

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

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- 41661	² Pool Code 96718	³ Pool Name Loco Hills; Glorieta Yeso
⁴ Property Code 40129	⁵ Property Name WICHITA HARPER STATE COM	
⁷ OGRID No. 229137	⁸ Operator Name COG OPERATING, LLC	⁶ Well Number 3H
		⁹ Elevation 3689'

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	16	17-S	30-E		1980	SOUTH	150	EAST	EDDY

¹¹ Bottom Hole Location If Different From Surface

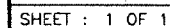
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	16	17-S	30-E		1980	SOUTH	330	WEST	EDDY

¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
160			

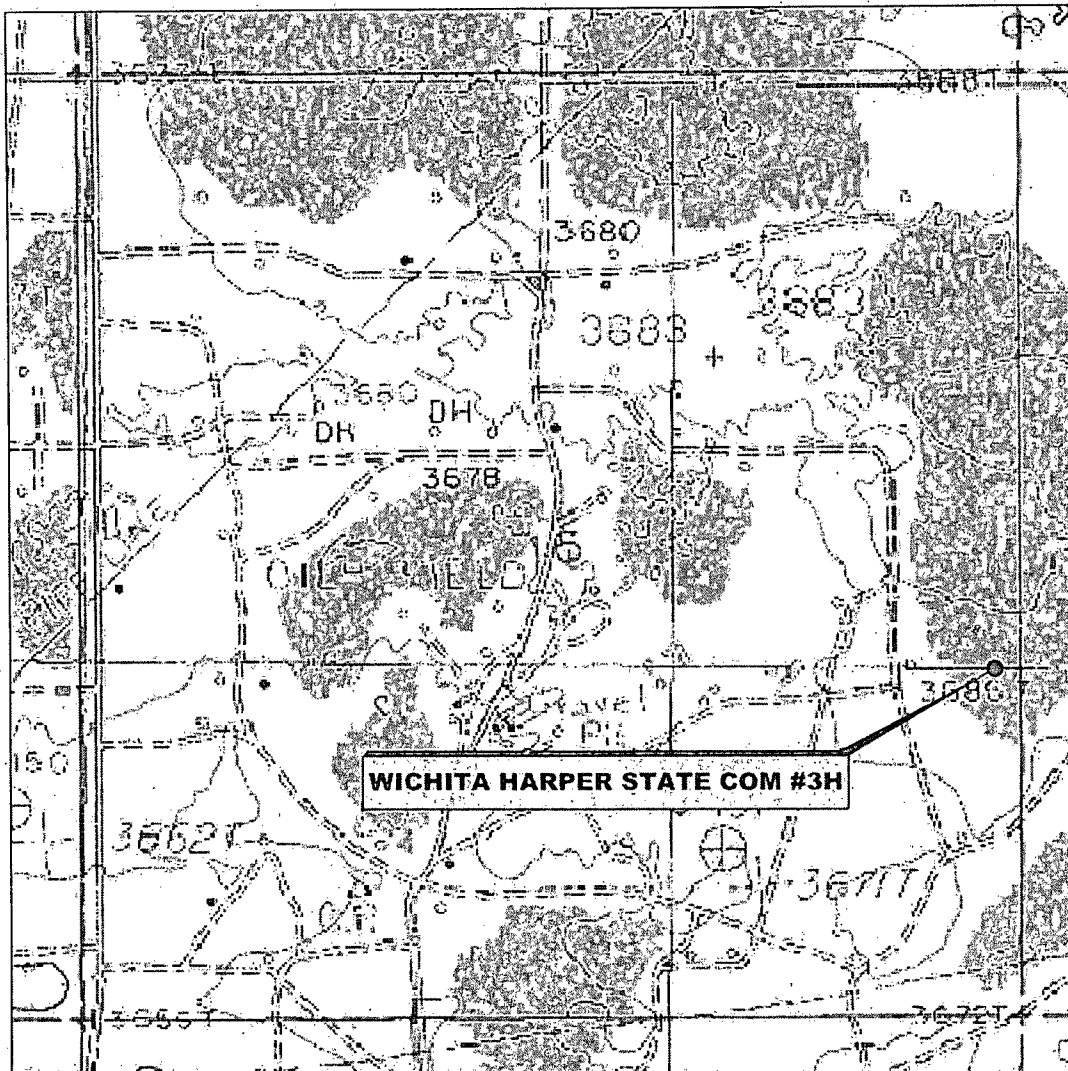
No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

