

CHESAPEAKE OPERATING

Field: Weld County, CO
Site: Eichheim 18-9-66
Well: 1H
Wellpath: OH



Azimuths to Grid North
True North: -0.44°
Magnetic North: 8.45°

Magnetic Field
Strength: 53321nT
Dip Angle: 67.31°
Date: 9/2/2011
Model: IGRF2010



Section Lines

BHL PBHL
600' Hard Lines 7450 7435

TARGET DETAILS

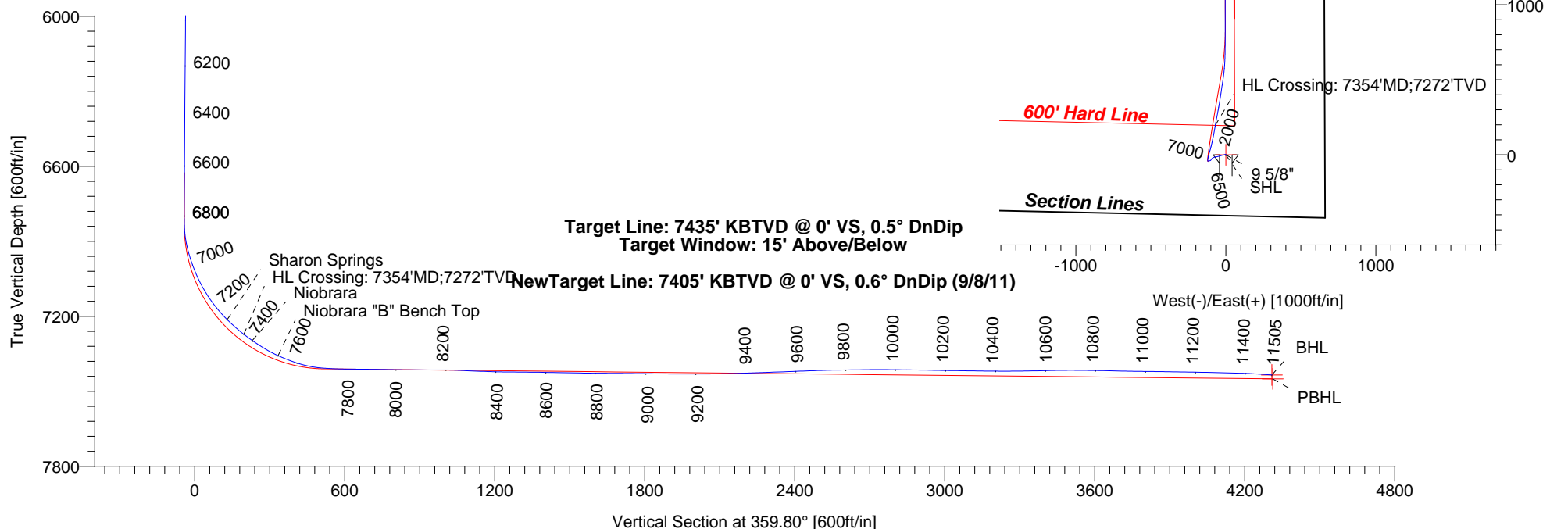
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
SHL	0.00	0.00	0.00	513384.99	2190641.40	40°44'26.252N	104°48'43.383W	Point
BHL	7434.82	4308.20	-35.83	517693.19	2190605.57	40°45'08.824N	104°48'43.414W	Point
PBHL	7450.16	4312.01	-15.40	517697.00	2190626.00	40°45'08.860N	104°48'43.149W	Rectangle (3797x0)

FORMATION TOP DETAILS

PROPOSED CASING DETAILS

No.	TVD	MD	Name	Size
1	1100.00	1100.00	9 5/8"	9.625

No.	TVDPath	MDPath	Formation
1	891.00	891.00	Fox Hills Base
2	3797.92	3798.57	Richard Sandstone
3	4711.83	4713.41	Sussex
4	7213.36	7264.40	Sharon Springs
5	7297.42	7397.34	Niobrara
6	7357.49	7518.05	Niobrara "B" Bench Top



LEAM DRILLING SYSTEMS, INC.
2010 East Davis, Conroe, Texas 77301
Phone: 936-756-7577 Fax: 936-756-7595

Wellpath: (1H/OH)
Created By: Mike Moreno Date: 9/28/2011
Checked: _____ Date: _____
Reviewed: _____ Date: _____
Approved: _____ Date: _____

