

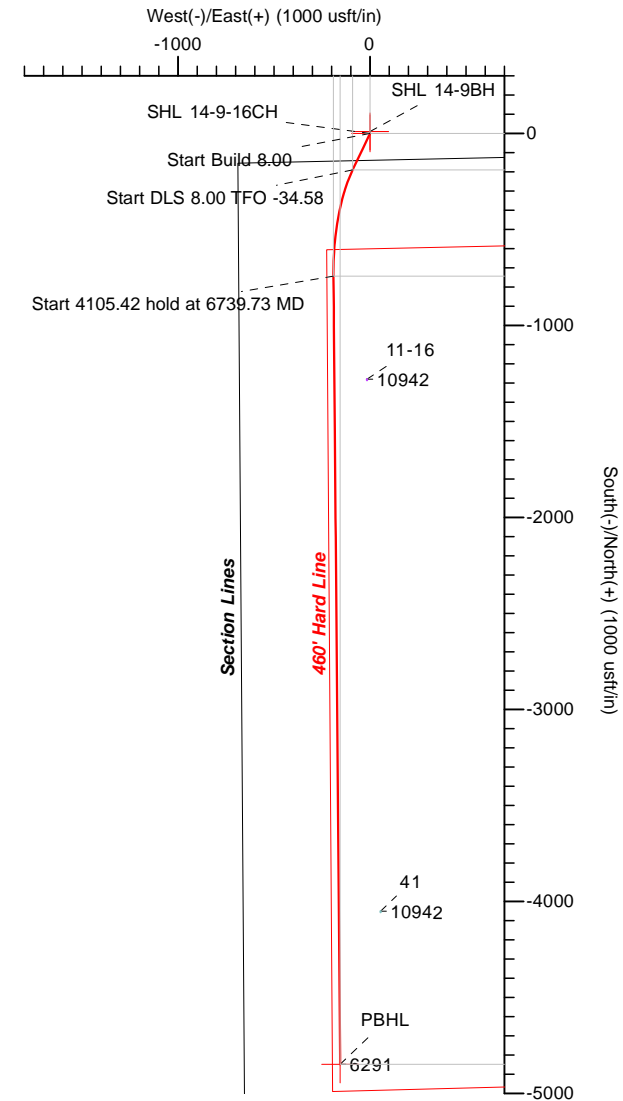
# HILCORP ENERGY COMPANY

Project: Weld County, CO  
 Site: State  
 Well: 14-9-16CH  
 Wellbore: OH  
 Design: Plan #2



Azimuths to True North  
 Magnetic North: 8.52°

Magnetic Field  
 Strength: 53012.3snT  
 Dip Angle: 66.96°  
 Date: 03/14/2012  
 Model: IGRF2010