CORNER DATA NAD 27 GRID - NM EAST A: FND BRASS CAP 1916 N 664812.6 - E 606985.4 B: FND BRASS CAP 1916 N 667453.2 - E 606975.6 C: FND BRASS CAP 1916 N 670092.7 - E 606967.2 D: FND BRASS CAP 1916 N 670097.0 - E 606960.9 E: FND BRASS CAP 1916 N 670102.3 - E 612250.5 F: FND BRASS CAP 1916 N 667461.9 - E 612259.6 G: FND BRASS CAP 1916 N 664822.3 - E 612268.5 H: FND BRASS CAP 1916 N 664818.5 - E 609582.4	GEODETIC DATA NAD 27 GRID - NM EAST SURFACE LOCATION N 666801.5 E 612111.7 LAT: 32.832590° N LONG: 103.968340° W BOTTOM LOCATION N 666792.8 E 607308.0	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. <i>Kelly J. Holly</i> Signature 5-21-13 Date Kelly J. Holly Printed Name kholly@concho.com E-mail Address
Project Area Producing Area S 89°53'46" W (GRID) 4804.98' (HORIZ.) Estimated Completed Interval: 1980 FSL 330 FEL		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. 3/8/13 Date of Survey Signature and Seal of Professional Surveyor: <i>Robert M. Howett</i> 19680 Certificate Number

WICHITA HARPER STATE COM #3H
(1980' FSL & 150' FEL)
Section 16, T-17-S, R-30-E,
N. M. P. M., Eddy Co., New Mexico



LOCATION VERIFICATION MAP



*SECTION 16, TWP. 17 SOUTH, RGE. 30 EAST,
N. M. P. M., EDDY COUNTY, NEW MEXICO*

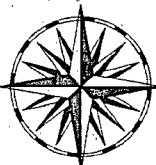
OPERATOR: COG Operating, LLC
 LEASE: WICHITA HARPER STATE COM
 WELL NO.: 3H
 ELEVATION: 3689'

LOCATION: 1980' FSL & 150' FEL
 CONTOUR INTERVAL: 10'
 USGS TOPO. SOURCE MAP:
LOCO HILLS, NM (Prov. Ed. 1985)

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NO.	REVISION	DATE
JOB NO.:	LS130087	
DWG. NO.:	130087LVM	

PROSPERITY CONSULTANTS, LLC



2251 Double Creek Drive, Suite 602, Round Rock, Texas 78664

o (512) 992-2087 f (512) 251-2518

SCALE: 1" = 1000'