LEAM Drilling Systems, Inc

Survey Report

Company: CHESAPEAKE OPERATING				Date: 9/28/2011		Time: 17:45:03		Page: 1	
Field: Weld County, CO				Co-ordinate(NE) Reference: Well: 1H, Grid North					
Site: Eichheim 18-9-66				Vertical (TVD) Reference: GE 5285' + 20' 5305.0					
Well: 1H				Section (VS) Reference: Well (0.00N,0.00E,359.80Azi)					
Wellpath: OH				Survey Calculation Method: Minimum Curvature				Db: Sybase	

Field: Weld County, CO			
Map System: US State Plane Coordinate System 1927		Map Zone: Colorado, Northern Zone	
Geo Datum: NAD27 (Clarke 1866)		Coordinate System: Well Centre	
Sys Datum: Mean Sea Level		Geomagnetic Model: IGRF2010	

Site: Eichheim 18-9-66 Sec. 18, T9N, R66W 405' FSL & 660' FEL			
Site Position:	Northing: 513384.99 ft	Latitude: 40 44 26.252 N	
From: Map	Easting: 2190641.40 ft	Longitude: 104 48 43.383 W	
Position Uncertainty: 0.00 ft		North Reference: Grid	
Ground Level: 5285.00 ft		Grid Convergence: 0.44 deg	

Well: 1H				Slot Name:			
Well Position:	+N/-S 0.00 ft	Northing: 513384.99 ft	Latitude: 40 44 26.252 N				
	+E/-W 0.00 ft	Easting : 2190641.40 ft	Longitude: 104 48 43.383 W				
Position Uncertainty: 0.00 ft							

Wellpath: OH				Drilled From: Surface			
Current Datum: GE 5285' + 20'				Tie-on Depth: 0.00 ft			
Magnetic Data: 9/2/2011				Above System Datum: Mean Sea Level			
Field Strength: 53321 nT				Declination: 8.89 deg			
Vertical Section: Depth From (TVD)				Mag Dip Angle: 67.31 deg			
	ft	+N/-S ft	+E/-W ft	Direction deg			
0.00		0.00	0.00	359.80			

Survey Program for Definitive Wellpath					
Date: 9/28/2011		Validated: No		Version: 0	
Actual From ft	To ft	Survey	Toolcode	Tool Name	
0.00	11454.00	Survey #1 (0.00-11454.00)	MWD	Std MWD	
11454.00	11505.00	Survey #2 (11454.00-11505.00)	Project	Projection	

Survey										
MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
1100.00	0.00	0.00	1100.00	0.00	0.00	0.00	0.00	0.00	0.00	9 5/8"
1150.00	0.00	0.00	1150.00	0.00	0.00	0.00	0.00	0.00	0.00	MWD
1397.73	0.26	78.33	1397.73	0.11	0.55	0.11	0.10	0.10	0.00	MWD
1678.03	0.44	342.92	1678.03	1.27	0.86	1.27	0.19	0.06	-34.04	MWD
2063.29	0.62	279.11	2063.27	3.02	-1.64	3.02	0.15	0.05	-16.56	MWD
2256.17	0.88	255.60	2256.14	2.81	-4.10	2.83	0.21	0.13	-12.19	MWD
2539.70	1.23	250.20	2539.62	1.24	-9.07	1.27	0.13	0.12	-1.90	MWD
2826.55	0.88	255.91	2826.42	-0.34	-14.11	-0.29	0.13	-0.12	1.99	MWD
3111.21	0.97	261.80	3111.04	-1.22	-18.61	-1.15	0.05	0.03	2.07	MWD
3397.97	1.58	254.50	3397.73	-2.62	-24.82	-2.53	0.22	0.21	-2.55	MWD
3684.62	3.08	251.91	3684.13	-6.07	-35.95	-5.94	0.52	0.52	-0.90	MWD
3971.82	3.08	255.69	3970.92	-10.37	-50.76	-10.19	0.07	0.00	1.32	MWD
4258.04	3.16	262.90	4256.72	-13.24	-66.04	-13.01	0.14	0.03	2.52	MWD
4541.83	1.23	248.79	4540.29	-15.31	-76.64	-15.05	0.70	-0.68	-4.97	MWD
4826.05	1.32	248.62	4824.44	-17.61	-82.54	-17.32	0.03	0.03	-0.06	MWD
5110.80	0.79	231.21	5109.14	-20.04	-87.12	-19.73	0.22	-0.19	-6.11	MWD
5396.20	1.49	224.93	5394.48	-23.89	-91.27	-23.58	0.25	0.25	-2.20	MWD
5490.49	1.58	227.70	5488.74	-25.64	-93.10	-25.31	0.12	0.10	2.94	MWD
5774.00	1.76	199.61	5772.13	-32.37	-97.45	-32.03	0.29	0.06	-9.91	MWD
6057.00	1.49	253.32	6055.03	-37.52	-102.44	-37.16	0.53	-0.10	18.98	MWD
6342.00	1.49	251.60	6339.93	-39.75	-109.50	-39.37	0.02	0.00	-0.60	MWD

