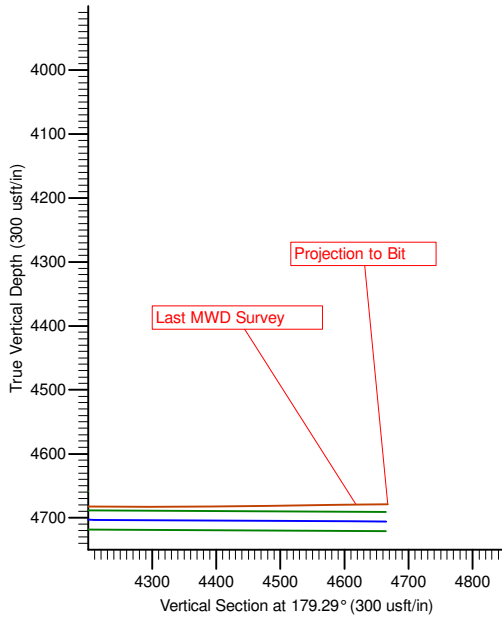
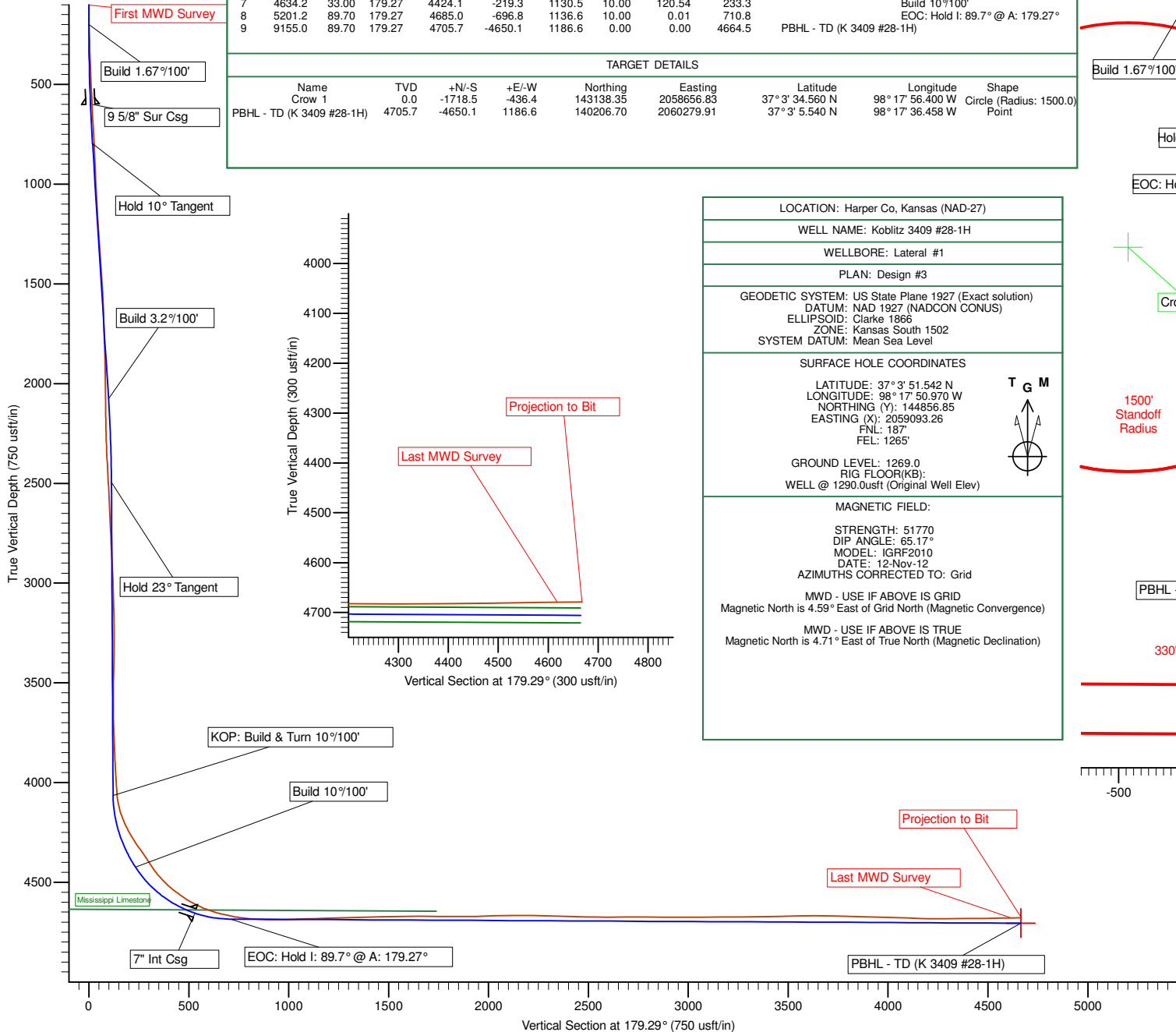


