

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

NM OIL CONSERVATION
State of New Mexico ARTESIA DISTRICT
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

RECEIVED

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

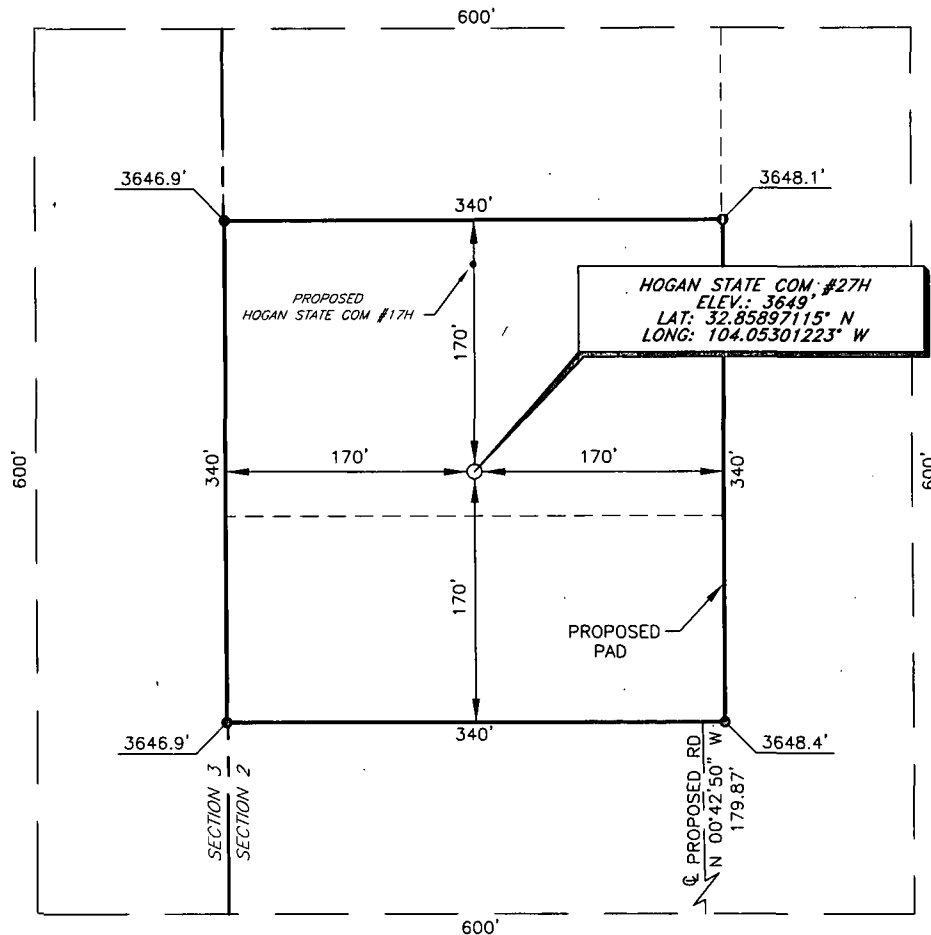
¹ API Number 30-015-43339		² Pool Code 96610		³ Pool Name Empire; Glorieta Yeso East					
⁴ Property Code 39291		⁵ Property Name HOGAN STATE COM						⁶ Well Number 27H	
⁷ GRID NO. 229137		⁸ Operator Name COG OPERATING, LLC						⁹ Elevation 3649'	
¹⁰ Surface Location									
UL or lot no. M	Section 2	Township 17S	Range 29E	Lot Idn	Feet from the 990	North/South line SOUTH	Feet From the 170	East/West line WEST	County EDDY
¹¹ Bottom Hole Location If Different From Surface									
UL or lot no. P	Section 2	Township 17S	Range 29E	Lot Idn	Feet from the 990	North/South line SOUTH	Feet from the 330	East/West line EAST	County EDDY
¹² Dedicated Acres 160		¹³ Joint or Infill		¹⁴ Consolidation Code		¹⁵ Order No.			

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.

