88.04	91.03	4,552.22	132.06	4,156.40	4,158.29	0.36	0.05	-0.36
8,546.00	87.71	91.00	4,554.56	130.95	4,219.34	4,221.19	0.53	-0.52	-0.05
8,609.00	87.33	90.93	4,557.29	129.89	4,282.27	4,284.09	0.61	-0.60	-0.11
8,672.00	88.73	91.21	4,559.45	128.71	4,345.22	4,347.00	2.27	2.22	0.44

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 16H
Project:	Eddy County, NM (NAD83 NME)	TVD Reference:	RKB @ 3706.00usft (Double K 7)
Site:	Gissler Federal	MD Reference:	RKB @ 3706.00usft (Double K 7)
Well:	16H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Double K 7)	Database:	USA Compass

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,735.00	88.27	90.74	4,561.10	127.64	4,408.19	4,409.93	1.04	-0.73	-0.75	
8,798.00	89.32	91.60	4,562.43	126.35	4,471.16	4,472.86	2.15	1.67	1.37	
8,860.00	89.65	91.60	4,562.98	124.62	4,533.14	4,534.78	0.53	0.53	0.00	
8,923.00	89.01	91.81	4,563.72	122.75	4,596.11	4,597.69	1.07	-1.02	0.33	
8,986.00	89.84	91.58	4,564.35	120.88	4,659.07	4,660.60	1.37	1.32	-0.37	
9,050.00	90.72	91.50	4,564.04	119.16	4,723.05	4,724.52	1.38	1.38	-0.13	
9,113.00	90.75	91.91	4,563.23	117.29	4,786.02	4,787.44	0.65	0.05	0.65	
9,176.00	91.02	91.39	4,562.26	115.47	4,848.98	4,850.35	0.93	0.43	-0.83	
9,239.00	91.53	90.89	4,560.86	114.22	4,911.95	4,913.28	1.13	0.81	-0.79	
9,302.00	90.44	89.55	4,559.77	113.98	4,974.94	4,976.24	2.74	-1.73	-2.13	
9,365.00	89.62	88.45	4,559.74	115.08	5,037.93	5,039.24	2.18	-1.30	-1.75	
9,425.00	89.01	88.30	4,560.46	116.78	5,097.90	5,099.24	1.05	-1.02	-0.25	
9,488.00	89.13	88.34	4,561.48	118.63	5,160.87	5,162.23	0.20	0.19	0.06	
9,551.00	90.81	88.91	4,561.51	120.14	5,223.85	5,225.22	2.82	2.67	0.90	
9,611.00	91.96	89.15	4,560.06	121.15	5,283.82	5,285.20	1.96	1.92	0.40	
Final Phoenix MWD Survey										
9,657.00	91.96	89.15	4,558.49	121.84	5,329.79	5,331.18	0.00	0.00	0.00	
Projection to TD										

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
3,558.00	3,545.67	178.13	-125.74	Tie In	
3,649.00	3,636.41	184.53	-128.15	First Phoenix MWD Survey	
9,611.00	4,560.06	121.15	5,283.82	Final Phoenix MWD Survey	
9,657.00	4,558.49	121.84	5,329.79	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____

API #	30-015-44913	GISSLER FEDERAL 16H	County, ST	Eddy, NM
Operator	Spur Energy Partners, LLC		Sec-Twn-Rng	6-17S-30E
Field	LOCO HILLS-GLORIETA YESO		Footage	1550' FSL 170' FEL
Spud Date	8/12/2018		Survey	

GL	3689'
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Hole Size	17-1/2"
TOC	Surf
Method	Circ Returns

Csg Depth	463'
Size	13-3/8"
Weight	54.5#
Grade	J-55
Connections	BTC
Cement	surface

PBTD	9,650'
TD MD	9657'
TD TVD	4558'

Hole Size	12-1/4"
TOC	Surf
Method	Circ Returns

Csg Depth	1259'
Size	9-5/8"
Weight	40#
Grade	J-55
Connections	BTC
Cement	surface

Hole Size	8-3/4"
TOC	Surf
Method	Circ Returns

Csg Depth	3599'	9644'
Size	7"	5-1/2"
Weight	29#	20#
Grade	L-80	L-80
Connections	BTC	BTC
Cement	surface	