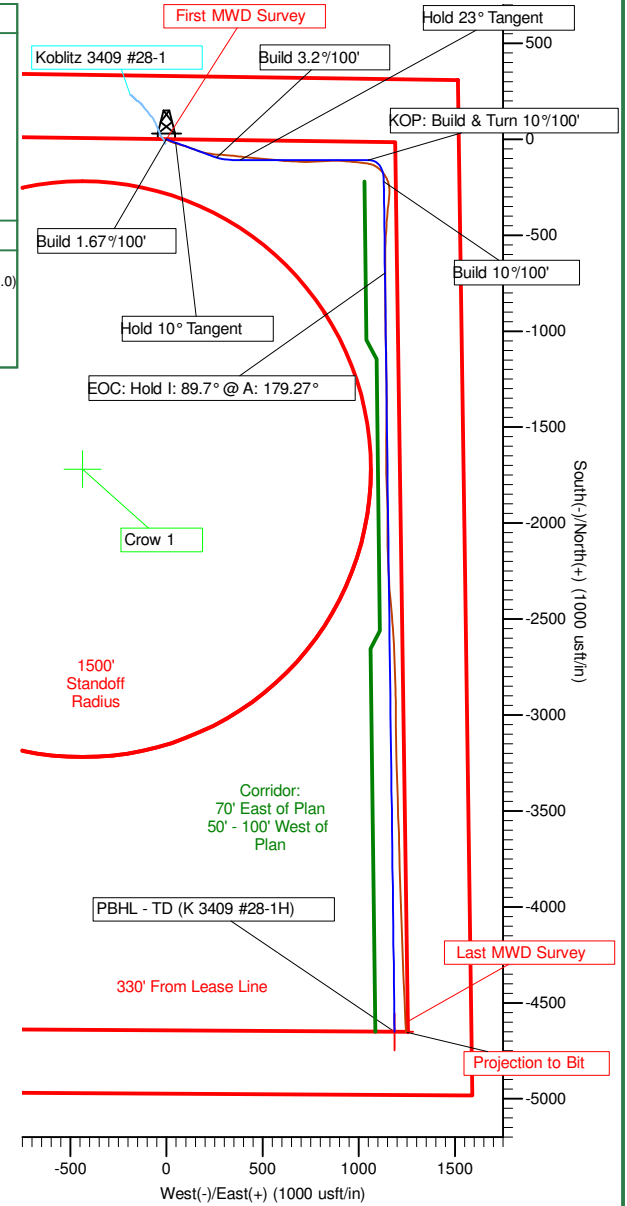


PLAN SECTION DETAILS											
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0		
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0		Build 1.67°/100'
3	798.8	10.00	110.00	795.8	-17.8	49.0	1.67	110.00	18.4		Hold 10° Tangent
4	2098.8	10.00	110.00	2076.0	-95.0	261.1	0.00	0.00	98.3		Build 3.2°/100'
5	2536.4	23.00	90.00	2495.0	-108.1	382.9	3.20	-33.52	112.8		Hold 23° Tangent
6	4242.0	23.00	90.00	4065.0	-108.1	1049.3	0.00	0.00	121.1		KOP: Build & Turn 10°/100'
7	4634.2	33.00	179.27	4424.1	-219.3	1130.5	10.00	120.54	233.3		Build 10°/100'
8	5201.2	89.70	179.27	4685.0	-696.8	1136.6	10.00	0.01	710.8		EOC: Hold I: 89.7° @ A: 179.27°
9	9155.0	89.70	179.27	4705.7	-4650.1	1186.6	0.00	0.00	4664.5		PBHL - TD (K 3409 #28-1H)

TARGET DETAILS											
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape			
Crow 1	0.0	-1718.5	-436.4	143138.35	2058656.83	37° 3' 34.560 N	98° 17' 56.400 W	Circle (Radius: 1500.0)			
PBHL - TD (K 3409 #28-1H)	4705.7	-4650.1	1186.6	140206.70	2060279.91	37° 3' 5.540 N	98° 17' 36.458 W	Point			



LOCATION: Harper Co, Kansas (NAD-27)
WELL NAME: Koblitz 3409 #28-1H
WELLBORE: Lateral #1
PLAN: Design #3
GEODETTIC SYSTEM: US State Plane 1927 (Exact solution)
DATUM: NAD 1927 (NADCON CONUS)
ELLIPSOID: Clarke 1866
ZONE: Kansas South 1502
SYSTEM DATUM: Mean Sea Level
SURFACE HOLE COORDINATES
LATITUDE: 37° 3' 51.542 N
LONGITUDE: 98° 17' 50.970 W
NORTHING (Y): 144856.85
EASTING (X): 2059093.26
FNL: 187
FEL: 1265
GROUND LEVEL: 1269.0
RIG FLOOR(KB):
WELL @ 1290.0usft (Original Well Elev)
MAGNETIC FIELD:
STRENGTH: 51770
DIP ANGLE: 65.17°
MODEL: IGRF2010
DATE: 12-Nov-12
AZIMUTHS CORRECTED TO: Grid