¹⁶ GEODETIC DATA NAD 27 GRID - NM EAST SURFACE LOCATION N 676319.2 - E 586078.4 LAT: 32.85897115° N LONG: 104.05301223° W BOTTOM HOLE N: 676312.6 - E: 590870.0 CORNER DATA NAD 27 GRID - NM EAST 1: CALCULATED CORNER N 676650.5 - E 585907.0 2: CALCULATED CORNER N 676642.0 - E 591199.7 Estimated Completed Interval: 983 FSL 330 FWL Producing Area Project Arch	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 hereinafter entered by the division. 9-2-15 Signature: <u>Kelly J. Holly</u> Printed Name: <u>Kelly J. Holly</u> E-mail Address: <u>kholly@concho.com</u> 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. 6-18-2015 Date of Survey: <u>6-18-2015</u> Signature and Seal of Professional Surveyor: <u>Robert M. Howett</u> 19680 Certificate Number: <u>19680</u>
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RRC - Firm No.: TX 10193838 NM 4555451 - Job No.: LS1505264

COG OPERATING, LLC
HOGAN STATE COM #27H
(990' FSL & 170' FWL)
SECTION 2, T17S, R29E
N. M. P. M., EDDY CO., NEW MEXICO



DIRECTIONS TO LOCATION

From the intersection of CR-215 (Kewanee Road) and US Hwy. 82;
Go North on CR-215 approx. 2.5 miles to a lease road on the left;
Turn left and go West approx. 0.9 miles to the Petra State Com #1;
Location is approx. 600 feet Northwest of existing well.

SCALE: 1" = 100'

0 50 100

BEARINGS ARE
NAD 27 GRID - NM EAST
DISTANCES ARE
GROUND.

Firm No.: TX 10193838 NM 4655451

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NO.	REVISION	DATE
JOB NO.:	LS1505264	
DWG. NO.:	1505264PAD	

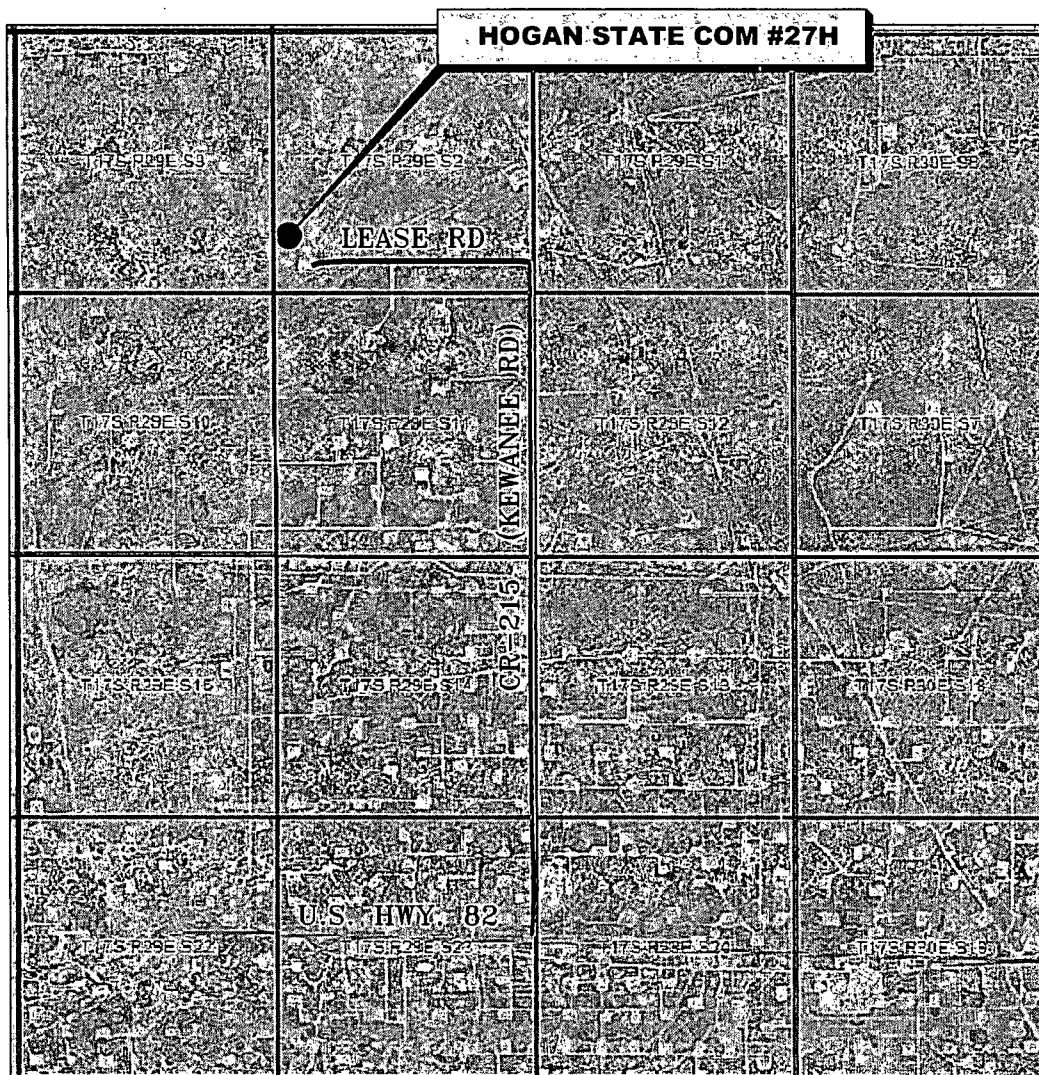
RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 100'
DATE: 6-18-15
SURVEYED BY: GB/CG
DRAWN BY: JC
APPROVED BY: RMH
SHEET : 1 OF 1