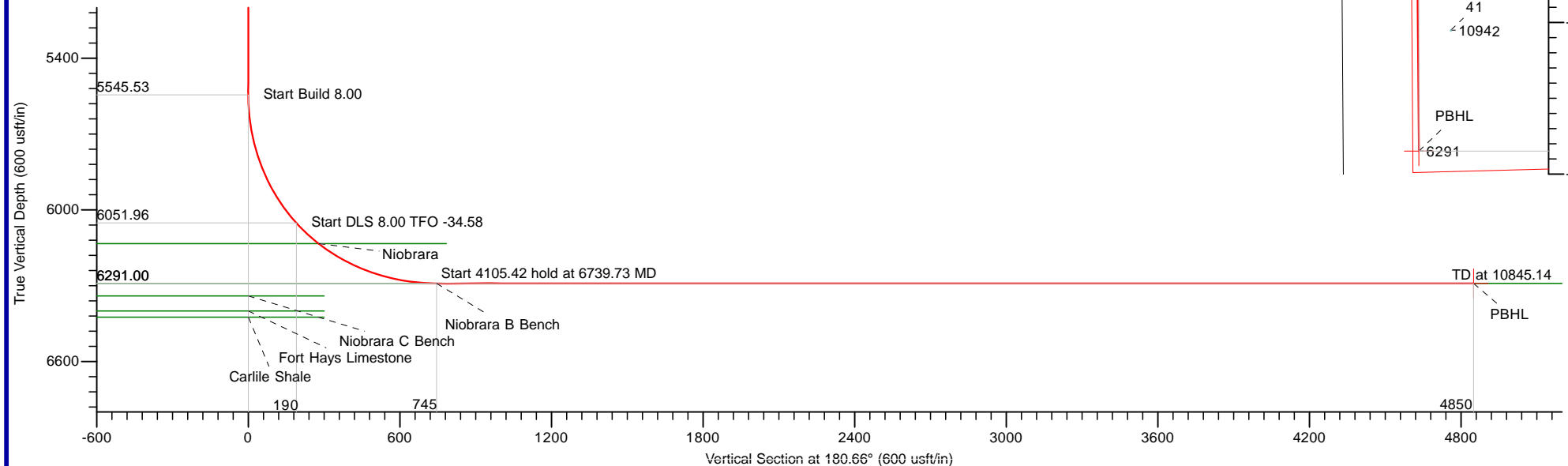


## DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL 14-9-16CH	0.00	0.00	0.00	1329974.18	3325037.98	40° 13' 59.952 N	104° 20' 8.772 W
SHL 14-9BH	0.00	10.92	0.00	1329985.10	3325037.84	40° 14' 0.060 N	104° 20' 8.772 W
PBHL	6291.00	-4848.40	-155.22	1325124.17	3324946.43	40° 13' 12.038 N	104° 20' 10.773 W

## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	5545.53	0.00	0.00	5545.53	0.00	0.00	0.00	0.00	0.00	
3	6108.03	45.00	205.50	6051.96	-189.33	-90.31	8.00	205.50	190.36	
4	6739.73	90.00	179.51	6291.00	-743.13	-190.33	8.00	-34.58	745.27	
5	10845.14	90.00	179.51	6291.00	-4848.40	-155.22	0.00	0.00	4849.86	PBHL



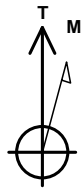
LEAM DRILLING SYSTEMS, INC.  
 2010 East Davis, Conroe, Texas 77301  
 Phone: 936/756-7577, Fax 936/756-7595

Plan: Plan #2 (14-9-16CH/OH)  
 State

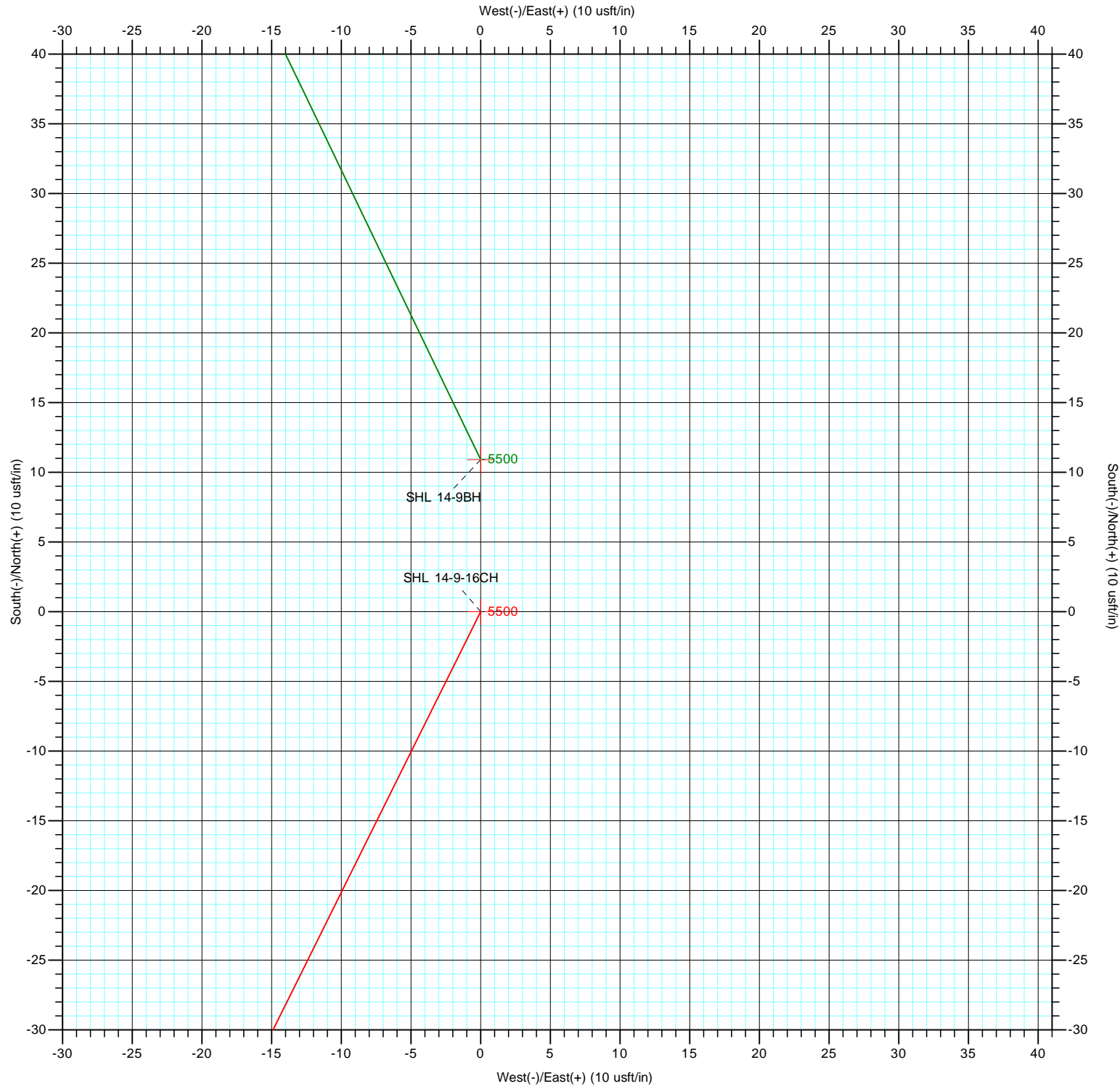
Created By: Justin Andoe  
 Date: 16:01, April 13 2012  
 Approved: \_\_\_\_\_ Date: \_\_\_\_\_