MWD - USE IF ABOVE IS GRID
Magnetic North is 4.59° East of Grid North (Magnetic Convergence)
MWD - USE IF ABOVE IS TRUE
Magnetic North is 4.71° East of True North (Magnetic Declination)





calmena

ENERGY SERVICES

Shell E&P Company

Harper Co, Kansas (NAD-27)

Koblitz 3409 #28-1H

Koblitz 3409 #28-1H

Lateral #1

Survey: Survey #1

Standard Survey Report

17 December, 2012





Company:	Shell E&P Company	Local Co-ordinate Reference:	Site Koblitz 3409 #28-1H
Project:	Harper Co, Kansas (NAD-27)	TVD Reference:	WELL @ 1290.0usft (Original Well Elev)
Site:	Koblitz 3409 #28-1H	MD Reference:	WELL @ 1290.0usft (Original Well Elev)
Well:	Koblitz 3409 #28-1H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	Database:	EDM 5000.1 Single User Db

Project	Harper Co, Kansas (NAD-27)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Kansas South 1502		

Site	Koblitz 3409 #28-1H, Sec 22, T-33S, R-7W				
Site Position:		Northing:	144,856.85 usft	Latitude:	37° 3' 51.542 N
From:	Map	Easting:	2,059,093.26 usft	Longitude:	98° 17' 50.970 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.12 °

Well	Koblitz 3409 #28-1H					
Well Position	+N/-S	0.0 usft	Northing:	144,856.85 usft	Latitude:	37° 3' 51.542 N
	+E/-W	0.0 usft	Easting:	2,059,093.26 usft	Longitude:	98° 17' 50.970 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	1,290.0 usft	Ground Level:	1,269.0 usft

Wellbore	Lateral #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/12/2012	4.71	65.17	51,770

Design	Lateral #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	179.29	

Survey Program	Date	12/17/2012			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
103.0	9,100.0	Survey #1 (Lateral #1)	MWD	MWD - Calmena	