VICINITY MAP

NOT TO SCALE



SECTION 2, TWP. 17 SOUTH, RGE. 29 EAST,
N. M. P. M., EDDY COUNTY, NEW MEXICO

OPERATOR: COG Operating, LLC
LEASE: Hogan State Com
WELL NO.: 27H

LOCATION: 990' FSL & 170' FWL
ELEVATION: 3649'

Firm No.: TX 10193838 NM 4655451

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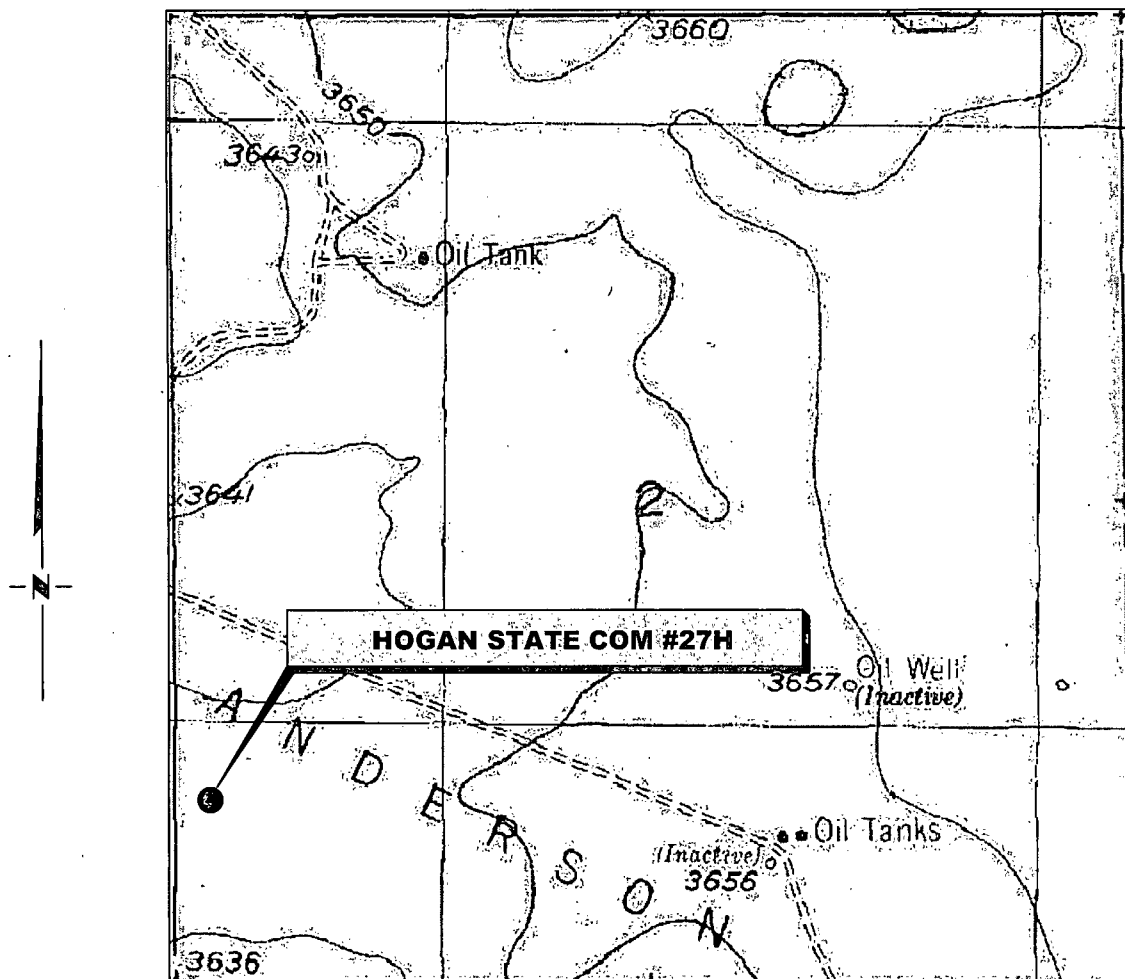
NO.	REVISION	DATE
JOB NO.:	LS1505264	
DWG. NO.:	1505264VM	