HILCORP ENERGY COMPANY

Project: Weld County, CO  
Site: State  
Well: 14-9-16CH  
Wellbore: OH  
Design: Plan #2



Azimuths to True North  
Magnetic North: 8.52°  
  
Magnetic Field  
Strength: 53012.3snT  
Dip Angle: 66.96°  
Date: 03/14/2012  
Model: IGRF2010



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

Plan: Plan #2 (14-9-16CH/OH)  
State  
Created By: Tyler Carlson  
Date: \_\_\_\_\_  
Approved: \_\_\_\_\_  
Date: 12:05, April 13 2012  
Date: \_\_\_\_\_

## Planning Report

<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well 14-9-16CH
<b>Company:</b>	HILCORP ENERGY COMPANY	<b>TVD Reference:</b>	GL 4629.8'+KB 12.2' @ 4642.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	GL 4629.8'+KB 12.2' @ 4642.00usft
<b>Site:</b>	State	<b>North Reference:</b>	True
<b>Well:</b>	14-9-16CH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2		

<b>Project</b>	Weld County, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

Site		State			
Site Position:		Northing:	1,329,974.18 usft	Latitude:	40° 13' 59.952 N
From:	Lat/Long	Easting:	3,325,037.98 usft	Longitude:	104° 20' 8.772 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.75 °

Well	14-9-16CH					
Well Position	+N/-S	0.00 usft	Northing:	1,329,974.18 usft	Latitude:	40° 13' 59.952 N
	+E/-W	0.00 usft	Easting:	3,325,037.98 usft	Longitude:	104° 20' 8.772 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	4,629.80 usft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	03/14/12	8.52	66.96	53,012

<b>Design</b>	Plan #2			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	180.66

<b>Plan Sections</b>										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,545.53	0.00	0.00	5,545.53	0.00	0.00	0.00	0.00	0.00	0.00	
6,108.03	45.00	205.50	6,051.96	-189.33	-90.31	8.00	8.00	0.00	205.50	
6,739.73	90.00	179.51	6,291.00	-743.13	-190.33	8.00	7.12	-4.11	-34.58	
10,845.14	90.00	179.51	6,291.00	-4,848.40	-155.22	0.00	0.00	0.00	0.00	PBHL

# Planning Report

<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well 14-9-16CH
<b>Company:</b>	HILCORP ENERGY COMPANY	<b>TVD Reference:</b>	GL 4629.8'+KB 12.2' @ 4642.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	GL 4629.8'+KB 12.2' @ 4642.00usft
<b>Site:</b>	State	<b>North Reference:</b>	True
<b>Well:</b>	14-9-16CH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2		

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)
5,545.53	0.00	0.00	5,545.53	0.00	0.00	0.00	0.00	0.00	0.00
5,550.00	0.36	205.50	5,550.00	-0.01	-0.01	0.01	8.00	8.00	0.00
5,600.00	4.36	205.50	5,599.95	-1.87	-0.89	1.88	8.00	8.00	0.00
5,650.00	8.36	205.50	5,649.63	-6.86	-3.27	6.90	8.00	8.00	0.00
5,700.00	12.36	205.50	5,698.81	-14.98	-7.14	15.06	8.00	8.00	0.00
5,750.00	16.36	205.50	5,747.23	-26.17	-12.48	26.31	8.00	8.00	0.00
5,800.00	20.36	205.50	5,794.68	-40.38	-19.26	40.60	8.00	8.00	0.00
5,850.00	24.36	205.50	5,840.91	-57.54	-27.44	57.85	8.00	8.00	0.00
5,900.00	28.36	205.50	5,885.70	-77.57	-37.00	77.99	8.00	8.00	0.00
5,950.00	32.36	205.50	5,928.84	-100.37	-47.88	100.92	8.00	8.00	0.00
6,000.00	36.36	205.50	5,970.11	-125.84	-60.02	126.52	8.00	8.00	0.00
6,050.00	40.36	205.50	6,009.31	-153.84	-73.38	154.67	8.00	8.00	0.00
6,100.00	44.36	205.50	6,046.25	-184.24	-87.88	185.24	8.00	8.00	0.00
6,108.03	45.00	205.50	6,051.96	-189.33	-90.31	190.36	8.00	8.00	0.00
6,150.00	47.79	202.93	6,080.90	-217.05	-102.76	218.22	8.00	6.66	-6.13
6,200.00	51.19	200.15	6,113.38	-252.41	-116.69	253.74	8.00	6.79	-5.56
6,233.76	53.52	198.42	6,134.00	-277.64	-125.51	279.07	8.00	6.90	-5.12
Niobrara									
6,250.00	54.65	197.62	6,143.53	-290.15	-129.57	291.62	8.00	6.95	-4.90
6,300.00	58.15	195.31	6,171.19	-330.08	-141.36	331.69	8.00	7.01	-4.63
6,350.00	61.69	193.16	6,196.25	-372.01	-151.98	373.74	8.00	7.09	-4.29
6,400.00	65.27	191.15	6,218.57	-415.74	-161.39	417.57	8.00	7.15	-4.01
6,450.00	68.87	189.26	6,238.05	-461.05	-169.54	462.98	8.00	7.20	-3.79
6,500.00	72.49	187.46	6,254.59	-507.73	-176.39	509.72	8.00	7.24	-3.61
6,550.00	76.12	185.72	6,268.12	-555.54	-181.90	557.59	8.00	7.27	-3.47
6,600.00	79.77	184.04	6,278.55	-604.25	-186.06	606.35	8.00	7.29	-3.36
6,650.00	83.43	182.40	6,285.86	-653.62	-188.84	655.75	8.00	7.31	-3.28
6,700.00	87.09	180.79	6,289.99	-703.42	-190.22	705.57	8.00	7.32	-3.23
6,739.73	90.00	179.51	6,291.00	-743.13	-190.33	745.27	8.00	7.33	-3.21
Niobrara B Bench									
6,800.00	90.00	179.51	6,291.00	-803.40	-189.81	805.53	0.00	0.00	0.00
6,900.00	90.00	179.51	6,291.00	-903.40	-188.96	905.51	0.00	0.00	0.00
7,000.00	90.00	179.51	6,291.00	-1,003.39	-188.10	1,005.49	0.00	0.00	0.00
7,100.00	90.00	179.51	6,291.00	-1,103.39	-187.25	1,105.47	0.00	0.00	0.00
7,200.00	90.00	179.51	6,291.00	-1,203.39	-186.39	1,205.45	0.00	0.00	0.00
7,300.00	90.00	179.51	6,291.00	-1,303.38	-185.54	1,305.43	0.00	0.00	0.00
7,400.00	90.00	179.51	6,291.00	-1,403.38	-184.68	1,405.41	0.00	0.00	0.00
7,500.00	90.00	179.51	6,291.00	-1,503.38	-183.83	1,505.39	0.00	0.00	0.00
7,600.00	90.00	179.51	6,291.00	-1,603.37	-182.97	1,605.37	0.00	0.00	0.00
7,700.00	90.00	179.51	6,291.00	-1,703.37	-182.11	1,705.35	0.00	0.00	0.00
7,800.00	90.00	179.51	6,291.00	-1,803.36	-181.26	1,805.33	0.00	0.00	0.00
7,900.00	90.00	179.51	6,291.00	-1,903.36	-180.40	1,905.31	0.00	0.00	0.00
8,000.00	90.00	179.51	6,291.00	-2,003.36	-179.55	2,005.29	0.00	0.00	0.00
8,100.00	90.00	179.51	6,291.00	-2,103.35	-178.69	2,105.27	0.00	0.00	0.00
8,200.00	90.00	179.51	6,291.00	-2,203.35	-177.84	2,205.25	0.00	0.00	0.00
8,300.00	90.00	179.51	6,291.00	-2,303.35	-176.98	2,305.23	0.00	0.00	0.00
8,400.00	90.00	179.51	6,291.00	-2,403.34	-176.13	2,405.21	0.00	0.00	0.00
8,500.00	90.00	179.51	6,291.00	-2,503.34	-175.27	2,505.19	0.00	0.00	0.00
8,600.00	90.00	179.51	6,291.00	-2,603.34	-174.42	2,605.17	0.00	0.00	0.00
8,700.00	90.00	179.51	6,291.00	-2,703.33	-173.56	2,705.15	0.00	0.00	0.00
8,800.00	90.00	179.51	6,291.00	-2,803.33	-172.71	2,805.13	0.00	0.00	0.00
8,900.00	90.00	179.51	6,291.00	-2,903.32	-171.85	2,905.11	0.00	0.00	0.00
9,000.00	90.00	179.51	6,291.00	-3,003.32	-171.00	3,005.09	0.00	0.00	0.00
9,100.00	90.00	179.51	6,291.00	-3,103.32	-170.14	3,105.07	0.00	0.00	0.00

# Planning Report

<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well 14-9-16CH
<b>Company:</b>	HILCORP ENERGY COMPANY	<b>TVD Reference:</b>	GL 4629.8'+KB 12.2' @ 4642.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	GL 4629.8'+KB 12.2' @ 4642.00usft
<b>Site:</b>	State	<b>North Reference:</b>	True
<b>Well:</b>	14-9-16CH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2		

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)
9,200.00	90.00	179.51	6,291.00	-3,203.31	-169.29	3,205.05	0.00	0.00	0.00
9,300.00	90.00	179.51	6,291.00	-3,303.31	-168.43	3,305.03	0.00	0.00	0.00
9,400.00	90.00	179.51	6,291.00	-3,403.31	-167.58	3,405.01	0.00	0.00	0.00
9,500.00	90.00	179.51	6,291.00	-3,503.30	-166.72	3,504.99	0.00	0.00	0.00
9,600.00	90.00	179.51	6,291.00	-3,603.30	-165.87	3,604.97	0.00	0.00	0.00
9,700.00	90.00	179.51	6,291.00	-3,703.30	-165.01	3,704.95	0.00	0.00	0.00
9,800.00	90.00	179.51	6,291.00	-3,803.29	-164.16	3,804.93	0.00	0.00	0.00
9,900.00	90.00	179.51	6,291.00	-3,903.29	-163.30	3,904.91	0.00	0.00	0.00
10,000.00	90.00	179.51	6,291.00	-4,003.28	-162.45	4,004.89	0.00	0.00	0.00
10,100.00	90.00	179.51	6,291.00	-4,103.28	-161.59	4,104.87	0.00	0.00	0.00
10,200.00	90.00	179.51	6,291.00	-4,203.28	-160.74	4,204.85	0.00	0.00	0.00
10,300.00	90.00	179.51	6,291.00	-4,303.27	-159.88	4,304.83	0.00	0.00	0.00
10,400.00	90.00	179.51	6,291.00	-4,403.27	-159.03	4,404.81	0.00	0.00	0.00
10,500.00	90.00	179.51	6,291.00	-4,503.27	-158.17	4,504.79	0.00	0.00	0.00
10,600.00	90.00	179.51	6,291.00	-4,603.26	-157.32	4,604.77	0.00	0.00	0.00
10,700.00	90.00	179.51	6,291.00	-4,703.26	-156.46	4,704.75	0.00	0.00	0.00
10,800.00	90.00	179.51	6,291.00	-4,803.25	-155.61	4,804.73	0.00	0.00	0.00
10,845.14	90.00	179.51	6,291.00	-4,848.40	-155.22	4,849.86	0.00	0.00	0.00
PBHL									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SHL 14-9BH	0.00	0.00	0.00	10.92	0.00	1,329,985.10	3,325,037.84	40° 14' 0.060 N	104° 20' 8.772 W
- hit/miss target									
- Shape									
- plan misses target center by 5545.54usft at 5545.53usft MD (5545.53 TVD, 0.00 N, 0.00 E)									
- Point									
SHL 14-9-16CH	0.00	0.00	0.00	0.00	0.00	1,329,974.18	3,325,037.98	40° 13' 59.952 N	104° 20' 8.772 W
- plan misses target center by 5545.53usft at 5545.53usft MD (5545.53 TVD, 0.00 N, 0.00 E)									
- Point									
PBHL	0.00	0.00	6,291.00	-4,848.40	-155.22	1,325,124.17	3,324,946.43	40° 13' 12.038 N	104° 20' 10.773 W
- plan hits target center									
- Point									

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
12.00	12.00	Parkman		0.00		
3,945.00	3,945.00	Sussex		0.00		
6,233.76	6,134.00	Niobrara		0.00		
6,739.73	6,291.00	Niobrara B Bench		0.00		