DATE: 3/8/13

SURVEYED BY: GB

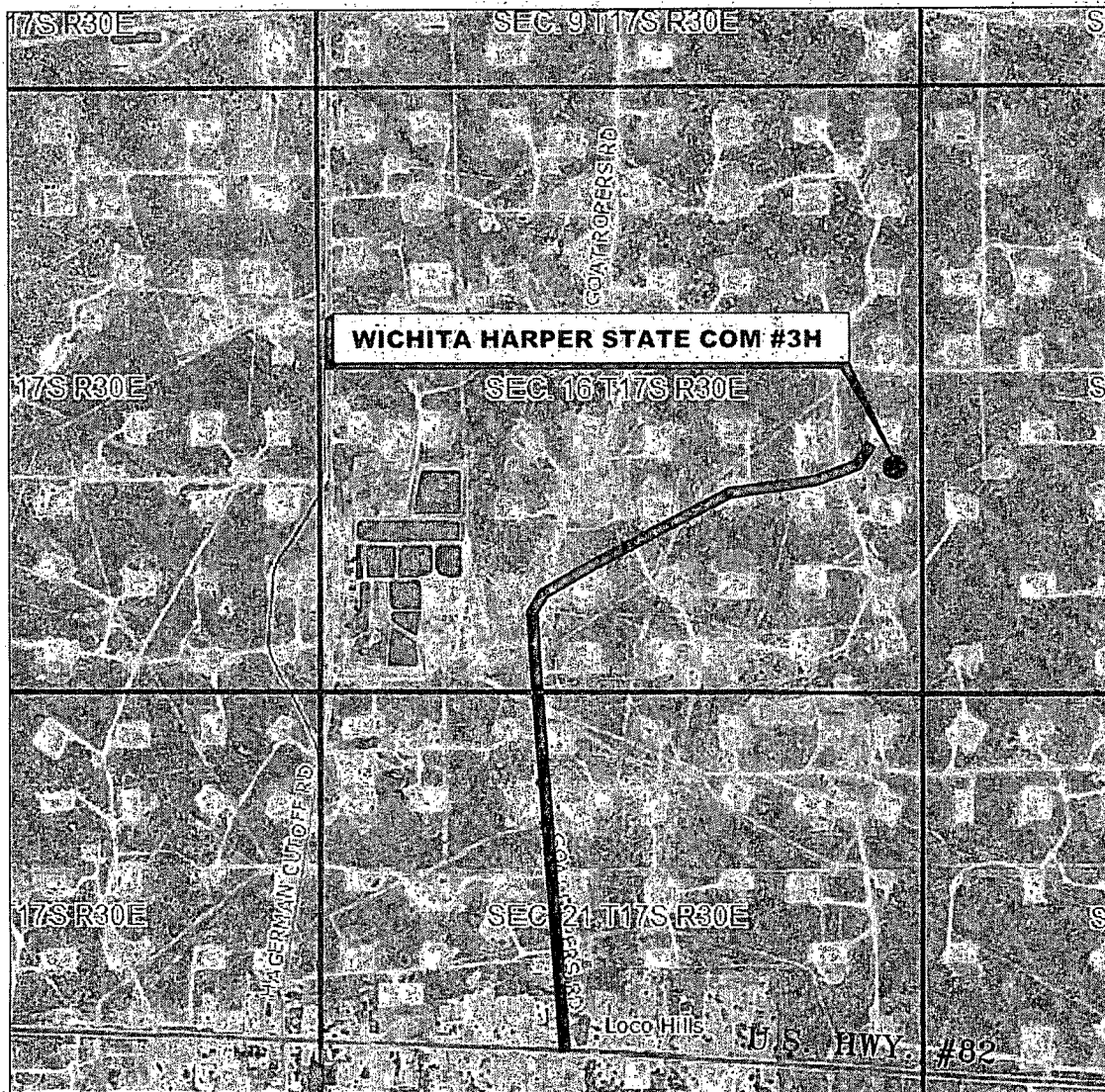
DRAWN BY: AF

APPROVED BY: LWB

SHEET : 1 OF 1

VICINITY MAP

NOT TO SCALE



*SECTION 16, TWP. 17 SOUTH, RGE. 30 EAST,
N. M. P. M., EDDY COUNTY, NEW MEXICO*

OPERATOR: COG Operating, LLC
LEASE: WICHITA HARPER STATE COM
WELL NO.: 3H

LOCATION: 1980' FSL & 150' FEL
ELEVATION: 3689'

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NO.	REVISION	DATE
JOB NO.:	LS130087	
DWG. NO.:	130087	

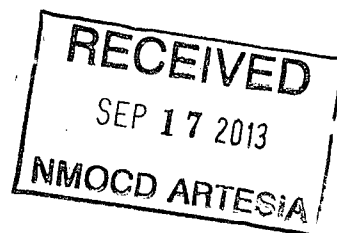
PROSPERITY CONSULTANTS, LLC



2251 Double Creek Drive, Suite 602, Round Rock, Texas 78664

o (512) 992-2087 f (512) 251-2518

SCALE: 1" = 1000'
DATE: 3/8/13
SURVEYED BY: GB
DRAWN BY: AF
APPROVED BY: LWB
SHEET : 1 OF 1



COG Operating LLC

Eddy County, New Mexico (NAD 27 NME)