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: N.T.S.
DATE: 6-18-15
SURVEYED BY: GB/CG
DRAWN BY: JC
APPROVED BY: RMH
SHEET : 1 OF 1

LOCATION VERIFICATION MAP



SECTION 2, TWP. 17 SOUTH, RGE. 29 EAST,
N. M. P. M., EDDY COUNTY, NEW MEXICO

OPERATOR: COG Operating, LLC
LEASE: Hogan State Com
WELL NO.: 27H
ELEVATION: 3649'

LOCATION: 990' FSL & 170' FWL
CONTOUR INTERVAL: 10'
USGS TOPO. SOURCE MAP:
Red Lake SE, NM (1955)

Firm No.: TX 10193838 NM 4655451

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NO.	REVISION	DATE
JOB NO.: LS1505264		
DWG. NO.: 1505264LVM		

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 1000'
DATE: 6-18-15
SURVEYED BY: GB/CG
DRAWN BY: JC
APPROVED BY: RMH
SHEET : 1 OF 1



COG Operating LLC

Eddy County, NM

Hogan State Com #27H

SHL: 990' FSL, 170' FWL, Sec 2, T17S, R29E, Unit M

PP: 983.8' FSL, 330' FWL, Sec 2, T17S, R29E, Unit M

BHL: 990' FSL, 330' FEL, Sec 2, T17S, R29E, Unit P

Plan: Plan #1

Standard Planning Report

13 August, 2015





TDS
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Hogan State Com #27H
Company:	COG Operating, LLC	TVD Reference:	KB @ 3661.0usft (United 43)
Project:	Eddy County, NM	MD Reference:	KB @ 3661.0usft (United 43)
Site:	Hogan State Com #27H	North Reference:	Grid
Well:	SHL 990' FSL 170' FWL Sec 2 T17S R29E Unit M	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL 990' FSL 330' FEL Sec 2 T17S R29E Unit P		
Design:	Plan #1		

Project: Eddy County, NM			
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Hogan State Com #27H				
Site Position:		Northing:	676,319.20 usft	Latitude:	32° 51' 32.296 N
From:	Map	Easting:	586,078.40 usft	Longitude:	104° 3' 10.844 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.15 °

Well	SHL 990' FSL 170' FWL Sec 2 T17S R29E Unit M					
Well Position	+N/-S	0.0 usft	Northing:	676,319.20 usft	Latitude:	32° 51' 32.296 N
	+E/-W	0.0 usft	Easting:	586,078.40 usft	Longitude:	104° 3' 10.844 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	3,649.0 usft

Wellbore:	BHL 990' FSL 330' FEL Sec 2, T17S, R29E, Unit P				
Magnetics:	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	8/13/2015	7.42	60.59	48,452

Design					Plan #1				
Audit Notes:									
Version:		Phase:		PLAN		Tie On Depth:		0.0	
Vertical Section:		Depth From (TVD)		+N/-S		+E/-W		Direction	
		(usft)		(usft)		(usft)		(°)	
		0.0		0.0		0.0		90.08	

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,429.2	0.00	0.00	4,429.2	0.0	0.0	0.00	0.00	0.00	0.00	
5,256.5	91.00	92.14	4,950.0	-19.8	529.6	11.00	11.00	0.00	92.14	
5,334.4	91.00	89.80	4,948.6	-21.1	607.5	3.00	0.00	-3.00	-89.99	
9,519.2	91.00	89.80	4,875.6	-6.6	4,791.6	0.00	0.00	0.00	0.00	BHL (HSC #27H/OH)



