30-015-40194

NM OIL CONSERVATION
ARTESIA DISTRICT
APR 09 2015
RECEIVED

EMKEY COMPANIES

North Seven Rivers (NAD27)
Eddy County, NM (Grid North)
Stiletto "16" State #7H
VH - Job #321114-KW-1304

Survey: Gyro

Regulatory Report (Grid North)

This survey is correct to the best of my knowledge and is supported by actual field data.

Jami Matthaei

Notarized this date 31st of December, 2014.

Carrie Reed

Notary Signature
County of Midland
State of Texas

NOTARY PUBLIC STATE OF TEXAS
CARRIE REED
My Commission Expires
October 4, 2015

Regulatory Report (Grid North)

Company:	EMKEY COMPANIES	**Local Co-ordinate Reference:**	Well Stiletto "16" State #7H
Project:	North Seven Rivers (NAD27)	**TVD Reference:**	Mean Sea Level (System)
Site:	Eddy County, NM (Grid North)	**MD Reference:**	Mean Sea Level (System)
Well:	Stiletto "16" State #7H	**North Reference:**	Grid
Wellbore:	VH - Job #321114-KW-1304	**Survey Calculation Method:**	Minimum Curvature
Design:	VH - Job #321114-KW-1304	**Database:**	MID Regulatory

Project North Seven Rivers (NAD27)

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 Eddy County, NM (Grid North)

Site Position:		**Northing:**	574,701.86 usft	**Latitude:**	32° 34' 47.480 N
From:	Lat/Long	**Easting:**	449,683.60 usft	**Longitude:**	104° 29' 48.060 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	-0.09 °

Well Stiletto "16" State #7H, Horizontal

Well Position	**+N/-S**	0.0 usft	**Northing:**	574,743.53 usft	**Latitude:**	32° 34' 47.890 N
	+E/-W	0.0 usft	**Easting:**	449,523.66 usft	**Longitude:**	104° 29' 49.930 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	0.0 usft	**Ground Level:**	0.0 usft

Wellbore VH - Job #321114-KW-1304

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	11/3/2014	7.80	60.26	48,361

Design VH - Job #321114-KW-1304

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	179.36

Survey Program **Date** 12/25/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
156.0	780.0	Gyro (VH - Job #321114-KW-1304)	Keeper	Keeper Gyro

Survey

MD (usft)	Inc (°)	Azi (grid north azim)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Azimuth (°)	Closure Distance (usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.0
156.0	0.14	250.33	156.0	-0.1	-0.2	250.33	0.2
312.0	0.26	76.89	312.0	0.0	0.0	196.48	0.1
468.0	0.72	41.23	468.0	0.8	1.0	51.77	1.2
624.0	0.45	55.52	624.0	1.9	2.1	48.94	2.8
780.0	0.77	75.95	780.0	2.5	3.6	56.07	4.4

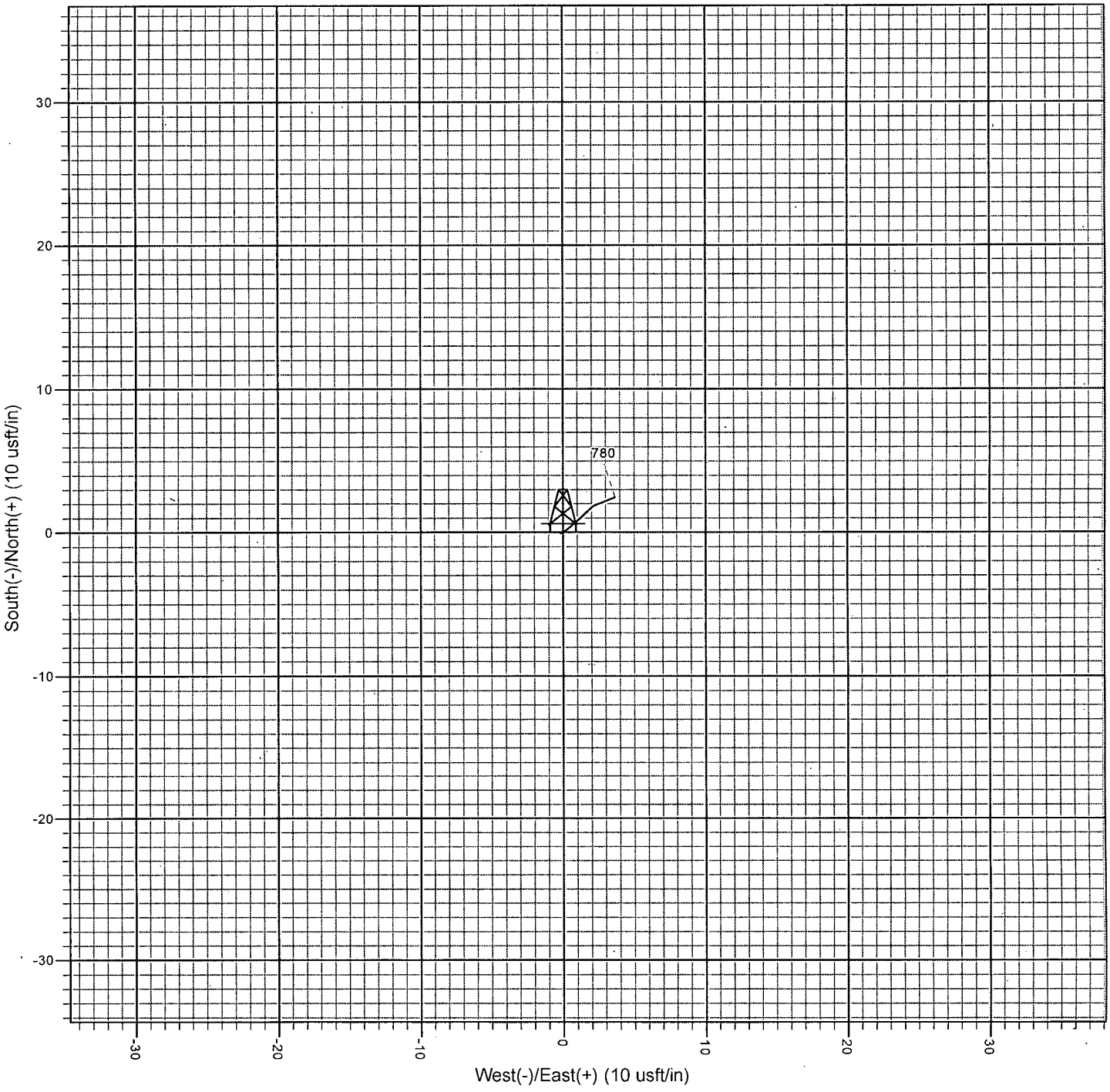
Checked By: _____ Approved By: _____ Date: _____

Scientific Drilling

Project: North Seven Rivers (NAD27)
Eddy County, NM (Grid North)
Well: Stiletto "16" State #7H
Wellbore: VH - Job #321114-KW-1304
Design: VH - Job #321114-KW-1304

WELL DETAILS: Stiletto "16" State #7H
Mean Sea Level (System)
Ground Level: 0.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	574743.53	449523.66	32° 34' 47.890 N	104° 29' 49.930 W	



PROJECT DETAILS: North Seven Rivers (NAD27)
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

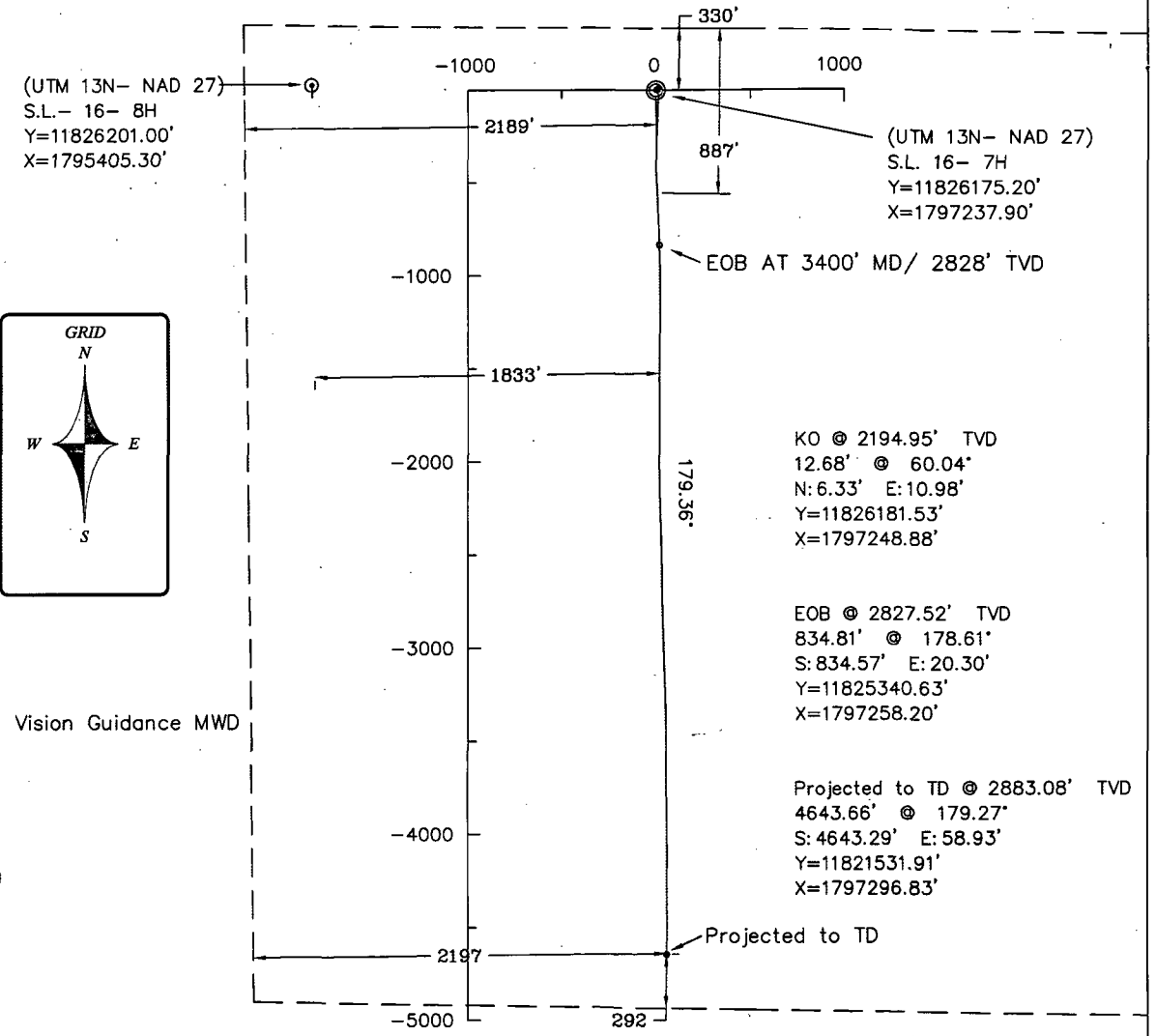
SITE DETAILS: Eddy County, NM (Grid North)
Site Centre Latitude: 32° 34' 47.480 N
Longitude: 104° 29' 48.060 W
Positional Uncertainity: 0.0
Convergence: -0.09
Local North: Grid

Job Number :	NML 1014– H1287
Company :	Emkey Companies
Lease/Well :	Stiletto 16– 7H
Location :	Eddy County, NM

GL= 3465', KB= 12'
PLAN B

SEC. 16– T 20 S– R 25 E

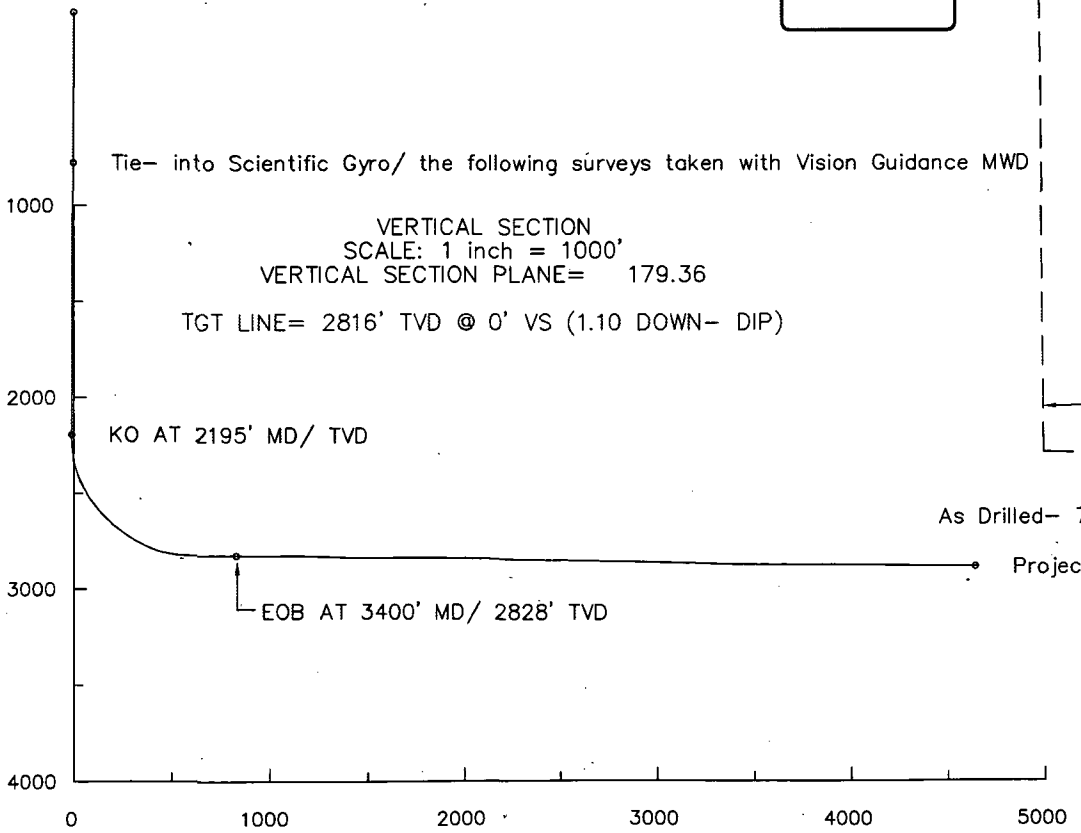
PLAN VIEW
SCALE: 1 inch = 1000'



Tie– into Scientific Gyro/ the following surveys taken with Vision Guidance MWD

VERTICAL SECTION
SCALE: 1 inch = 1000'
VERTICAL SECTION PLANE= 179.36

TGT LINE= 2816' TVD @ 0' VS (1.10 DOWN– DIP)



MAVERICK DIRECTIONAL SERVICES

DRAWN BY: JOSE GARZA	FILE NAME: ST1167HB.dwg	DATE: 1/16/2015	TXT FILE: ST1167HB.svy	PH: 281–364–1212	EMAIL: JOSE@MAVERICKDIRECTIONAL.COM

MAVERICK DIRECTIONAL SERVICES

Job Number: NML 1014- H1287
Company: Emkey Companies
Lease/Well: Stiletto 16- 7H
Location: Eddy County, NM
Rig Name: United Drilling 29
RKB: 12'
G.L. or M.S.L.: 3465'

State/Country: NM- USA
Declination: 7.66
Grid: 0.27= 7.39°East
File name: G:\SVYS\JOBS\STI167HB.SVY
Date/Time: 16-Jan-15 / 14:35
Curve Name: As Drilled- 7H

Maverick Directional Services
Spring, Texas
Main # 281-364-1212
Fax # 281-364-1213

Calculated by: Jose Garza
email: jose@maverickdirectional.com

WINSERVE SURVEY CALCULATIONS
Minimum Curvature Method
Vertical Section Plane 179.36
Vertical Section Referenced to Wellhead
Rectangular Coordinates Referenced to Wellhead

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Vertical Section FT	N-S FT	E-W FT	CLOSURE Distance FT	CLOSURE Direction Deg	Dogleg Severity Deg/100
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
156.00	.14	250.33	156.00	.06	-.06	-.18	.19	250.33	.09
312.00	.26	76.89	312.00	.05	-.05	-.01	.05	196.48	.26
468.00	.72	41.23	467.99	-.76	.77	.98	1.24	51.77	.34
624.00	.45	55.52	623.99	-1.83	1.85	2.13	2.82	48.94	.20
Tie- into Scientific Gyro/ the following surveys taken with Vision Guidance MWD									
780.00	.77	75.95	779.98	-2.41	2.45	3.65	4.40	56.07	.24
957.00	.40	69.10	956.97	-2.90	2.96	5.38	6.14	61.15	.21
1141.00	.30	73.30	1140.96	-3.26	3.33	6.44	7.25	62.65	.06
1326.00	.30	98.30	1325.96	-3.32	3.40	7.38	8.13	65.27	.07
1510.00	.20	67.00	1509.96	-3.37	3.46	8.16	8.86	67.04	.09
1697.00	.30	53.60	1696.96	-3.78	3.87	8.85	9.66	66.36	.06
1887.00	.30	52.90	1886.96	-4.36	4.47	9.65	10.63	65.14	.00
2077.00	.50	27.30	2076.95	-5.39	5.51	10.43	11.79	62.16	.14
2163.00	.50	35.70	2162.95	-6.02	6.14	10.82	12.44	60.40	.09
KO AT 2195' MD/ TVD									
2195.00	.40	49.50	2194.95	-6.21	6.33	10.98	12.68	60.04	.46
2226.00	1.50	163.00	2225.94	-5.89	6.01	11.18	12.70	61.74	5.48
2258.00	4.40	167.10	2257.90	-4.29	4.42	11.58	12.39	69.13	9.08
2290.00	6.90	176.30	2289.74	-1.17	1.30	11.98	12.05	83.81	8.28
2321.00	9.60	177.60	2320.42	3.28	-3.14	12.21	12.61	104.43	8.73

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Vertical Section FT	N-S FT	E-W FT	CLOSURE Distance FT	CLOSURE Direction Deg	Dogleg Severity Deg/100
2353.00	12.90	177.70	2351.80	9.52	-9.38	12.46	15.60	126.96	10.31
2385.00	16.60	177.60	2382.74	17.66	-17.52	12.80	21.69	143.85	11.56
2417.00	20.50	178.90	2413.07	27.84	-27.69	13.10	30.63	154.69	12.26
2448.00	24.40	181.20	2441.71	39.67	-39.52	13.07	41.63	161.71	12.89
2480.00	27.50	182.30	2470.48	53.66	-53.52	12.63	54.99	166.72	9.80
2512.00	30.50	183.20	2498.47	69.14	-69.01	11.88	70.03	170.23	9.47
2543.00	33.10	183.00	2524.81	85.44	-85.32	11.00	86.03	172.65	8.39
2575.00	35.40	183.10	2551.26	103.41	-103.30	10.04	103.79	174.45	7.19
2607.00	37.70	183.00	2576.97	122.43	-122.33	9.03	122.67	175.78	7.19
2639.00	41.30	183.60	2601.66	142.73	-142.65	7.85	142.87	176.85	11.31
2670.00	44.30	183.20	2624.40	163.74	-163.67	6.60	163.81	177.69	9.72
2702.00	46.50	182.80	2646.87	186.47	-186.43	5.41	186.50	178.34	6.93
2734.00	48.90	182.20	2668.40	210.11	-210.07	4.38	210.12	178.80	7.63
2765.00	51.40	181.40	2688.26	233.88	-233.86	3.64	233.88	179.11	8.30
2797.00	53.60	180.70	2707.74	259.26	-259.24	3.18	259.26	179.30	7.09
2829.00	55.90	180.40	2726.21	285.38	-285.37	2.93	285.38	179.41	7.23
2861.00	58.20	180.40	2743.61	312.23	-312.22	2.74	312.23	179.50	7.19
2892.00	60.80	180.40	2759.35	338.93	-338.92	2.55	338.93	179.57	8.39
2924.00	63.20	180.30	2774.37	367.18	-367.18	2.38	367.18	179.63	7.51
2956.00	66.80	179.20	2787.89	396.18	-396.17	2.51	396.18	179.64	11.67
2988.00	70.70	177.80	2799.49	425.99	-425.98	3.30	425.99	179.56	12.85
3019.00	74.50	177.20	2808.76	455.55	-455.53	4.59	455.55	179.42	12.40
3051.00	78.50	177.40	2816.22	486.64	-486.60	6.05	486.64	179.29	12.51
3083.00	82.20	177.70	2821.59	518.16	-518.11	7.40	518.17	179.18	11.60
3114.00	85.70	177.90	2824.85	548.98	-548.91	8.58	548.98	179.10	11.31
3146.00	87.80	177.90	2826.67	580.91	-580.84	9.75	580.92	179.04	6.56
3178.00	88.50	177.90	2827.70	612.89	-612.80	10.93	612.90	178.98	2.19
3209.00	89.90	177.60	2828.13	643.87	-643.77	12.14	643.89	178.92	4.62
3241.00	90.80	177.40	2827.94	675.85	-675.74	13.54	675.88	178.85	2.88
3273.00	91.60	177.30	2827.27	707.82	-707.70	15.02	707.86	178.78	2.52
3305.00	91.00	176.90	2826.54	739.79	-739.65	16.64	739.84	178.71	2.25
3336.00	89.50	177.60	2826.41	770.77	-770.61	18.12	770.83	178.65	5.34
EOB AT 3400' MD/ 2828' TVD									
3400.00	88.50	178.50	2827.52	834.74	-834.57	20.30	834.81	178.61	2.10
3463.00	90.00	178.50	2828.35	897.73	-897.54	21.95	897.81	178.60	2.38
3527.00	90.10	179.30	2828.29	961.72	-961.52	23.18	961.80	178.62	1.26
3590.00	90.80	179.90	2827.80	1024.72	-1024.52	23.62	1024.79	178.68	1.46
3653.00	90.70	179.90	2826.97	1087.71	-1087.52	23.73	1087.77	178.75	.16
3716.00	89.60	180.10	2826.81	1150.71	-1150.51	23.73	1150.76	178.82	1.77
3780.00	88.70	180.60	2827.76	1214.69	-1214.50	23.34	1214.73	178.90	1.61
3843.00	87.60	180.80	2829.79	1277.64	-1277.47	22.57	1277.67	178.99	1.77
3907.00	87.90	181.10	2832.31	1341.56	-1341.41	21.51	1341.58	179.08	.66
3970.00	88.70	180.60	2834.17	1404.51	-1404.37	20.57	1404.52	179.16	1.50
4034.00	89.30	180.60	2835.29	1468.49	-1468.36	19.90	1468.49	179.22	.94
4097.00	89.80	180.60	2835.79	1531.47	-1531.35	19.24	1531.47	179.28	.79
4160.00	90.20	180.10	2835.79	1594.46	-1594.35	18.86	1594.46	179.32	1.02

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Vertical Section FT	N-S FT	E-W FT	CLOSURE Distance FT	CLOSURE Direction Deg	Dogleg Severity Deg/100
4224.00	90.80	180.10	2835.23	1658.46	-1658.35	18.75	1658.46	179.35	.94
4287.00	90.50	179.70	2834.51	1721.45	-1721.34	18.86	1721.45	179.37	.79
4351.00	89.40	179.50	2834.57	1785.45	-1785.34	19.30	1785.45	179.38	1.75
4414.00	89.70	179.90	2835.06	1848.44	-1848.34	19.63	1848.44	179.39	.79
4541.00	89.20	179.30	2836.28	1975.44	-1975.33	20.52	1975.44	179.40	.61
4667.00	88.70	179.20	2838.59	2101.41	-2101.30	22.17	2101.41	179.40	.40
4794.00	89.20	178.60	2840.92	2228.39	-2228.25	24.61	2228.39	179.37	.61
4921.00	88.40	178.60	2843.58	2355.35	-2355.18	27.71	2355.35	179.33	.63
5048.00	89.30	178.50	2846.13	2482.31	-2482.12	30.92	2482.31	179.29	.71
5175.00	88.90	179.60	2848.12	2609.29	-2609.08	33.03	2609.29	179.27	.92
5301.00	89.40	178.90	2849.99	2735.27	-2735.06	34.68	2735.28	179.27	.68
5428.00	89.00	178.70	2851.76	2862.25	-2862.02	37.34	2862.26	179.25	.35
5555.00	88.30	178.30	2854.76	2989.20	-2988.94	40.66	2989.21	179.22	.63
5670.00	88.50	177.60	2857.97	3104.12	-3103.82	44.77	3104.14	179.17	.63
5797.00	87.40	178.60	2862.51	3231.01	-3230.66	48.98	3231.03	179.13	1.17
5923.00	87.60	179.20	2868.01	3356.88	-3356.52	51.40	3356.91	179.12	.50
6050.00	88.60	179.10	2872.22	3483.81	-3483.43	53.28	3483.84	179.12	.79
6176.00	89.20	179.10	2874.64	3609.78	-3609.39	55.26	3609.82	179.12	.48
6303.00	89.50	179.50	2876.08	3736.78	-3736.37	56.81	3736.81	179.13	.39
6430.00	89.80	178.90	2876.85	3863.77	-3863.36	58.58	3863.80	179.13	.53
6553.00	90.00	179.20	2877.07	3986.77	-3986.34	60.62	3986.80	179.13	.29
6680.00	89.30	180.10	2877.84	4113.76	-4113.34	61.40	4113.79	179.14	.90
6807.00	88.80	180.50	2879.95	4240.73	-4240.32	60.73	4240.75	179.18	.50
6933.00	89.80	179.90	2881.49	4366.70	-4366.30	60.29	4366.72	179.21	.93
7060.00	89.20	180.30	2882.60	4493.69	-4493.30	60.07	4493.70	179.23	.57
7155.00	90.10	180.50	2883.18	4588.67	-4588.29	59.41	4588.68	179.26	.97
Projected to TD at 7210' MD/ 2883' TVD									
7210.00	90.10	180.50	2883.08	4643.66	-4643.29	58.93	4643.66	179.27	.00