Wichita Harper State Com

#3H

WB1

Plan: Plan #2 09-03-13

Surface: 1980' FSL, 150' FEL, Sec 16, T17S, R30E, Unit I

PP: 1980' FSL, 330' FEL, Sec 16, T17S, R30E, Unit I

BHL: 1980' FSL, 330' FWL, Sec 16, T17S, R30E, Unit L

Standard Planning Report

03 September, 2013





Phoenix Technology Services
Planning Report



Database:	GCR DB	Local Co-ordinate Reference:	Well #3H
Company:	COG Operating LLC	TVD Reference:	GL @ 3689.00usft
Project:	Eddy County, New Mexico (NAD 27 NME)	MD Reference:	GL @ 3689.00usft
Site:	Wichita Harper State Com.	North Reference:	Grid
Well:	#3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #2 09-03-13		

Project	Eddy County, New Mexico (NAD 27 NME)		
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	Wichita Harper State Com		
Site Position:		Northing:	666,801.50 usft
From:	Map	Easting:	612,111.70 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 49' 57.32899 N
		Longitude:	103° 58' 6.02752 W
		Grid Convergence:	0.20 °

Well	#3H		
Well Position	+N-S	0.00 usft	Northing:
	+E-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	Ground Level:
			3,689.00 usft

Wellbore	WB1		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010_14	09/03/13	7.54
			Dip Angle
			(°)
			Field Strength
			(nT)
			60.63
			48,715

Design	Plan #2 09-03-13		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.00
Vertical Section:	Depth From (TVD)	+N-S	+E-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction
			(°)
			261.66

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N-S	+E-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(usft)	(usft)	Rate	Rate	Rate	(°)	
(usft)			(usft)			(°/100usft)	(°/100usft)	(°/100usft)		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,204.21	0.00	0.00	5,204.21	0.00	0.00	0.00	0.00	0.00	0.00	
6,031.48	91.00	269.90	5,725.00	-0.96	-529.96	11.00	11.00	0.00	269.90	
10,305.88	91.00	269.90	5,650.40	-8.70	-4,803.70	0.00	0.00	0.00	0.00	PBHL-Wichita Harper



Phoenix Technology Services
Planning Report



Database:	IGCR DB	Local Co-ordinate Reference:	Well #3H
Company:	COG Operating, LLC	TVD Reference:	GL @ 3689.00usft
Project:	Eddy County, New Mexico (NAD 27 NME)	MD Reference:	GL @ 3689.00usft
Site:	Wichita Harper State Corn	North Reference:	Grid
Well:	#3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #2 09-03-13		