TDS
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Hogan State Com #27H
Company:	COG Operating LLC	TVD Reference:	KB @ 3661.0usft (United 43)
Project:	Eddy County, NM	MD Reference:	KB @ 3661.0usft (United 43)
Site:	Hogan State Com #27H	North Reference:	Grid
Well:	SHL 990' FSL 170' FWL Sec 2, T17S, R29E, Unit M	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL 990' FSL 330' FEL Sec 2, T17S, R29E, Unit P		
Design:	Plan #1		

Planned 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)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
4,429.2	0.00	0.00	4,429.2	0.0	0.0	0.0	0.00	0.00	0.00	
KOP - Start Build 11.00										
4,450.0	2.29	92.14	4,450.0	0.0	0.4	0.4	11.00	11.00	0.00	
4,500.0	7.79	92.14	4,499.8	-0.2	4.8	4.8	11.00	11.00	0.00	
4,550.0	13.29	92.14	4,548.9	-0.5	13.9	13.9	11.00	11.00	0.00	
4,600.0	18.79	92.14	4,597.0	-1.0	27.7	27.7	11.00	11.00	0.00	
4,650.0	24.29	92.14	4,643.4	-1.7	46.1	46.1	11.00	11.00	0.00	



TDS
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Hogan State Corn #27H
Company:	COG Operating LLC	TVD Reference:	KB @ 3661.0usft (United 43)
Project:	Eddy County NM	MD Reference:	KB @ 3661.0usft (United 43)
Site:	Hogan State Corn #27H	North Reference:	Grid
Well:	SHL 990' FSL 170' FWL Sec 2 T17S R29E	Survey Calculation Method:	Minimum Curvature
	Unit M		
Wellbore:	BHL 990' FSL 330' FEL Sec 2 T17S R29E		
	Unit P		
Design:	Plan #1		