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	
103.0	0.20	181.20	103.0	-0.2	0.0	0.2	0.19	0.19	0.00	
First MWD Survey										
133.0	0.50	112.50	133.0	-0.3	0.1	0.3	1.55	1.00	-229.00	
167.0	1.30	132.50	167.0	-0.6	0.5	0.6	2.49	2.35	58.82	
199.0	1.90	120.10	199.0	-1.1	1.3	1.1	2.15	1.88	-38.75	
230.0	2.60	124.60	230.0	-1.8	2.3	1.8	2.33	2.26	14.52	
261.0	3.20	121.00	260.9	-2.6	3.6	2.7	2.02	1.94	-11.61	
292.0	3.70	119.30	291.9	-3.5	5.2	3.6	1.65	1.61	-5.48	
323.0	4.20	116.60	322.8	-4.5	7.1	4.6	1.72	1.61	-8.71	
354.0	4.60	115.90	353.7	-5.6	9.2	5.7	1.30	1.29	-2.26	



Company:	Shell E&P Company	Local Co-ordinate Reference:	Site Koblitz 3409 #28-1H
Project:	Harper Co, Kansas (NAD-27)	TVD Reference:	WELL @ 1290.0usft (Original Well Elev)
Site:	Koblitz 3409 #28-1H	MD Reference:	WELL @ 1290.0usft (Original Well Elev)
Well:	Koblitz 3409 #28-1H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	Database:	EDM 5000.1 Single User Db

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)
385.0	4.90	115.60	384.6	-6.7	11.6	6.9	0.97	0.97	-0.97
416.0	5.20	113.70	415.5	-7.8	14.0	8.0	1.11	0.97	-6.13
448.0	5.90	113.30	447.3	-9.1	16.9	9.3	2.19	2.19	-1.25
518.0	6.30	114.60	516.9	-12.1	23.7	12.4	0.60	0.57	1.86
549.0	6.10	114.60	547.7	-13.5	26.7	13.8	0.65	-0.65	0.00
612.0	7.20	111.00	610.3	-16.3	33.4	16.7	1.87	1.75	-5.71
707.0	9.80	107.10	704.3	-20.8	46.7	21.4	2.80	2.74	-4.11
801.0	9.40	106.40	797.0	-25.3	61.7	26.1	0.44	-0.43	-0.74
896.0	8.50	103.60	890.8	-29.2	76.0	30.1	1.05	-0.95	-2.95
990.0	9.50	108.20	983.6	-33.2	90.1	34.3	1.31	1.06	4.89
1,083.0	9.20	107.50	1,075.4	-37.9	104.5	39.2	0.34	-0.32	-0.75
1,177.0	9.90	110.10	1,168.1	-42.9	119.3	44.4	0.87	0.74	2.77
1,272.0	10.00	110.50	1,261.7	-48.6	134.7	50.3	0.13	0.11	0.42
1,366.0	10.40	111.30	1,354.2	-54.5	150.2	56.4	0.45	0.43	0.85
1,461.0	10.20	113.00	1,447.7	-60.9	165.9	63.0	0.38	-0.21	1.79
1,555.0	10.80	105.30	1,540.1	-66.5	182.1	68.8	1.62	0.64	-8.19
1,650.0	10.00	102.10	1,633.5	-70.6	198.8	73.1	1.04	-0.84	-3.37
1,744.0	9.60	98.60	1,726.2	-73.5	214.5	76.1	0.76	-0.43	-3.72
1,839.0	9.50	97.70	1,819.8	-75.7	230.1	78.6	0.19	-0.11	-0.95
1,933.0	9.60	97.30	1,912.5	-77.7	245.5	80.8	0.13	0.11	-0.43
2,028.0	9.10	96.50	2,006.3	-79.6	260.9	82.8	0.54	-0.53	-0.84
2,122.0	10.10	90.80	2,099.0	-80.6	276.5	84.0	1.47	1.06	-6.06
2,186.0	11.70	91.90	2,161.8	-80.9	288.6	84.4	2.52	2.50	1.72
2,217.0	13.50	94.00	2,192.0	-81.2	295.3	84.9	5.99	5.81	6.77
2,249.0	15.70	94.00	2,223.0	-81.8	303.4	85.5	6.88	6.88	0.00
2,280.0	17.80	94.40	2,252.7	-82.4	312.3	86.3	6.78	6.77	1.29
2,312.0	19.00	95.30	2,283.1	-83.3	322.4	87.3	3.85	3.75	2.81
2,343.0	20.20	95.50	2,312.3	-84.3	332.7	88.4	3.88	3.87	0.65
2,375.0	21.30	95.80	2,342.2	-85.4	344.0	89.6	3.45	3.44	0.94
2,406.0	22.00	95.40	2,371.0	-86.5	355.4	90.9	2.31	2.26	-1.29
2,438.0	22.50	96.80	2,400.6	-87.8	367.4	92.3	2.28	1.56	4.38
2,469.0	22.90	96.90	2,429.2	-89.2	379.3	93.9	1.30	1.29	0.32
2,501.0	23.60	96.70	2,458.6	-90.7	391.8	95.6	2.20	2.19	-0.63
2,532.0	23.60	96.50	2,487.0	-92.1	404.2	97.1	0.26	0.00	-0.65
2,564.0	23.30	96.20	2,516.4	-93.5	416.8	98.7	1.01	-0.94	-0.94
2,595.0	23.20	96.40	2,544.9	-94.9	429.0	100.2	0.41	-0.32	0.65
2,690.0	22.20	95.00	2,632.5	-98.5	465.5	104.3	1.20	-1.05	-1.47
2,784.0	22.80	95.40	2,719.3	-101.8	501.3	108.0	0.66	0.64	0.43
2,879.0	24.00	95.30	2,806.5	-105.3	538.9	112.0	1.26	1.26	-0.11
2,974.0	24.20	95.20	2,893.3	-108.9	577.5	116.0	0.21	0.21	-0.11
3,068.0	24.10	94.70	2,979.0	-112.2	615.8	119.8	0.24	-0.11	-0.53
3,163.0	22.80	93.30	3,066.2	-114.8	653.5	122.9	1.49	-1.37	-1.47
3,257.0	21.30	92.20	3,153.3	-116.5	688.8	125.1	1.66	-1.60	-1.17



Company:	Shell E&P Company	Local Co-ordinate Reference:	Site Koblitz 3409 #28-1H
Project:	Harper Co, Kansas (NAD-27)	TVD Reference:	WELL @ 1290.0usft (Original Well Elev)
Site:	Koblitz 3409 #28-1H	MD Reference:	WELL @ 1290.0usft (Original Well Elev)
Well:	Koblitz 3409 #28-1H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	Database:	EDM 5000.1 Single User Db

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)
3,352.0	21.70	90.00	3,241.7	-117.2	723.6	126.2	0.95	0.42	-2.32
3,446.0	21.90	87.90	3,329.0	-116.6	758.5	125.9	0.86	0.21	-2.23
3,541.0	21.80	86.10	3,417.1	-114.7	793.8	124.5	0.71	-0.11	-1.89
3,635.0	22.10	88.20	3,504.3	-113.0	828.9	123.2	0.89	0.32	2.23
3,730.0	21.10	86.90	3,592.7	-111.5	863.8	122.2	1.17	-1.05	-1.37
3,824.0	21.60	93.70	3,680.2	-111.7	898.0	122.8	2.69	0.53	7.23
3,901.0	21.10	95.60	3,751.9	-113.9	925.9	125.4	1.11	-0.65	2.47
3,933.0	21.10	95.10	3,781.8	-115.0	937.4	126.6	0.56	0.00	-1.56
3,996.0	22.20	94.10	3,840.4	-116.9	960.5	128.8	1.84	1.75	-1.59
4,026.0	22.10	94.40	3,868.1	-117.7	971.8	129.8	0.50	-0.33	1.00
4,059.0	24.10	95.80	3,898.5	-118.9	984.7	131.1	6.28	6.06	4.24
4,091.0	24.90	96.70	3,927.6	-120.3	997.9	132.7	2.76	2.50	2.81
4,122.0	25.10	96.60	3,955.7	-121.8	1,010.9	134.4	0.66	0.65	-0.32
4,154.0	24.40	95.90	3,984.8	-123.3	1,024.2	136.0	2.37	-2.19	-2.19
4,185.0	23.80	96.10	4,013.1	-124.6	1,036.8	137.5	1.95	-1.94	0.65
4,217.0	23.60	99.40	4,042.4	-126.4	1,049.6	139.4	4.19	-0.63	10.31
4,248.0	23.50	106.30	4,070.8	-129.1	1,061.6	142.2	8.89	-0.32	22.26
4,280.0	24.10	111.70	4,100.1	-133.3	1,073.8	146.6	7.06	1.88	16.88
4,311.0	26.10	119.60	4,128.2	-139.0	1,085.6	152.5	12.58	6.45	25.48
4,343.0	28.60	126.80	4,156.6	-147.1	1,097.9	160.7	12.94	7.81	22.50
4,374.0	30.40	131.60	4,183.6	-156.7	1,109.7	170.5	9.58	5.81	15.48
4,406.0	31.70	138.10	4,211.0	-168.4	1,121.4	182.3	11.23	4.06	20.31
4,437.0	32.90	144.50	4,237.2	-181.3	1,131.7	195.3	11.69	3.87	20.65
4,469.0	34.00	150.30	4,263.9	-196.2	1,141.2	210.3	10.56	3.44	18.13
4,500.0	34.40	157.30	4,289.6	-211.8	1,148.9	226.0	12.75	1.29	22.58
4,532.0	34.80	164.70	4,315.9	-228.9	1,154.8	243.2	13.18	1.25	23.13
4,563.0	35.70	171.80	4,341.2	-246.4	1,158.4	260.8	13.53	2.90	22.90
4,595.0	34.80	177.80	4,367.4	-264.8	1,160.1	279.1	11.18	-2.81	18.75
4,626.0	33.10	183.40	4,393.1	-282.1	1,159.9	296.4	11.48	-5.48	18.06
4,658.0	33.70	185.10	4,419.8	-299.6	1,158.6	314.0	3.47	1.88	5.31
4,689.0	37.40	186.90	4,445.0	-317.6	1,156.7	331.9	12.40	11.94	5.81
4,721.0	41.10	187.40	4,469.8	-337.7	1,154.2	351.9	11.60	11.56	1.56
4,752.0	44.40	186.70	4,492.6	-358.5	1,151.6	372.8	10.75	10.65	-2.26
4,784.0	47.60	185.20	4,514.8	-381.4	1,149.2	395.6	10.55	10.00	-4.69
4,815.0	50.70	183.80	4,535.1	-404.8	1,147.4	419.0	10.57	10.00	-4.52
4,847.0	53.10	183.20	4,554.8	-429.9	1,145.8	444.1	7.64	7.50	-1.88
4,878.0	55.80	183.60	4,572.8	-455.1	1,144.4	469.3	8.77	8.71	1.29
4,910.0	58.80	184.00	4,590.1	-482.0	1,142.6	496.1	9.43	9.38	1.25
4,941.0	61.90	183.60	4,605.4	-508.8	1,140.8	522.9	10.06	10.00	-1.29
4,972.0	64.70	182.10	4,619.4	-536.5	1,139.4	550.6	10.01	9.03	-4.84
5,004.0	67.70	181.00	4,632.3	-565.8	1,138.6	579.8	9.89	9.38	-3.44
5,035.0	71.10	180.60	4,643.2	-594.8	1,138.2	608.8	11.03	10.97	-1.29
5,067.0	74.60	179.90	4,652.6	-625.4	1,138.1	639.4	11.14	10.94	-2.19



Company:	Shell E&P Company	Local Co-ordinate Reference:	Site Koblitz 3409 #28-1H
Project:	Harper Co, Kansas (NAD-27)	TVD Reference:	WELL @ 1290.0usft (Original Well Elev)
Site:	Koblitz 3409 #28-1H	MD Reference:	WELL @ 1290.0usft (Original Well Elev)
Well:	Koblitz 3409 #28-1H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	Database:	EDM 5000.1 Single User Db

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)
5,098.0	76.70	179.70	4,660.3	-655.4	1,138.2	669.4	6.80	6.77	-0.65
5,130.0	77.60	179.80	4,667.4	-686.6	1,138.3	700.6	2.83	2.81	0.31
5,162.0	79.90	180.10	4,673.7	-718.0	1,138.4	732.0	7.25	7.19	0.94
5,193.0	83.00	180.00	4,678.3	-748.6	1,138.3	762.7	10.01	10.00	-0.32
5,275.0	86.30	180.10	4,685.9	-830.2	1,138.3	844.3	4.03	4.02	0.12
5,307.0	87.90	179.50	4,687.5	-862.2	1,138.4	876.2	5.34	5.00	-1.88
5,338.0	89.20	179.30	4,688.3	-893.2	1,138.7	907.2	4.24	4.19	-0.65
5,370.0	90.60	179.60	4,688.4	-925.2	1,139.0	939.2	4.47	4.38	0.94
5,401.0	91.70	179.50	4,687.8	-956.2	1,139.2	970.2	3.56	3.55	-0.32
5,433.0	92.20	179.20	4,686.7	-988.2	1,139.6	1,002.2	1.82	1.56	-0.94
5,464.0	92.00	178.80	4,685.5	-1,019.1	1,140.1	1,033.2	1.44	-0.65	-1.29
5,527.0	91.70	178.80	4,683.5	-1,082.1	1,141.5	1,096.2	0.48	-0.48	0.00
5,559.0	91.60	178.90	4,682.6	-1,114.1	1,142.1	1,128.1	0.44	-0.31	0.31
5,622.0	91.70	178.90	4,680.8	-1,177.0	1,143.3	1,191.1	0.16	0.16	0.00
5,717.0	91.40	178.80	4,678.2	-1,272.0	1,145.2	1,286.1	0.33	-0.32	-0.11
5,810.0	91.40	180.20	4,675.9	-1,364.9	1,146.0	1,379.0	1.50	0.00	1.51
5,903.0	91.90	181.50	4,673.2	-1,457.9	1,144.7	1,472.0	1.50	0.54	1.40
5,997.0	90.40	180.80	4,671.4	-1,551.9	1,142.8	1,565.9	1.76	-1.60	-0.74
6,090.0	89.80	179.60	4,671.2	-1,644.8	1,142.4	1,658.9	1.44	-0.65	-1.29
6,183.0	89.90	179.00	4,671.4	-1,737.8	1,143.6	1,751.9	0.65	0.11	-0.65
6,276.0	89.70	177.80	4,671.8	-1,830.8	1,146.2	1,844.9	1.31	-0.22	-1.29
6,370.0	90.90	178.50	4,671.3	-1,924.8	1,149.2	1,938.8	1.48	1.28	0.74
6,462.0	92.60	180.20	4,668.5	-2,016.7	1,150.3	2,030.8	2.61	1.85	1.85
6,556.0	89.80	179.20	4,666.5	-2,110.7	1,150.7	2,124.8	3.16	-2.98	-1.06
6,648.0	89.00	177.90	4,667.5	-2,202.6	1,153.1	2,216.7	1.66	-0.87	-1.41
6,742.0	88.60	176.60	4,669.4	-2,296.5	1,157.6	2,310.7	1.45	-0.43	-1.38
6,837.0	88.30	174.90	4,672.0	-2,391.2	1,164.6	2,405.4	1.82	-0.32	-1.79
6,931.0	88.80	175.00	4,674.4	-2,484.8	1,172.9	2,499.1	0.54	0.53	0.11
7,026.0	90.30	176.40	4,675.1	-2,579.5	1,180.0	2,593.9	2.16	1.58	1.47
7,121.0	90.60	178.00	4,674.4	-2,674.4	1,184.7	2,688.9	1.71	0.32	1.68
7,215.0	89.60	178.10	4,674.2	-2,768.3	1,187.9	2,782.9	1.07	-1.06	0.11
7,310.0	89.20	178.00	4,675.2	-2,863.3	1,191.1	2,877.8	0.43	-0.42	-0.11
7,404.0	90.20	180.00	4,675.7	-2,957.3	1,192.7	2,971.8	2.38	1.06	2.13
7,499.0	90.60	179.70	4,675.0	-3,052.3	1,193.0	3,066.8	0.53	0.42	-0.32
7,594.0	90.30	179.00	4,674.3	-3,147.3	1,194.1	3,161.8	0.80	-0.32	-0.74
7,688.0	90.20	178.10	4,673.9	-3,241.2	1,196.4	3,255.8	0.96	-0.11	-0.96
7,783.0	90.50	177.90	4,673.3	-3,336.2	1,199.7	3,350.8	0.38	0.32	-0.21
7,877.0	91.20	178.30	4,671.9	-3,430.1	1,202.9	3,444.7	0.86	0.74	0.43
7,972.0	91.50	178.00	4,669.7	-3,525.0	1,205.9	3,539.7	0.45	0.32	-0.32
8,067.0	89.60	177.90	4,668.8	-3,620.0	1,209.3	3,634.7	2.00	-2.00	-0.11
8,161.0	89.20	179.00	4,669.7	-3,713.9	1,211.9	3,728.6	1.25	-0.43	1.17
8,254.0	88.50	178.40	4,671.6	-3,806.9	1,214.0	3,821.6	0.99	-0.75	-0.65
8,349.0	88.50	178.30	4,674.1	-3,901.8	1,216.7	3,916.6	0.11	0.00	-0.11
8,443.0	88.30	178.30	4,676.7	-3,995.7	1,219.5	4,010.5	0.21	-0.21	0.00



Company:	Shell E&P Company	Local Co-ordinate Reference:	Site Koblitz 3409 #28-1H
Project:	Harper Co, Kansas (NAD-27)	TVD Reference:	WELL @ 1290.0usft (Original Well Elev)
Site:	Koblitz 3409 #28-1H	MD Reference:	WELL @ 1290.0usft (Original Well Elev)
Well:	Koblitz 3409 #28-1H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	Database:	EDM 5000.1 Single User Db

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)
8,538.0	87.70	178.10	4,680.0	-4,090.6	1,222.5	4,105.4	0.67	-0.63	-0.21
8,633.0	89.30	177.80	4,682.5	-4,185.5	1,225.9	4,200.4	1.71	1.68	-0.32
8,727.0	90.40	178.10	4,682.8	-4,279.5	1,229.2	4,294.4	1.21	1.17	0.32
8,822.0	90.20	177.60	4,682.3	-4,374.4	1,232.8	4,389.3	0.57	-0.21	-0.53
8,916.0	90.90	177.20	4,681.4	-4,468.3	1,237.1	4,483.3	0.86	0.74	-0.43
9,011.0	90.80	177.30	4,680.0	-4,563.2	1,241.6	4,578.2	0.15	-0.11	0.11
9,051.0	90.90	177.10	4,679.4	-4,603.1	1,243.6	4,618.2	0.56	0.25	-0.50
Last MWD Survey									
9,100.0	90.90	177.10	4,678.6	-4,652.0	1,246.1	4,667.1	0.00	0.00	0.00
Projection to Bit									

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
103.0	103.0	-0.2	0.0	First MWD Survey
9,051.0	4,679.4	-4,603.1	1,243.6	Last MWD Survey
9,100.0	4,678.6	-4,652.0	1,246.1	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____