

PO Box 1370
Artesia, NM 88211-1370
(575) 748-1288

30-015-39815

March 22, 2012

COG, LLC
Fasken Center, Tower II
550 West Texas Ave, Suite 1300
Midland, TX 79701

RE: Patton 5 Fee #2H
1040' FNL & 330' FWL
Sec. 5, T19S, R26E
Eddy County, New Mexico

Dear Sir,

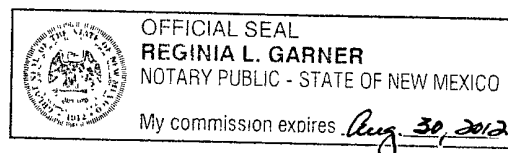
The attached is the Deviation Survey for the above captioned well.

Very truly yours,

Eddie C. LaRue
Operations Manager

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 22nd day of March, 2012.

Notary Public

Patton 5 Fee #2H

Date	Depth	Deviation	Direction	TVD
3/6/2012	137	0.10		
3/6/2012	229	0.40		
3/6/2012	317	0.50		
3/6/2012	405	0.70		
3/6/2012	492	0.60		
3/6/2012	581	0.30		
3/6/2012	670	0.70		
3/6/2012	886	1.60		
3/7/2012	980	2.30		
3/7/2012	1074	3.70		
3/9/2012	1225	3.90		
3/9/2012	1318	4.20		
3/9/2012	1411	5.10		
3/10/2012	1457	4.60	172.80	
3/10/2012	1544	3.60	162.00	
3/10/2012	1639	2.10	140.10	
3/10/2012	1731	0.30	179.60	
3/10/2012	1825	0.40	238.10	
3/11/2012	1919	0.20	256.60	
3/11/2012	2044	0.40	291.40	
3/11/2012	2106	2.60	78.40	
3/11/2012	2012	0.40	280.10	
3/11/2012	2075	0.50	64.70	
3/11/2012	2137	5.40	76.90	
3/11/2012	2168	8.30	75.00	
3/11/2012	2231	14.50	73.80	
3/11/2012	2293	20.90	75.30	
3/11/2012	2199	11.30	73.20	
3/11/2012	2262	17.80	74.70	
3/12/2012	2325	24.20	77.10	2316.00
3/12/2012	2356	27.40	78.80	2344.00
3/12/2012	2387	31.00	80.40	2371.00
3/12/2012	2419	34.60	81.30	2396.00
3/12/2012	2448	36.30	82.30	2422.00
3/12/2012	2480	38.70	84.60	2447.00
3/12/2012	2511	42.80	86.50	2470.00
3/12/2012	2542	47.20	87.10	2492.00
3/12/2012	2573	51.50	87.20	2512.00
3/12/2012	2604	55.80	88.20	
3/12/2012	2635	59.90	88.00	
3/12/2012	2667	63.80	86.90	
3/12/2012	2698	67.50	86.40	
3/12/2012	2729	70.90	85.00	
3/13/2012	2762	73.70	83.30	2597.00
3/13/2012	2794	76.20	84.00	2605.00
3/13/2012	2825	79.10	85.20	2611.00

Date	Depth	Deviation	Direction	TVD
3/13/2012	2856	80.50	86.80	2617.00
3/13/2012	2887	81.70	88.40	2622.00
3/13/2012	2918	83.00	89.40	2626.00
3/13/2012	3043	89.10	91.00	
3/13/2012	3137	89.60	89.80	
3/13/2012	3231	89.90	89.50	
3/13/2012	3325	90.50	89.60	
3/13/2012	3418	90.70	87.50	
3/14/2012	3512	89.40	87.00	2849.00
3/14/2012	3605	89.70	86.40	2635.00
3/14/2012	3699	89.80	86.40	3152.00
3/14/2012	3792	87.70	86.40	2638.00
3/14/2012	3886	88.20	86.20	2641.00
3/14/2012	3979	87.90	87.50	2644.00
3/14/2012	4073	87.10	89.60	
3/14/2012	4167	86.90	90.30	
3/14/2012	4260	87.10	90.00	
3/14/2012	4354	89.00	91.50	
3/15/2012	4448	87.30	91.00	2663.00
3/15/2012	4541	89.30	90.30	2664.00
3/15/2012	4634	89.40	90.20	2665.00
3/15/2012	4728	89.10	90.40	2666.00
3/15/2012	4821	89.30	90.00	2667.00
3/15/2012	4915	89.30	89.60	2669.00
3/16/2012	5008	87.50	89.10	2669.00
3/16/2012	5102	89.80	89.90	2670.00
3/16/2012	5195	88.50	91.30	
3/16/2012	5289	86.80	90.80	2675.00
3/16/2012	5382	87.20	90.50	2680.00
3/17/2012	5476	87.90	90.70	2694.00
3/17/2012	5569	88.30	90.10	2687.00
3/17/2012	5663	88.80	90.20	2690.00
3/17/2012	5757	87.70	90.30	2692.00
3/17/2012	5851	88.10	90.80	2696.00
3/17/2012	5944	88.40	90.20	2699.00
3/17/2012	6038	87.00	90.40	2702.00
3/17/2012	6132	87.40	90.10	2707.00
3/17/2012	6226	87.70	90.00	2711.00
3/17/2012	6320	87.80	90.00	2715.00
3/18/2012	6413	87.80	89.80	2719.00
3/18/2012	6507	87.90	90.00	2722.00
3/18/2012	6600	87.80	89.70	2725.00
3/18/2012	6693	87.70	89.30	2729.00
3/18/2012	6787	87.80	89.20	2733.00
3/18/2012	6880	88.00	88.60	2736.00
3/18/2012	6933	88.10	88.20	

COG Operating LLC

Eddy County, NM

Patton 5 Fee #2H

Patton 5 Fee #2H

Wellbore #1

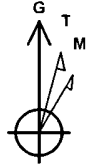
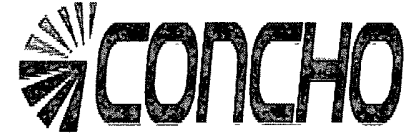
Survey: Crescent MWD

Standard Survey Report

19 March, 2012



**COG Operating LLC
Patton 5 Fee #2H
Eddy County, NM
Plan 4**

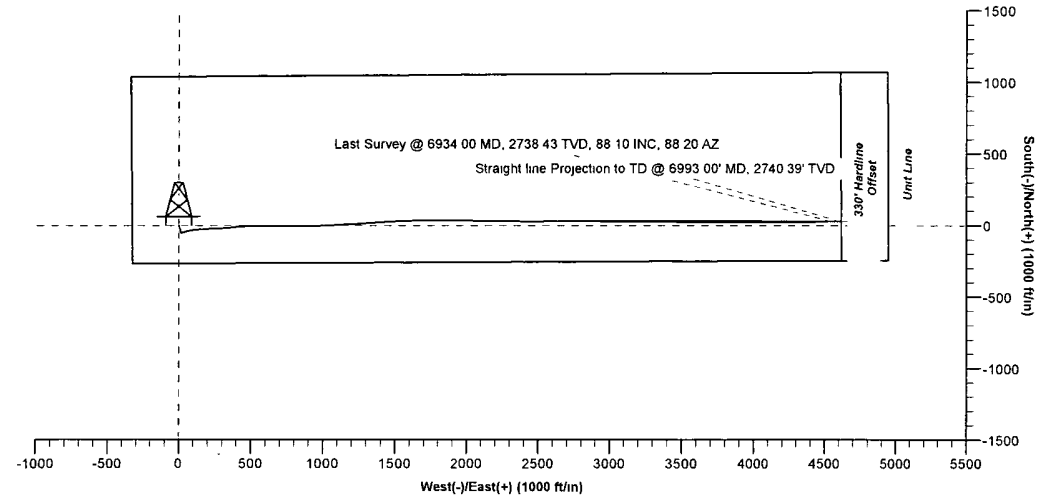
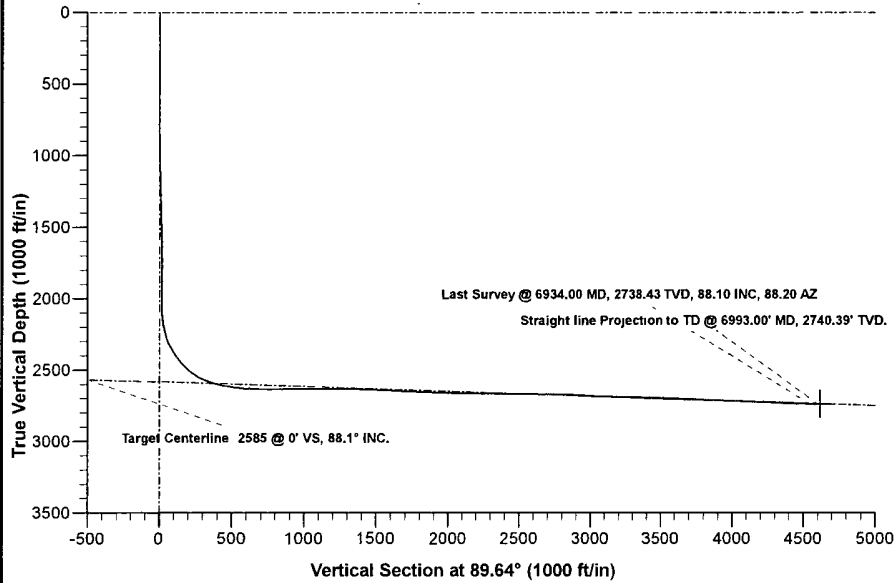


Azimuths to Grid North
True North 0 04°
Magnetic North 7 96°

Magnetic Field
Strength 48734.4snT
Dip Angle 60 46°
Date 2/28/2012
Model IGRF2010

Surface Location		Ground Elev: 3379.00 KB @ 3396.00ft (Silver Oak #8)			
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	616162.40	476030.10	32° 41' 38.05 N	104° 24' 40.51 W

TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL (Patton 5 Fee #2H - plan 4)	2738.30	28.80	4618.60	616191.20	480648.70	32° 41' 38.36 N	104° 23' 46.46 W



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	5068.00	89.69	89.61	2670.32	30.25	2680.12	0.00	0.00	2680.25	Projected to Brl @ 5068.00' MD / Start Drop & Turn, 3°/100'
2	5158.92	87.00	90.05	2672.94	30.52	2770.99	3.00	170.67	2771.13	
3	5352.31	87.00	90.05	2683.06	30.34	2964.11	0.00	0.00	2964.24	
4	5388.97	88.10	90.05	2684.63	30.30	3000.74	3.00	0.00	3000.87	
5	7007.72	88.10	90.05	2738.30	28.80	4618.60	0.00	0.00	4618.69	PBHL @ 7007.72' MD

Crescent Directional Drilling

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Patton 5 Fee #2H
Project:	Eddy County, NM	TVD Reference:	KB @ 3396 00ft (Silver Oak #8)
Site:	Patton 5 Fee #2H	MD Reference:	KB @ 3396 00ft (Silver Oak #8)
Well:	Patton 5 Fee #2H	North Reference:	Gnd
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	surveys	Database:	R5000 Houston DB

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: Patton 5 Fee #2H					
Site Position:		Northing:	616,162 40 ft	Latitude:	32° 41' 38 05 N
From:	Map	Easting:	476,030 10 ft	Longitude:	104° 24' 40 51 W
Position Uncertainty:	0 00 ft	Slot Radius:	13 200 in	Grid Convergence:	-0 04 °

Well: Patton 5 Fee #2H						
Well Position	+N/-S	0 00 ft	Northing:	616,162 40 ft	Latitude:	32° 41' 38 05 N
	+E/-W	0 00 ft	Easting:	476,030 10 ft	Longitude:	104° 24' 40.51 W
Position Uncertainty		0 00 ft	Wellhead Elevation:	ft	Ground Level:	3,379 00 ft

Wellbore		Wellbore #1			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/28/2012	7 92	60 46	48,734

Design		surveys			
Audit Notes:					
Version:		1 0	Phase:		ACTUAL
			Tie On Depth:		0 00
Vertical Section:		Depth From (TVD)	+N/-S	+E/-W	Direction
		(ft)	(ft)	(ft)	(°)
		0.00	0 00	0 00	160 09

Survey Program		Date	3/19/2012	
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
100.00	1,352.00	ves gyro (Wellbore #1)	Good_mag	Good Magnetic
1,457.00	6,993.00	Crescent MWD (Wellbore #1)	Good_mag	Good Magnetic

Survey									
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn
Depth	(°)	(°)	Depth	(ft)	(ft)	Section	Rate	Rate	Rate
(ft)			(ft)			(ft)	(°/100ft)	(°/100ft)	(°/100ft)
1,352 00	4.79	165 65	1,351 09	-33.03	11 96	35 13	0 00	0 00	0 00
1,391 00	4 90	166 00	1,389 95	-36 23	12 77	38 41	0 29	0 28	0 90
1,457 00	4 60	172 80	1,455 73	-41 59	13 78	43 80	0 97	-0 45	10 30
1,544 00	3 60	162 00	1,542 50	-47 65	15 07	49 93	1 45	-1 15	-12 41
1,638 00	2 10	140 10	1,636 39	-51 78	17 08	54 50	1 94	-1 60	-23 30
1,731 00	0 30	179 60	1,729 36	-53.33	18 18	56 33	2 02	-1 94	42 47
1,825 00	0 40	238 10	1,823 36	-53 75	17 90	56 63	0 38	0 11	62 23
1,919 00	0 20	256 60	1,917 36	-53 96	17 46	56 68	0 23	-0 21	19 68
2,012 00	0 40	280 10	2,010 36	-53 94	16 98	56 50	0 25	0 22	25 27
2,044 00	0 40	291 40	2,042 36	-53.88	16 77	56 37	0 25	0 00	35 31

Crescent Directional Drilling

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Patton 5 Fee #2H
Project:	Eddy County, NM	TVD Reference:	KB @ 3396.00ft (Silver Oak #8)
Site:	Patton 5 Fee #2H	MD Reference:	KB @ 3396.00ft (Silver Oak #8)
Well:	Patton 5 Fee #2H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	surveys	Database:	R5000 Houston DB

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
2,075.00	0.50	64.70	2,073.36	-53.78	16.79	56.29	2.67	0.32	430.00
2,106.00	2.60	78.40	2,104.35	-53.58	17.60	56.37	6.83	6.77	44.19
2,137.00	5.40	76.90	2,135.27	-53.11	19.71	56.65	9.04	9.03	-4.84
2,169.00	8.30	75.00	2,167.04	-52.17	23.41	57.02	9.09	9.06	-5.94
2,200.00	11.30	73.20	2,197.58	-50.71	28.48	57.38	9.73	9.68	-5.81
2,231.00	14.50	73.80	2,227.79	-48.75	35.12	57.80	10.33	10.32	1.94
2,262.00	17.80	74.70	2,257.57	-46.42	43.42	58.43	10.68	10.65	2.90
2,293.00	20.90	75.30	2,286.81	-43.76	53.34	59.31	10.02	10.00	1.94
2,325.00	24.20	77.10	2,316.36	-40.85	65.26	60.63	10.53	10.31	5.63
2,356.00	27.40	78.80	2,344.27	-38.05	78.45	62.49	10.59	10.32	5.48
2,387.00	31.00	80.40	2,371.32	-35.33	93.32	65.00	11.88	11.61	5.16
2,417.00	34.60	81.30	2,396.54	-32.75	109.37	68.03	12.11	12.00	3.00
2,449.00	36.30	82.40	2,422.60	-30.12	127.74	71.82	5.67	5.31	3.44
2,480.00	38.70	84.60	2,447.20	-28.00	146.49	76.21	8.86	7.74	7.10
2,511.00	42.70	86.30	2,470.70	-26.41	166.63	81.57	13.39	12.90	5.48
2,542.00	47.20	87.10	2,492.63	-25.15	188.49	87.83	14.63	14.52	2.58
2,573.00	51.50	87.70	2,512.82	-24.09	211.98	94.83	13.95	13.87	1.94
2,604.00	55.80	88.20	2,531.19	-23.20	236.93	102.49	13.93	13.87	1.61
2,636.00	59.90	88.00	2,548.21	-22.30	264.00	110.86	12.82	12.81	-0.63
2,667.00	63.80	86.90	2,562.84	-21.08	291.30	119.01	12.96	12.58	-3.55
2,699.00	67.50	86.40	2,576.03	-19.37	320.40	127.32	11.65	11.56	-1.56
2,730.00	70.90	85.00	2,587.04	-17.20	349.29	135.11	11.75	10.97	-4.52
2,763.00	73.70	83.30	2,597.07	-13.99	380.56	142.74	9.80	8.48	-5.15
2,794.00	76.20	84.00	2,605.12	-10.68	410.31	149.76	8.35	8.06	2.26
2,825.00	79.10	85.20	2,611.75	-7.83	440.45	157.35	10.09	9.35	3.87
2,856.00	80.50	86.80	2,617.24	-5.71	470.89	165.71	6.80	4.52	5.16
2,887.00	81.70	88.40	2,622.03	-4.42	501.49	174.93	6.40	3.87	5.16
2,918.00	83.00	89.40	2,626.16	-3.83	532.20	184.83	5.27	4.19	3.23
3,043.00	89.10	91.00	2,634.77	-4.28	656.84	227.69	5.04	4.88	1.28
3,138.00	89.60	89.80	2,635.85	-4.94	751.83	260.66	1.37	0.53	-1.26
3,231.00	89.90	89.50	2,636.25	-4.37	844.83	291.79	0.46	0.32	-0.32
3,325.00	90.50	89.60	2,635.92	-3.63	938.83	323.11	0.65	0.64	0.11
3,418.00	90.70	87.50	2,634.95	-1.28	1,031.79	352.55	2.27	0.22	-2.26
3,512.00	89.40	87.00	2,634.87	3.23	1,125.68	380.28	1.48	-1.38	-0.53
3,605.00	89.70	86.40	2,635.60	8.58	1,218.52	406.86	0.72	0.32	-0.65
3,699.00	89.80	86.40	2,636.01	14.49	1,312.33	433.26	0.11	0.11	0.00
3,792.00	87.70	86.40	2,638.04	20.32	1,405.12	459.36	2.26	-2.26	0.00
3,886.00	88.20	86.20	2,641.40	26.39	1,498.86	485.59	0.57	0.53	-0.21
3,980.00	87.90	87.50	2,644.60	31.55	1,592.67	512.67	1.42	-0.32	1.38
4,073.00	87.10	89.60	2,648.66	33.90	1,685.54	542.09	2.41	-0.86	2.26
4,167.00	86.90	90.30	2,653.57	33.98	1,779.41	573.98	0.77	-0.21	0.74
4,261.00	87.10	90.00	2,658.49	33.74	1,873.28	606.17	0.38	0.21	-0.32
4,354.00	89.00	91.50	2,661.66	32.52	1,966.21	638.96	2.60	2.04	1.61

Crescent Directional Drilling

Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Patton 5 Fee #2H
Project:	Eddy County, NM	TVD Reference:	KB @ 3396 00ft (Silver Oak #8)
Site:	Patton 5 Fee #2H	MD Reference:	KB @ 3396 00ft (Silver Oak #8)
Well:	Patton 5 Fee #2H	North Reference:	Grnd
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	surveys	Database:	R5000 Houston DB