Planned 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)
4,700.0	29.79	92.14	4,688.0	-2.6	68.8	68.8	11.00	11.00	0.00
4,750.0	35.29	92.14	4,730.1	-3.6	95.6	95.6	11.00	11.00	0.00
4,800.0	40.79	92.14	4,769.5	-4.7	126.4	126.4	11.00	11.00	0.00
4,850.0	46.29	92.14	4,805.7	-6.0	160.8	160.8	11.00	11.00	0.00
4,900.0	51.79	92.14	4,838.5	-7.4	198.5	198.5	11.00	11.00	0.00
4,950.0	57.29	92.14	4,867.5	-8.9	239.2	239.2	11.00	11.00	0.00
5,000.0	62.79	92.14	4,892.4	-10.6	282.5	282.5	11.00	11.00	0.00
5,050.0	68.29	92.14	4,913.1	-12.3	328.0	328.0	11.00	11.00	0.00
5,100.0	73.79	92.14	4,929.4	-14.0	375.2	375.2	11.00	11.00	0.00
5,150.0	79.29	92.14	4,941.0	-15.8	423.8	423.8	11.00	11.00	0.00
5,200.0	84.79	92.14	4,947.9	-17.7	473.2	473.2	11.00	11.00	0.00
5,250.0	90.29	92.14	4,950.1	-19.5	523.1	523.2	11.00	11.00	0.00
5,256.5	91.00	92.14	4,950.0	-19.8	529.6	529.6	11.00	11.00	0.00
EOC/TURN - Start DLS 3.00 TFO -89.99									
5,300.0	91.00	90.83	4,949.2	-20.9	573.1	573.1	3.00	0.00	-3.00
5,334.4	91.00	89.80	4,948.6	-21.1	607.5	607.5	3.00	0.00	-3.00
END TURN - Start 4184.8 hold at 5334.4 MD									
5,400.0	91.00	89.80	4,947.5	-20.9	673.1	673.1	0.00	0.00	0.00
5,500.0	91.00	89.80	4,945.7	-20.5	773.1	773.1	0.00	0.00	0.00
5,600.0	91.00	89.80	4,944.0	-20.2	873.0	873.1	0.00	0.00	0.00
5,700.0	91.00	89.80	4,942.3	-19.8	973.0	973.1	0.00	0.00	0.00
5,800.0	91.00	89.80	4,940.5	-19.5	1,073.0	1,073.0	0.00	0.00	0.00
5,900.0	91.00	89.80	4,938.8	-19.1	1,173.0	1,173.0	0.00	0.00	0.00
6,000.0	91.00	89.80	4,937.0	-18.8	1,273.0	1,273.0	0.00	0.00	0.00
6,100.0	91.00	89.80	4,935.3	-18.5	1,373.0	1,373.0	0.00	0.00	0.00
6,200.0	91.00	89.80	4,933.5	-18.1	1,473.0	1,473.0	0.00	0.00	0.00
6,300.0	91.00	89.80	4,931.8	-17.8	1,572.9	1,573.0	0.00	0.00	0.00
6,400.0	91.00	89.80	4,930.0	-17.4	1,672.9	1,672.9	0.00	0.00	0.00
6,500.0	91.00	89.80	4,928.3	-17.1	1,772.9	1,772.9	0.00	0.00	0.00
6,600.0	91.00	89.80	4,926.5	-16.7	1,872.9	1,872.9	0.00	0.00	0.00
6,700.0	91.00	89.80	4,924.8	-16.4	1,972.9	1,972.9	0.00	0.00	0.00
6,800.0	91.00	89.80	4,923.1	-16.0	2,072.9	2,072.9	0.00	0.00	0.00
6,900.0	91.00	89.80	4,921.3	-15.7	2,172.8	2,172.9	0.00	0.00	0.00
7,000.0	91.00	89.80	4,919.6	-15.3	2,272.8	2,272.8	0.00	0.00	0.00
7,100.0	91.00	89.80	4,917.8	-15.0	2,372.8	2,372.8	0.00	0.00	0.00
7,200.0	91.00	89.80	4,916.1	-14.6	2,472.8	2,472.8	0.00	0.00	0.00
7,300.0	91.00	89.80	4,914.3	-14.3	2,572.8	2,572.8	0.00	0.00	0.00
7,400.0	91.00	89.80	4,912.6	-13.9	2,672.8	2,672.8	0.00	0.00	0.00
7,500.0	91.00	89.80	4,910.8	-13.6	2,772.7	2,772.8	0.00	0.00	0.00
7,600.0	91.00	89.80	4,909.1	-13.3	2,872.7	2,872.7	0.00	0.00	0.00
7,700.0	91.00	89.80	4,907.4	-12.9	2,972.7	2,972.7	0.00	0.00	0.00
7,800.0	91.00	89.80	4,905.6	-12.6	3,072.7	3,072.7	0.00	0.00	0.00
7,900.0	91.00	89.80	4,903.9	-12.2	3,172.7	3,172.7	0.00	0.00	0.00
8,000.0	91.00	89.80	4,902.1	-11.9	3,272.7	3,272.7	0.00	0.00	0.00
8,100.0	91.00	89.80	4,900.4	-11.5	3,372.7	3,372.7	0.00	0.00	0.00
8,200.0	91.00	89.80	4,898.6	-11.2	3,472.6	3,472.6	0.00	0.00	0.00
8,300.0	91.00	89.80	4,896.9	-10.8	3,572.6	3,572.6	0.00	0.00	0.00
8,400.0	91.00	89.80	4,895.1	-10.5	3,672.6	3,672.6	0.00	0.00	0.00
8,500.0	91.00	89.80	4,893.4	-10.1	3,772.6	3,772.6	0.00	0.00	0.00
8,600.0	91.00	89.80	4,891.7	-9.8	3,872.6	3,872.6	0.00	0.00	0.00
8,700.0	91.00	89.80	4,889.9	-9.4	3,972.6	3,972.6	0.00	0.00	0.00
8,800.0	91.00	89.80	4,888.2	-9.1	4,072.5	4,072.6	0.00	0.00	0.00



TDS
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Hogan State Com #27H
Company:	COG Operating LLC	TVD Reference:	KB @ 3661.0usft (United 43)
Project:	Eddy County, NM	MD Reference:	KB @ 3661.0usft (United 43)
Site:	Hogan State Com #27H	North Reference:	Grid
Well:	SHL 990' FSL, 170' FWL, Sec 2, T17S, R29E, Unit M	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL 990' FSL, 330' FEL, Sec 2, T17S, R29E, Unit P		
Design:	Plan #1		