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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,204.21	0.00	0.00	5,204.21	0.00	0.00	0.00	0.00	0.00	0.00
KOP Start Build 11'00"									
5,300.00	10.54	269.90	5,299.46	-0.02	-8.78	8.69	11.00	11.00	0.00
5,400.00	21.54	269.90	5,395.42	-0.07	-36.37	35.99	11.00	11.00	0.00
5,500.00	32.54	269.90	5,484.36	-0.15	-81.75	80.91	11.00	11.00	0.00
5,600.00	43.54	269.90	5,563.00	-0.26	-143.28	141.80	11.00	11.00	0.00
5,650.79	49.12	269.90	5,598.05	-0.33	-180.00	178.14	11.00	11.00	0.00
PP Wichita Harper #3H									
5,700.00	54.54	269.90	5,628.45	-0.40	-218.67	216.42	11.00	11.00	0.00
5,800.00	65.54	269.90	5,678.32	-0.55	-305.18	302.03	11.00	11.00	0.00
5,900.00	76.54	269.90	5,710.77	-0.72	-399.60	395.48	11.00	11.00	0.00
6,000.00	87.54	269.90	5,724.60	-0.90	-498.49	493.34	11.00	11.00	0.00
6,015.37	89.23	269.90	5,725.03	-0.93	-513.85	508.55	11.00	11.00	0.00
TL 5734.9 TVD @ 0 VZ 91.0° Inc									
6,031.48	91.00	269.90	5,725.00	-0.96	-529.96	524.49	11.00	11.00	0.00
LP Start 4274.40 hold at 6031.48 MD									
6,100.00	91.00	269.90	5,723.80	-1.08	-598.47	592.29	0.00	0.00	0.00
6,200.00	91.00	269.90	5,722.06	-1.26	-698.45	691.24	0.00	0.00	0.00
6,300.00	91.00	269.90	5,720.31	-1.45	-798.44	790.20	0.00	0.00	0.00
6,400.00	91.00	269.90	5,718.57	-1.63	-898.42	889.15	0.00	0.00	0.00
6,500.00	91.00	269.90	5,716.82	-1.81	-998.41	988.10	0.00	0.00	0.00
6,600.00	91.00	269.90	5,715.08	-1.99	-1,098.39	1,087.06	0.00	0.00	0.00
6,700.00	91.00	269.90	5,713.33	-2.17	-1,198.38	1,186.01	0.00	0.00	0.00
6,800.00	91.00	269.90	5,711.59	-2.35	-1,298.36	1,284.96	0.00	0.00	0.00
6,900.00	91.00	269.90	5,709.84	-2.53	-1,398.35	1,383.91	0.00	0.00	0.00
7,000.00	91.00	269.90	5,708.10	-2.71	-1,498.33	1,482.87	0.00	0.00	0.00
7,100.00	91.00	269.90	5,706.35	-2.89	-1,598.32	1,581.82	0.00	0.00	0.00
7,200.00	91.00	269.90	5,704.61	-3.08	-1,698.30	1,680.77	0.00	0.00	0.00
7,300.00	91.00	269.90	5,702.86	-3.26	-1,798.29	1,779.72	0.00	0.00	0.00
7,400.00	91.00	269.90	5,701.11	-3.44	-1,898.27	1,878.68	0.00	0.00	0.00
7,500.00	91.00	269.90	5,699.37	-3.62	-1,998.25	1,977.63	0.00	0.00	0.00
7,600.00	91.00	269.90	5,697.62	-3.80	-2,098.24	2,076.58	0.00	0.00	0.00
7,700.00	91.00	269.90	5,695.88	-3.98	-2,198.22	2,175.53	0.00	0.00	0.00
7,800.00	91.00	269.90	5,694.13	-4.16	-2,298.21	2,274.49	0.00	0.00	0.00
7,900.00	91.00	269.90	5,692.39	-4.34	-2,398.19	2,373.44	0.00	0.00	0.00
8,000.00	91.00	269.90	5,690.64	-4.52	-2,498.18	2,472.39	0.00	0.00	0.00
8,100.00	91.00	269.90	5,688.90	-4.71	-2,598.16	2,571.34	0.00	0.00	0.00
8,200.00	91.00	269.90	5,687.15	-4.89	-2,698.15	2,670.30	0.00	0.00	0.00
8,300.00	91.00	269.90	5,685.41	-5.07	-2,798.13	2,769.25	0.00	0.00	0.00
8,400.00	91.00	269.90	5,683.66	-5.25	-2,898.12	2,868.20	0.00	0.00	0.00
8,500.00	91.00	269.90	5,681.92	-5.43	-2,998.10	2,967.15	0.00	0.00	0.00
8,600.00	91.00	269.90	5,680.17	-5.61	-3,098.09	3,066.11	0.00	0.00	0.00
8,700.00	91.00	269.90	5,678.43	-5.79	-3,198.07	3,165.06	0.00	0.00	0.00
8,800.00	91.00	269.90	5,676.68	-5.97	-3,298.05	3,264.01	0.00	0.00	0.00
8,900.00	91.00	269.90	5,674.94	-6.15	-3,398.04	3,362.96	0.00	0.00	0.00
9,000.00	91.00	269.90	5,673.19	-6.34	-3,498.02	3,461.92	0.00	0.00	0.00
9,100.00	91.00	269.90	5,671.45	-6.52	-3,598.01	3,560.87	0.00	0.00	0.00
9,200.00	91.00	269.90	5,669.70	-6.70	-3,697.99	3,659.82	0.00	0.00	0.00
9,300.00	91.00	269.90	5,667.96	-6.88	-3,797.98	3,758.77	0.00	0.00	0.00
9,400.00	91.00	269.90	5,666.21	-7.06	-3,897.96	3,857.73	0.00	0.00	0.00
9,500.00	91.00	269.90	5,664.46	-7.24	-3,997.95	3,956.68	0.00	0.00	0.00
9,600.00	91.00	269.90	5,662.72	-7.42	-4,097.93	4,055.63	0.00	0.00	0.00
9,700.00	91.00	269.90	5,660.97	-7.60	-4,197.92	4,154.58	0.00	0.00	0.00