LEAM Drilling Systems, Inc

Survey Report

Company: CHESAPEAKE OPERATING Field: Weld County, CO Site: Eichheim 18-9-66 Well: 1H Wellpath: OH	Date: 9/28/2011 Co-ordinate(NE) Reference: Well: 1H, Grid North Vertical (TVD) Reference: GE 5285' + 20' 5305.0 Section (VS) Reference: Well (0.00N,0.00E,359.80Azi) Survey Calculation Method: Minimum Curvature	Time: 17:45:03 Page: 2 Db: Sybase
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Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
6628.00	1.32	260.22	6625.85	-41.49	-116.28	-41.08	0.09	-0.06	3.01	MWD
6784.00	1.50	257.40	6781.80	-42.24	-120.04	-41.82	0.12	0.12	-1.81	MWD
6846.00	1.90	346.50	6843.78	-41.41	-121.07	-40.99	3.87	0.65	143.71	MWD
6894.00	9.10	1.10	6891.53	-36.84	-121.19	-36.42	15.16	15.00	30.42	MWD
6942.00	15.20	10.40	6938.44	-26.84	-119.98	-26.43	13.31	12.71	19.37	MWD
6990.00	19.60	13.00	6984.23	-12.80	-117.03	-12.40	9.31	9.17	5.42	MWD
7037.00	23.60	14.30	7027.92	4.00	-112.93	4.40	8.57	8.51	2.77	MWD
7085.00	28.50	16.70	7071.03	24.29	-107.26	24.67	10.44	10.21	5.00	MWD
7132.00	33.20	14.90	7111.37	47.48	-100.73	47.83	10.19	10.00	-3.83	MWD
7180.00	37.80	12.80	7150.44	74.54	-94.08	74.87	9.91	9.58	-4.37	MWD
7227.00	42.20	12.00	7186.44	104.04	-87.61	104.35	9.43	9.36	-1.70	MWD
7275.00	46.70	10.90	7220.69	136.98	-80.95	137.26	9.51	9.37	-2.29	MWD
7322.00	50.00	9.70	7251.93	171.53	-74.68	171.79	7.28	7.02	-2.55	MWD
7354.00	52.47	9.84	7271.96	196.12	-70.45	196.36	7.72	7.71	0.42	HL Crossing: 7354'MD;7272
7370.00	53.70	9.90	7281.57	208.72	-68.26	208.96	7.72	7.71	0.40	MWD
7418.00	56.80	10.90	7308.93	247.50	-61.13	247.71	6.68	6.46	2.08	MWD
7466.00	60.00	10.90	7334.08	287.64	-53.40	287.83	6.67	6.67	0.00	MWD
7513.00	65.90	9.90	7355.44	328.80	-45.86	328.95	12.70	12.55	-2.13	MWD
7561.00	68.80	9.00	7373.93	372.49	-38.59	372.62	6.28	6.04	-1.87	MWD
7609.00	73.30	8.60	7389.51	417.34	-31.65	417.45	9.41	9.37	-0.83	MWD
7657.00	79.30	8.60	7400.87	463.43	-24.68	463.51	12.50	12.50	0.00	MWD
7699.00	85.20	8.30	7406.53	504.58	-18.57	504.64	14.07	14.05	-0.71	MWD
7798.00	89.50	3.70	7411.11	602.88	-8.24	602.91	6.36	4.34	-4.65	MWD
7892.00	89.40	0.50	7412.01	696.80	-4.80	696.81	3.41	-0.11	-3.40	MWD
7986.00	88.90	0.40	7413.41	790.79	-4.06	790.80	0.54	-0.53	-0.11	MWD
8080.00	89.80	359.80	7414.48	884.78	-3.89	884.79	1.15	0.96	-0.64	MWD
8175.00	90.00	359.80	7414.64	979.78	-4.23	979.79	0.21	0.21	0.00	MWD
8269.00	87.20	359.70	7416.94	1073.74	-4.64	1073.75	2.98	-2.98	-0.11	MWD
8363.00	88.00	359.70	7420.87	1167.66	-5.13	1167.67	0.85	0.85	0.00	MWD
8457.00	89.60	359.70	7422.84	1261.63	-5.62	1261.64	1.70	1.70	0.00	MWD
8551.00	89.30	0.20	7423.74	1355.63	-5.70	1355.64	0.62	-0.32	0.53	MWD
8646.00	88.90	0.00	7425.24	1450.61	-5.54	1450.62	0.47	-0.42	-0.21	MWD
8740.00	89.00	0.00	7426.96	1544.60	-5.54	1544.61	0.11	0.11	0.00	MWD
8834.00	89.80	0.00	7427.94	1638.59	-5.54	1638.60	0.85	0.85	0.00	MWD
8928.00	89.30	358.80	7428.68	1732.58	-6.52	1732.59	1.38	-0.53	-1.28	MWD
9022.00	89.20	359.30	7429.91	1826.56	-8.08	1826.58	0.54	-0.11	0.53	MWD
9116.00	90.00	359.30	7430.57	1920.55	-9.23	1920.57	0.85	0.85	0.00	MWD
9210.00	89.90	359.80	7430.65	2014.55	-9.96	2014.57	0.54	-0.11	0.53	MWD
9304.00	90.90	1.20	7429.99	2108.54	-9.14	2108.56	1.83	1.06	1.49	MWD
9399.00	92.20	1.20	7427.42	2203.48	-7.16	2203.49	1.37	1.37	0.00	MWD
9493.00	91.90	0.00	7424.06	2297.41	-6.17	2297.42	1.32	-0.32	-1.28	MWD
9587.00	92.30	359.80	7420.62	2391.35	-6.34	2391.36	0.48	0.43	-0.21	MWD
9681.00	91.90	359.00	7417.17	2485.28	-7.32	2485.29	0.95	-0.43	-0.85	MWD
9775.00	90.70	359.30	7415.04	2579.24	-8.71	2579.26	1.32	-1.28	0.32	MWD
9870.00	90.80	358.80	7413.80	2674.22	-10.29	2674.24	0.54	0.11	-0.53	MWD
9964.00	89.60	359.00	7413.47	2768.20	-12.09	2768.23	1.29	-1.28	0.21	MWD
10058.00	89.20	358.60	7414.45	2862.18	-14.06	2862.21	0.60	-0.43	-0.43	MWD
10152.00	88.90	357.70	7416.01	2956.11	-17.10	2956.16	1.01	-0.32	-0.96	MWD
10246.00	89.30	356.90	7417.49	3050.00	-21.52	3050.05	0.95	0.43	-0.85	MWD
10340.00	89.10	357.50	7418.80	3143.88	-26.11	3143.95	0.67	-0.21	0.64	MWD
10435.00	90.00	358.30	7419.55	3238.81	-29.60	3238.89	1.27	0.95	0.84	MWD
10529.00	91.00	359.00	7418.73	3332.78	-31.81	3332.87	1.30	1.06	0.74	MWD
10623.00	91.30	359.30	7416.84	3426.75	-33.20	3426.84	0.45	0.32	0.32	MWD

LEAM Drilling Systems, Inc

Survey Report

Company: CHESAPEAKE OPERATING Field: Weld County, CO Site: Eichheim 18-9-66 Well: 1H Wellpath: OH	Date: 9/28/2011 Co-ordinate(NE) Reference: Well: 1H, Grid North Vertical (TVD) Reference: GE 5285' + 20' 5305.0 Section (VS) Reference: Well (0.00N,0.00E,359.80Azi) Survey Calculation Method: Minimum Curvature Db: Sybase
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Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
10717.00	89.70	0.50	7416.02	3520.74	-33.37	3520.83	2.13	-1.70	1.28	MWD
10811.00	89.00	1.40	7417.09	3614.72	-31.81	3614.81	1.21	-0.74	0.96	MWD
10905.00	88.60	1.60	7419.05	3708.66	-29.35	3708.74	0.48	-0.43	0.21	MWD
11000.00	89.50	0.90	7420.63	3803.63	-27.28	3803.70	1.20	0.95	-0.74	MWD
11094.00	89.10	359.80	7421.78	3897.62	-26.70	3897.69	1.25	-0.43	-1.17	MWD
11188.00	89.00	359.30	7423.34	3991.60	-27.44	3991.67	0.54	-0.11	-0.53	MWD
11282.00	88.70	359.00	7425.22	4085.57	-28.84	4085.65	0.45	-0.32	-0.32	MWD
11376.00	88.50	358.60	7427.52	4179.52	-30.80	4179.60	0.48	-0.21	-0.43	MWD
11454.00	86.00	357.40	7431.26	4257.38	-33.52	4257.47	3.55	-3.21	-1.54	MWD
11505.00	86.00	357.40	7434.82	4308.20	-35.83	4308.30	0.00	0.00	0.00	Project

Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
1100.00	1100.00	9.625	12.250	9 5/8"

Annotation

MD ft	TVD ft	
7354.00	7271.96	HL Crossing: 7354'MD;7272'TVD

LEAM Drilling Systems, Inc

Survey Report - Geographic

Company: CHESAPEAKE OPERATING				Date: 9/28/2011		Time: 17:45:15		Page: 1	
Field: Weld County, CO				Co-ordinate(NE) Reference:		Well: 1H, Grid North			
Site: Eichheim 18-9-66				Vertical (TVD) Reference:		GE 5285' + 20' 5305.0			
Well: 1H				Section (VS) Reference:		Well (0.00N,0.00E,359.80Azi)			
Wellpath: OH				Survey Calculation Method:		Minimum Curvature		Db: Sybase	

Field: Weld County, CO			
Map System: US State Plane Coordinate System 1927		Map Zone: Colorado, Northern Zone	
Geo Datum: NAD27 (Clarke 1866)		Coordinate System: Well Centre	
Sys Datum: Mean Sea Level		Geomagnetic Model: IGRF2010	

Site: Eichheim 18-9-66 Sec. 18, T9N, R66W 405' FSL & 660' FEL			
Site Position:	Northing: 513384.99 ft	Latitude: 40 44 26.252 N	
From: Map	Easting: 2190641.40 ft	Longitude: 104 48 43.383 W	
Position Uncertainty: 0.00 ft		North Reference: Grid	
Ground Level: 5285.00 ft		Grid Convergence: 0.44 deg	

Well: 1H				Slot Name:			
Well Position:	+N/-S 0.00 ft	Northing: 513384.99 ft	Latitude: 40 44 26.252 N	+E/-W 0.00 ft	Easting : 2190641.40 ft	Longitude: 104 48 43.383 W	
Position Uncertainty: 0.00 ft							

Wellpath: OH				Drilled From: Surface			
Current Datum: GE 5285' + 20'				Tie-on Depth: 0.00 ft			
Magnetic Data: 9/2/2011				Above System Datum: Mean Sea Level			
Field Strength: 53321 nT				Declination: 8.89 deg			
Vertical Section: Depth From (TVD)				Mag Dip Angle: 67.31 deg			
	ft	+N/-S ft	+E/-W ft	Direction deg			
0.00		0.00	0.00	359.80			

Survey Program for Definitive Wellpath					
Date: 9/28/2011		Validated: No		Version: 0	
Actual From ft	To ft	Survey	Toolcode	Tool Name	
0.00	11454.00	Survey #1 (0.00-11454.00)	MWD	Std MWD	
11454.00	11505.00	Survey #2 (11454.00-11505.00)	Project	Projection	

Survey															
MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<--- Latitude ---> Deg Min Sec			<--- Longitude ---> Deg Min Sec				
0.00	0.00	0.00	0.00	0.00	0.00	513384.99	2190641.40	40	44	26.252	N	104	48	43.383	W
1100.00	0.00	0.00	1100.00	0.00	0.00	513384.99	2190641.40	40	44	26.252	N	104	48	43.383	W
1150.00	0.00	0.00	1150.00	0.00	0.00	513384.99	2190641.40	40	44	26.252	N	104	48	43.383	W
1397.73	0.26	78.33	1397.73	0.11	0.55	513385.10	2190641.95	40	44	26.253	N	104	48	43.376	W
1678.03	0.44	342.92	1678.03	1.27	0.86	513386.26	2190642.26	40	44	26.264	N	104	48	43.372	W
2063.29	0.62	279.11	2063.27	3.02	-1.64	513388.01	2190639.76	40	44	26.281	N	104	48	43.404	W
2256.17	0.88	255.60	2256.14	2.81	-4.10	513387.80	2190637.30	40	44	26.280	N	104	48	43.436	W
2539.70	1.23	250.20	2539.62	1.24	-9.07	513386.23	2190632.33	40	44	26.264	N	104	48	43.501	W
2826.55	0.88	255.91	2826.42	-0.34	-14.11	513384.65	2190627.29	40	44	26.249	N	104	48	43.567	W
3111.21	0.97	261.80	3111.04	-1.22	-18.61	513383.77	2190622.79	40	44	26.241	N	104	48	43.625	W
3397.97	1.58	254.50	3397.73	-2.62	-24.82	513382.37	2190616.58	40	44	26.228	N	104	48	43.706	W
3684.62	3.08	251.91	3684.13	-6.07	-35.95	513378.92	2190605.45	40	44	26.194	N	104	48	43.851	W
3971.82	3.08	255.69	3970.92	-10.37	-50.76	513374.62	2190590.64	40	44	26.153	N	104	48	44.044	W
4258.04	3.16	262.90	4256.72	-13.24	-66.04	513371.75	2190575.36	40	44	26.126	N	104	48	44.242	W
4541.83	1.23	248.79	4540.29	-15.31	-76.64	513369.68	2190564.76	40	44	26.106	N	104	48	44.380	W
4826.05	1.32	248.62	4824.44	-17.61	-82.54	513367.38	2190558.86	40	44	26.084	N	104	48	44.457	W
5110.80	0.79	231.21	5109.14	-20.04	-87.12	513364.95	2190554.28	40	44	26.060	N	104	48	44.517	W
5396.20	1.49	224.93	5394.48	-23.89	-91.27	513361.10	2190550.13	40	44	26.022	N	104	48	44.571	W
5490.49	1.58	227.70	5488.74	-25.64	-93.10	513359.35	2190548.30	40	44	26.005	N	104	48	44.595	W
5774.00	1.76	199.61	5772.13	-32.37	-97.45	513352.62	2190543.95	40	44	25.939	N	104	48	44.652	W
6057.00	1.49	253.32	6055.03	-37.52	-102.44	513347.47	2190538.96	40	44	25.889	N	104	48	44.718	W

LEAM Drilling Systems, Inc

Survey Report - Geographic

Company: CHESAPEAKE OPERATING Field: Weld County, CO Site: Eichheim 18-9-66 Well: 1H Wellpath: OH	Date: 9/28/2011 Co-ordinate(NE) Reference: Well: 1H, Grid North Vertical (TVD) Reference: GE 5285' + 20' 5305.0 Section (VS) Reference: Well (0.00N,0.00E,359.80Azi) Survey Calculation Method: Minimum Curvature
	Time: 17:45:15 Page: 2 Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<---- Latitude ---->			<--- Longitude --->		
								Deg	Min	Sec	Deg	Min	Sec
6342.00	1.49	251.60	6339.93	-39.75	-109.50	513345.24	2190531.90	40	44	25.867 N	104	48	44.810 W
6628.00	1.32	260.22	6625.85	-41.49	-116.28	513343.50	2190525.12	40	44	25.851 N	104	48	44.898 W
6784.00	1.50	257.40	6781.80	-42.24	-120.04	513342.75	2190521.36	40	44	25.843 N	104	48	44.947 W
6846.00	1.90	346.50	6843.78	-41.41	-121.07	513343.58	2190520.33	40	44	25.852 N	104	48	44.960 W
6894.00	9.10	1.10	6891.53	-36.84	-121.19	513348.15	2190520.21	40	44	25.897 N	104	48	44.961 W
6942.00	15.20	10.40	6938.44	-26.84	-119.98	513358.15	2190521.42	40	44	25.995 N	104	48	44.944 W
6990.00	19.60	13.00	6984.23	-12.80	-117.03	513372.19	2190524.37	40	44	26.134 N	104	48	44.905 W
7037.00	23.60	14.30	7027.92	4.00	-112.93	513388.99	2190528.47	40	44	26.300 N	104	48	44.850 W
7085.00	28.50	16.70	7071.03	24.29	-107.26	513409.28	2190534.14	40	44	26.500 N	104	48	44.774 W
7132.00	33.20	14.90	7111.37	47.48	-100.73	513432.47	2190540.67	40	44	26.728 N	104	48	44.687 W
7180.00	37.80	12.80	7150.44	74.54	-94.08	513459.53	2190547.32	40	44	26.995 N	104	48	44.598 W
7227.00	42.20	12.00	7186.44	104.04	-87.61	513489.03	2190553.79	40	44	27.286 N	104	48	44.511 W
7275.00	46.70	10.90	7220.69	136.98	-80.95	513521.97	2190560.45	40	44	27.611 N	104	48	44.421 W
7322.00	50.00	9.70	7251.93	171.53	-74.68	513556.52	2190566.72	40	44	27.952 N	104	48	44.336 W
7354.00	52.47	9.84	7271.96	196.12	-70.45	513581.11	2190570.95	40	44	28.195 N	104	48	44.279 W
7370.00	53.70	9.90	7281.57	208.72	-68.26	513593.71	2190573.14	40	44	28.319 N	104	48	44.249 W
7418.00	56.80	10.90	7308.93	247.50	-61.13	513632.49	2190580.27	40	44	28.702 N	104	48	44.152 W
7466.00	60.00	10.90	7334.08	287.64	-53.40	513672.63	2190588.00	40	44	29.098 N	104	48	44.048 W
7513.00	65.90	9.90	7355.44	328.80	-45.86	513713.79	2190595.54	40	44	29.504 N	104	48	43.946 W
7561.00	68.80	9.00	7373.93	372.49	-38.59	513757.48	2190602.81	40	44	29.935 N	104	48	43.847 W
7609.00	73.30	8.60	7389.51	417.34	-31.65	513802.33	2190609.75	40	44	30.378 N	104	48	43.752 W
7657.00	79.30	8.60	7400.87	463.43	-24.68	513848.42	2190616.72	40	44	30.833 N	104	48	43.657 W
7699.00	85.20	8.30	7406.53	504.58	-18.57	513889.57	2190622.83	40	44	31.239 N	104	48	43.574 W
7798.00	89.50	3.70	7411.11	602.88	-8.24	513987.87	2190633.16	40	44	32.209 N	104	48	43.430 W
7892.00	89.40	0.50	7412.01	696.80	-4.80	514081.79	2190636.60	40	44	33.137 N	104	48	43.375 W
7986.00	88.90	0.40	7413.41	790.79	-4.06	514175.78	2190637.34	40	44	34.066 N	104	48	43.356 W
8080.00	89.80	359.80	7414.48	884.78	-3.89	514269.77	2190637.51	40	44	34.994 N	104	48	43.345 W
8175.00	90.00	359.80	7414.64	979.78	-4.23	514364.77	2190637.17	40	44	35.933 N	104	48	43.339 W
8269.00	87.20	359.70	7416.94	1073.74	-4.64	514458.73	2190636.76	40	44	36.862 N	104	48	43.335 W
8363.00	88.00	359.70	7420.87	1167.66	-5.13	514552.65	2190636.27	40	44	37.790 N	104	48	43.332 W
8457.00	89.60	359.70	7422.84	1261.63	-5.62	514646.62	2190635.78	40	44	38.718 N	104	48	43.329 W
8551.00	89.30	0.20	7423.74	1355.63	-5.70	514740.62	2190635.70	40	44	39.647 N	104	48	43.321 W
8646.00	88.90	0.00	7425.24	1450.61	-5.54	514835.60	2190635.86	40	44	40.585 N	104	48	43.309 W
8740.00	89.00	0.00	7426.96	1544.60	-5.54	514929.59	2190635.86	40	44	41.514 N	104	48	43.299 W
8834.00	89.80	0.00	7427.94	1638.59	-5.54	515023.58	2190635.86	40	44	42.443 N	104	48	43.290 W
8928.00	89.30	358.80	7428.68	1732.58	-6.52	515117.57	2190634.88	40	44	43.372 N	104	48	43.293 W
9022.00	89.20	359.30	7429.91	1826.56	-8.08	515211.55	2190633.32	40	44	44.300 N	104	48	43.304 W
9116.00	90.00	359.30	7430.57	1920.55	-9.23	515305.54	2190632.17	40	44	45.229 N	104	48	43.310 W
9210.00	89.90	359.80	7430.65	2014.55	-9.96	515399.54	2190631.44	40	44	46.158 N	104	48	43.310 W
9304.00	90.90	1.20	7429.99	2108.54	-9.14	515493.53	2190632.26	40	44	47.087 N	104	48	43.290 W
9399.00	92.20	1.20	7427.42	2203.48	-7.16	515588.47	2190634.24	40	44	48.025 N	104	48	43.254 W
9493.00	91.90	0.00	7424.06	2297.41	-6.17	515682.40	2190635.23	40	44	48.953 N	104	48	43.232 W
9587.00	92.30	359.80	7420.62	2391.35	-6.34	515776.34	2190635.06	40	44	49.881 N	104	48	43.225 W
9681.00	91.90	359.00	7417.17	2485.28	-7.32	515870.27	2190634.08	40	44	50.809 N	104	48	43.228 W
9775.00	90.70	359.30	7415.04	2579.24	-8.71	515964.23	2190632.69	40	44	51.738 N	104	48	43.236 W
9870.00	90.80	358.80	7413.80	2674.22	-10.29	516059.21	2190631.11	40	44	52.676 N	104	48	43.247 W
9964.00	89.60	359.00	7413.47	2768.20	-12.09	516153.19	2190629.31	40	44	53.605 N	104	48	43.261 W
10058.00	89.20	358.60	7414.45	2862.18	-14.06	516247.17	2190627.34	40	44	54.534 N	104	48	43.277 W
10152.00	88.90	357.70	7416.01	2956.11	-17.10	516341.10	2190624.30	40	44	55.462 N	104	48	43.307 W
10246.00	89.30	356.90	7417.49	3050.00	-21.52	516434.99	2190619.88	40	44	56.390 N	104	48	43.355 W
10340.00	89.10	357.50	7418.80	3143.88	-26.11	516528.87	2190615.29	40	44	57.318 N	104	48	43.406 W
10435.00	90.00	358.30	7419.55	3238.81	-29.60	516623.80	2190611.80	40	44	58.256 N	104	48	43.441 W
10529.00	91.00	359.00	7418.73	3332.78	-31.81	516717.77	2190609.59	40	44	59.185 N	104	48	43.461 W

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Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<---- Latitude ----> Deg Min Sec			<--- Longitude ---> Deg Min Sec		
10623.00	91.30	359.30	7416.84	3426.75	-33.20	516811.74	2190608.20	40	45	0.114 N	104	48	43.469 W
10717.00	89.70	0.50	7416.02	3520.74	-33.37	516905.73	2190608.03	40	45	1.042 N	104	48	43.462 W
10811.00	89.00	1.40	7417.09	3614.72	-31.81	516999.71	2190609.59	40	45	1.971 N	104	48	43.432 W
10905.00	88.60	1.60	7419.05	3708.66	-29.35	517093.65	2190612.05	40	45	2.899 N	104	48	43.391 W
11000.00	89.50	0.90	7420.63	3803.63	-27.28	517188.62	2190614.12	40	45	3.837 N	104	48	43.354 W
11094.00	89.10	359.80	7421.78	3897.62	-26.70	517282.61	2190614.70	40	45	4.766 N	104	48	43.337 W
11188.00	89.00	359.30	7423.34	3991.60	-27.44	517376.59	2190613.96	40	45	5.695 N	104	48	43.337 W
11282.00	88.70	359.00	7425.22	4085.57	-28.84	517470.56	2190612.56	40	45	6.623 N	104	48	43.346 W
11376.00	88.50	358.60	7427.52	4179.52	-30.80	517564.51	2190610.60	40	45	7.552 N	104	48	43.362 W
11454.00	86.00	357.40	7431.26	4257.38	-33.52	517642.37	2190607.88	40	45	8.321 N	104	48	43.390 W
11505.00	86.00	357.40	7434.82	4308.20	-35.83	517693.19	2190605.57	40	45	8.824 N	104	48	43.414 W

Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
1100.00	1100.00	9.625	12.250	9 5/8"

Annotation

MD ft	TVD ft	
7354.00	7271.96	HL Crossing: 7354'MD;7272'TVD