Planned 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)	
8,900.0	91.00	89.80	4,886.4	-8.7	4,172.5	4,172.5	0.00	0.00	0.00	
9,000.0	91.00	89.80	4,884.7	-8.4	4,272.5	4,272.5	0.00	0.00	0.00	
9,100.0	91.00	89.80	4,882.9	-8.1	4,372.5	4,372.5	0.00	0.00	0.00	
9,200.0	91.00	89.80	4,881.2	-7.7	4,472.5	4,472.5	0.00	0.00	0.00	
9,300.0	91.00	89.80	4,879.4	-7.4	4,572.5	4,572.5	0.00	0.00	0.00	
9,400.0	91.00	89.80	4,877.7	-7.0	4,672.4	4,672.5	0.00	0.00	0.00	
9,500.0	91.00	89.80	4,875.9	-6.7	4,772.4	4,772.4	0.00	0.00	0.00	
9,519.2	91.00	89.80	4,875.6	-6.6	4,791.6	4,791.6	0.00	0.00	0.00	
TD at 9519.2										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
hit/miss target										
Shape										
PP (HSC #27H/OH Plan - plan hits target center - Point	0.00	0.00	4,804.9	-6.0	160.0	676,313.22	586,238.40	32° 51' 32.232 N	104° 3' 8.968 W	
BHL (HSC #27H/OH) - plan hits target center - Point	0.00	0.00	4,875.6	-6.6	4,791.6	676,312.60	590,870.00	32° 51' 32.101 N	104° 2' 14.669 W	
EOC (HSC #27H/OH Pl - plan hits target center - Point	0.00	0.00	4,950.0	-19.8	529.6	676,299.40	586,608.02	32° 51' 32.086 N	104° 3' 4.635 W	

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,429.2	4,429.2	0.0	0.0	KOP - Start Build 11.00
5,256.5	4,950.0	-19.8	529.6	EOC/TURN - Start DLS 3.00 TFO -89.99
5,334.4	4,948.6	-21.1	607.5	END TURN - Start 4184.8 hold at 5334.4 MD
9,519.2	4,875.6	-6.6	4,791.6	TD at 9519.2



Section Details										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	4429.2	0.00	0.00	4429.2	0.0	0.0	0.00	0.00	0.0	
3	5256.5	91.00	92.14	4950.0	-19.8	529.6	11.00	92.14	529.6	
4	5334.4	91.00	89.80	4948.6	-21.1	607.5	3.00	-89.99	607.5	
5	9519.2	91.00	89.80	4875.6	-6.6	4791.6	0.00	0.00	4791.6	BHL (HSC #27H/OH)