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,448 00	89 30	91 00	2,663 05	30 47	2,060 18	672.89	0 62	0 32	-0 53
4,541 00	89 30	90 30	2,664 19	29 41	2,153 17	705 54	0 75	0.00	-0 75
4,635 00	89 40	90 20	2,665 26	29 00	2,247 16	737 93	0 15	0.11	-0 11
4,728 00	89 10	90 40	2,666 47	28 52	2,340 15	770 06	0 39	-0 32	0 22
4,821 00	89 30	90 00	2,667 77	28 19	2,433 14	802 03	0 48	0 22	-0 43
4,915 00	89 30	89 60	2,668 92	28 52	2,527 13	833 72	0 43	0.00	-0 43
5,008 00	89 50	89 10	2,669 89	29 57	2,620 12	864 40	0 58	0 22	-0 54
5,102 00	89 80	89 90	2,670 47	30 39	2,714 12	895.63	0 91	0 32	0 85
5,196 00	88 50	91 30	2,671 86	29 41	2,808 10	928 56	2 03	-1 38	1 49
5,289 00	86 80	90 80	2,675 68	27 71	2,901 00	961 80	1 91	-1 83	-0 54
5,383 00	87 20	90 50	2,680 60	26 64	2,994 86	994 76	0 53	0 43	-0 32
5,476 00	87 90	90 70	2,684 57	25 67	3,087 77	1,027 31	0 78	0 75	0 22
5,570 00	88 30	90 10	2,687 69	25 01	3,181 72	1,059 92	0 77	0 43	-0 64
5,663 00	88 80	90 20	2,690 04	24 77	3,274 69	1,091.81	0 55	0 54	0 11
5,757 00	87 70	90 30	2,692 91	24 36	3,368 64	1,124 19	1 18	-1.17	0 11
5,851 00	88 10	90 80	2,696 36	23 46	3,462 57	1,157 02	0 68	0 43	0 53
5,945 00	88 40	90 20	2,699 23	22 64	3,556 53	1,189 78	0 71	0 32	-0 64
6,038 00	87 00	90 40	2,702 96	22 15	3,649 45	1,221 88	1 52	-1 51	0 22
6,132 00	87 40	90 10	2,707 55	21 74	3,743 33	1,254 24	0 53	0 43	-0 32
6,226 00	87 70	90 00	2,711 57	21 66	3,837 25	1,286.29	0 34	0 32	-0 11
6,320 00	87 80	90 00	2,715 26	21 66	3,931 18	1,318 28	0 11	0 11	0 00
6,413 00	87 80	89 80	2,718 83	21 82	4,024 11	1,349 77	0 21	0 00	-0 22
6,507 00	87 90	90 00	2,722 36	21 99	4,118 04	1,381 60	0 24	0 11	0 21
6,600 00	87 80	89 70	2,725 84	22 23	4,210.97	1,413 02	0 34	-0 11	-0 32
6,693 00	87 70	89 30	2,729 50	23 04	4,303 90	1,443 90	0 44	-0 11	-0 43
6,787 00	87 80	89 20	2,733 19	24 27	4,397 82	1,474 73	0 15	0 11	-0 11
6,881 00	88 00	88 60	2,736 63	26 07	4,491 74	1,505 01	0 67	0 21	-0 64
6,934 00	88 10	88 20	2,738 43	27 55	4,544 69	1,521 65	0 78	0 19	-0 75
Last Survey @ 6934.00 MD, 2738.43 TVD, 88.10 INC, 88.20 AZ									
6,993 00	88 10	88 20	2,740 39	29 41	4,603 62	1,539 98	0 00	0 00	0 00
Straight line Projection to TD @ 6993.00' MD, 2740.39' TVD.									

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
6,934 00	2,738 43	27 55	4,544 69	Last Survey @ 6934 00 MD, 2738 43 TVD, 88 10 INC, 88 20 AZ
6,993 00	2,740 39	29 41	4,603 62	Straight line Projection to TD @ 6993 00' MD, 2740 39' TVD

Checked By: _____	Approved By: _____	Date: _____
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