Phoenix Technology Services Planning Report



Database:	GCR DB	Local Co-ordinate Reference:	Well #3H
Company:	COG Operating LLC	TVD Reference:	GL @ 3689.00usft
Project:	Eddy County, New Mexico (NAD 27 NME)	MD Reference:	GL @ 3689.00usft
Site:	Wichita Harper State Com	North Reference:	Grid
Well:	#3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #2-09-03-13		

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)
9,800.00	91.00	269.90	5,659.23	-7.78	-4,297.90	4,253.54	0.00	0.00	0.00
9,900.00	91.00	269.90	5,657.48	-7.97	-4,397.88	4,352.49	0.00	0.00	0.00
10,000.00	91.00	269.90	5,655.74	-8.15	-4,497.87	4,451.44	0.00	0.00	0.00
10,100.00	91.00	269.90	5,653.99	-8.33	-4,597.85	4,550.39	0.00	0.00	0.00
10,200.00	91.00	269.90	5,652.25	-8.51	-4,697.84	4,649.35	0.00	0.00	0.00
10,300.00	91.00	269.90	5,650.50	-8.69	-4,797.82	4,748.30	0.00	0.00	0.00
10,305.88	91.00	269.90	5,650.40	-8.70	-4,803.70	4,754.12	0.00	0.00	0.00
TD at 10305.88 PBHL-Wichita Harper #3H									

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-Wichita Harper #3H	0.00	0.00	5,598.05	-0.33	-180.00	666,801.18	611,931.70	32° 49' 57.33191 N	103° 58' 8.13713 W
- plan hits target center									
- Point									
PBHL-Wichita Harper #3	0.00	0.00	5,650.40	-8.70	-4,803.70	666,792.80	607,308.00	32° 49' 57.40356 N	103° 59' 2.32730 W
- plan hits target center									
- Point									

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
6,015.37	5,725.03	TL, 5734.9' TVD @ 0 VZ, 91.0° Inc		-1.00	269.90	

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,204.21	5,204.21	0.00	0.00	KOP Start Build 11.00
6,031.48	5,725.00	-0.96	-529.96	LP Start 4274.40 hold at 6031.48 MD
10,305.88	5,650.40	-8.70	-4,803.70	TD at 10305.88



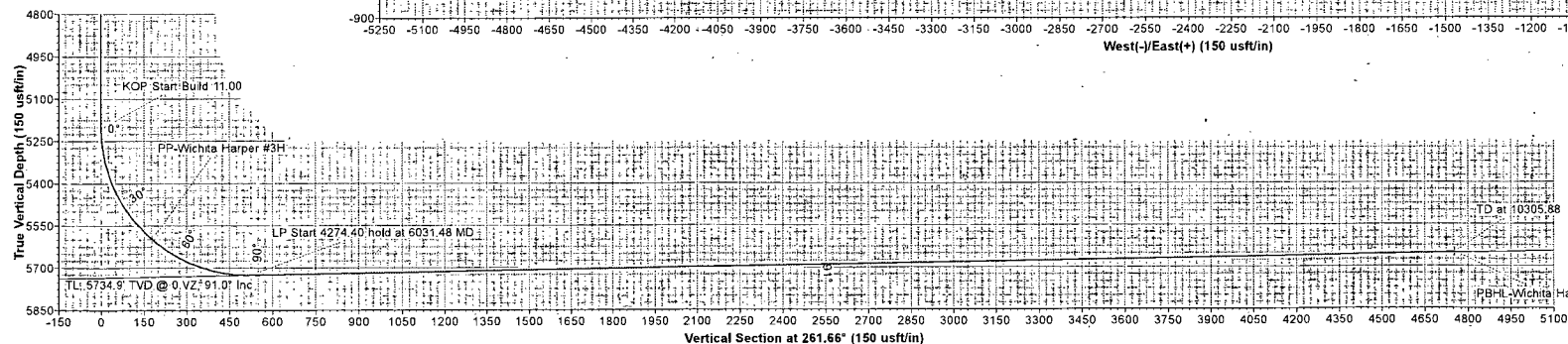
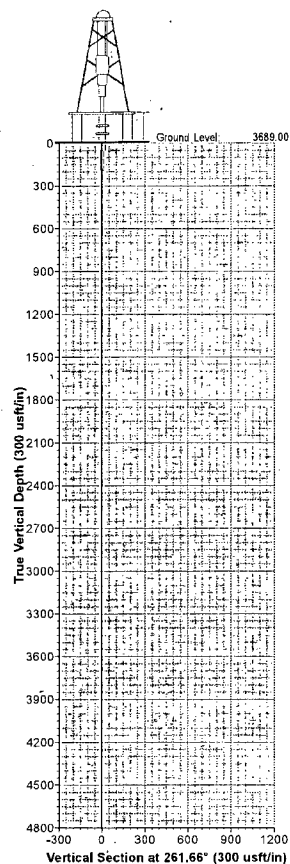
Project: Eddy County, New Mexico (NAD 27 NME)
Site: Wichita Harper State Com
Well: #3H
Wellbore: WB1
Design: Plan #2 09-03-13



PHOENIX
TECHNOLOGY SERVICES



Azimuths to Grid North
True North: -0.20°
Magnetic North: 7.34°
Magnetic Field
Strength: 48714.75nT
Dip Angle: 60.63°
Date: 09/03/2013
Model: IGRF2010_14



WELL DETAILS											
+N-S		+E-W		Northing	Ground Level: 3689.00		Latitude	Longitude			
0.00		0.00		666801.50	Easting 612111.70		32° 49' 57.32899 N	103° 58' 6.02752 W			

SECTION DETAILS											
Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSect	Target	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2	5204.21	0.00	0.00	5204.21	0.00	0.00	0.00	0.00	0.00		KOP Start Build 11.00
3	6031.48	91.00	269.90	5725.00	-0.96	-529.96	11.00	269.90	524.40		LP Start 4274.40 hold at 6031.48 MD
4	10305.88	91.00	269.90	5650.40	-8.70	-4803.70	0.00	0.00	4754.12	PBHL-Wichita Harper #3H	TD at 10305.88

DESIGN TARGET DETAILS											
Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude	Shape			
PP-Wichita Harper #3H	5598.05	-0.33	-180.00	666801.17	611931.70	32° 49' 57.33191 N	103° 58' 8.13713 W	Point			
PBHL-Wichita Harper #3H		- plan hits target center									
	5650.40	-8.70	-4803.70	666792.80	607308.00	32° 49' 57.40356 N	103° 59' 2.32730 W	Point			
		- plan hits target center									

PROJECT DETAILS: Eddy County, New Mexico (NAD 27 NME)											
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											
SITE DETAILS: Wichita Harper State Com											
Site Centre Northing: 666801.50											
Easting: 612111.70											
Positional Uncertainty: 0.00											
Convergence: 0.20											
Local North: Grid											
FORMATION TOP DETAILS											
TVDPath	MDPath	Formation	DipAngle	DipDir							
5725.03	6015.37	TL 5734.9° TVD @ 0 VZ 91.0° Inc	-1.00	269.90							

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 #3H, Grid North											
Latitude: 32° 49' 57.32899 N											
Longitude: 103° 58' 6.02752 W											
Grid East: 612111.70											
Grid North: 666801.50											
Scale Factor: 1.000											
Geomagnetic Model: IGRF2010_14											
Sample Date: 03-Sep-13											
Magnetic Declination: 7.54°											
Dip Angle from Horizontal: 60.63°											
Magnetic Field Strength: 48715											
To convert a Magnetic Direction to a Grid Direction, Add 7.34°											
To convert a Magnetic Direction to a True Direction, Add 7.54° East											
To convert a True Direction to a Grid Direction, Subtract 0.20°											
LEGEND											
— Plan #2 09-03-13											