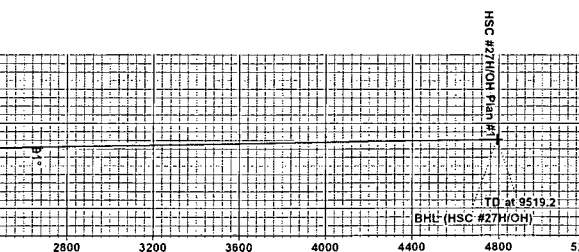
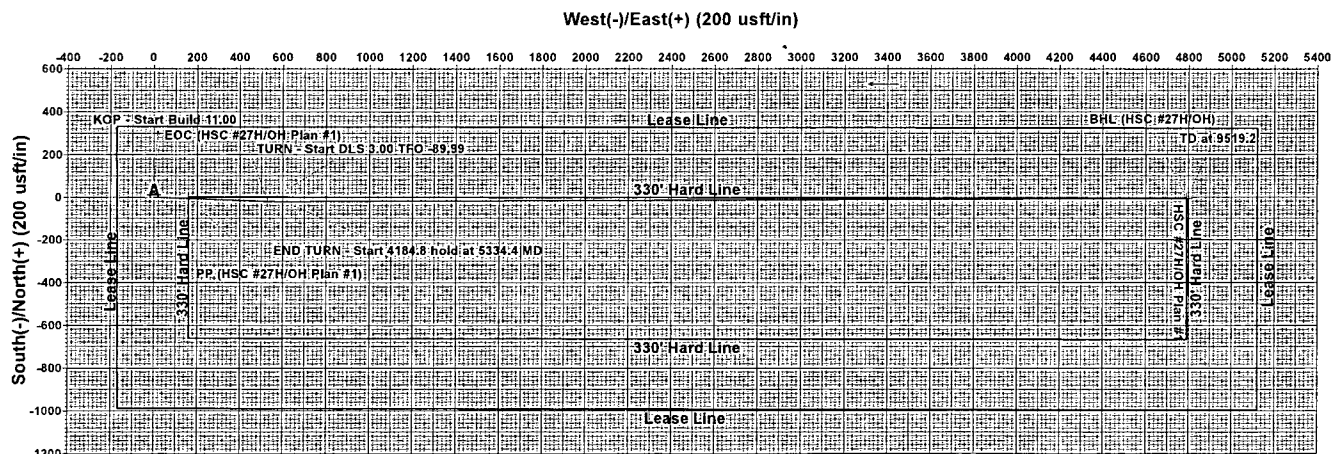
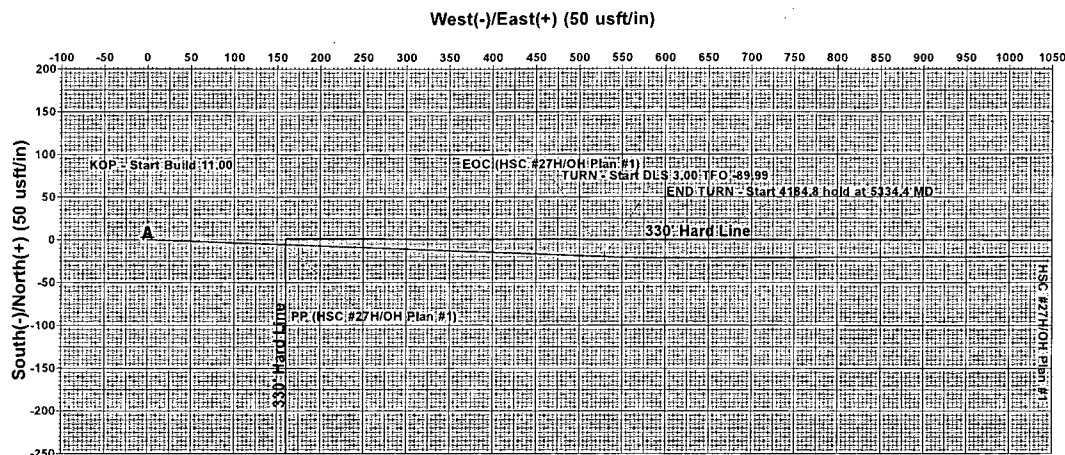
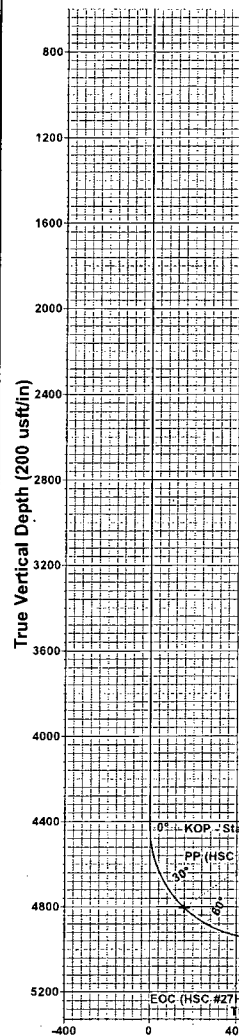
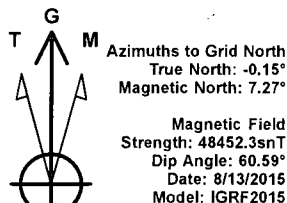
Ground Elevation:: 3649.0
RKB Elevation: KB @ 3661.0usft (United 43)

Northing 676319.20 Easting 586078.40 Latitude 32° 51' 32.296 N Longitude 104° 3' 10.844 W

COG Operating LLC
Project: Eddy County, NM
Site: Hogan State Com #27H

Well: SHL: 990' FSL, 170' FWL, Sec 2, T17S, R29E, Unit M
Wellbore: BHL: 990' FSL, 330' FEL, Sec 2, T17S, R29E, Unit P

Plan: Plan #1 (SHL: 990' FSL, 170' FWL, Sec 2, T17S, R29E, Unit M/BHL: 990' FSL, 330' FEL, Sec 2, T17S, R29E, Unit P)



Vertical Section at 90.08° (200 usft/in)
Terra Directional Services LLC
322 Spring Hill Drive, Suite A300, Spring, Tx 77386
Phone: 432-425-7532

PROJECT DETAILS: Eddy County, NM
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid