

Hilcorp Energy Company  
**State of Colorado 14-9-16CH**  
SHL: 140' FSL 690' FWL (SW/4 SW/4)  
Sec. 9 T3N R62W  
BHL: ±600' FSL ±600' FWL (SW/4 SW/4)  
Sec. 16 T3N R62W  
Weld County, Colorado  
Surface: Fee  
SHL State Mineral Lease: ST-7873.3  
BHL State Mineral Lease: ST-7972.4

**CONFIDENTIAL**

**DRILLING PLAN**

Please contact Mr. John McKnight with Hilcorp at 713-289-2755, if there are any questions or concerns regarding this Drilling Program.

**WELL OBJECTIVES**

- (1) Drill and case each wellbore with no health, safety, or environmental impact.
- (2) Optimize drilling efficiency by utilizing best drilling practices and input from entire drill team.  
Communicate best practices to Hilcorp so they can be included in the design of future wellbores.

**SURFACE ELEVATION** – 4,631' (Un-graded ground elevation)

**SURFACE FORMATION** – Parkman

**ESTIMATED FORMATION TOPS (PILOT HOLE)**

	<b>TVD</b>	<b>MD</b>	
Parkman	0'	0'	
Sussex	3,945'	3,945'	
Niobrara	6,134'	6,216'	Water, Oil & Gas
Niobrara B	6,291'	6,683'	Water, Oil & Gas
<b>Total Depth</b>	<b>6,575'</b>	<b>10,829'</b>	

*All fresh water and prospectively valuable minerals encountered during drilling will be recorded by depth and protected.*

**HORIZONTAL DRILLING PROGRAM**

- A) Kick-Off-Point (KOP) is estimated to be at 5,575' TVD.
- B) The horizontal portion of the well will kick off at 5,575' TVD, the curve and lateral will be drilled, and production casing will run the distance of the horizontal leg +/- 10,829'.

CASING PROGRAM

Total Measured Depth (MD)	Hole Diameter	Casing Diameter	Casing Weight And Grade	Cement
0' - 40'	24"	20"	Conductor Casing	Redimix to surface
Surface 0' - 2,000'	17-1/2"	13-3/8"	K-55 54.5 lbm/ft	Lead: +/- 870 sks Swiftcem B2 Tail +/- 410 sks Swiftcem B2*
Intermediate 0' - 5,500'	12-1/4"	9-5/8"	K-55 36 lbm/ft	Lead +/- 580 sks Extendacem Tail +/- 280 sks Extendacem**
Horizontal Production 0' - 10,829'	8-1/2"	5-1/2"	HCP 110 20 lbm/ft	Lead +/- 1070 sks Expandacem**

\* Cement volume calculated based on gauge hole plus 100%.

\*\* Cement volume calculated based on gauge hole plus 35%.

Yields:	Surface:	Lead:	Swiftcem B2 =	2.42 ft <sup>3</sup> /sk (12.0 ppg) 14.36 gal/sk
		Tail:	Swiftcem B2 =	1.72 ft <sup>3</sup> /sk (13.5 ppg) 9.09 gal/sk
	Intermediate:	Lead:	Extendacem =	2.03 ft <sup>3</sup> /sk (11.8 ppg) 11.08 gal/sk
		Tail:	Extendacem =	1.69 ft <sup>3</sup> /sk (12.5 ppg) 8.54 gal/sk
	Production:	Lead:	Extendacem =	1.67 ft <sup>3</sup> /sk (13.8 ppg) 7.75 gal/sk

PRESSURE CONTROL

- See attached blowout preventer diagram.

BOPs and choke manifold will be installed and pressure tested before drilling out of surface casing (subsequent pressure test will be performed whenever pressure seals are broken), and then will be checked daily as to mechanical operating condition. BOPs will be pressure tested at least once every 30 days. Ram type preventers and related pressure control equipment will be pressure tested to related working pressure of the stack assembly if a test plug is used. If a plug is not used, the stack assembly will be tested to the rated working pressure of the stack assembly or 70% of the minimum internal yield of the casing, whichever is less. Annular type preventers will be pressure tested to 50% of their working pressure. All casing strings will be pressure tested to 0.22 psi/ft or 1,500 psi, whichever is greater, not to exceed 70% of the internal yield. If a 5M system or greater is used, the casing shoe will be tested by drilling 5-20' out from under the shoe and pressure tested to a maximum expected mud weight equivalent as shown in the mud program listed below.

A manual locking device (i.e. hand wheels) or automatic locking devices shall be installed on the BOP stack. Remote controls capable of both opening and closing all preventers shall be readily accessible to the driller.

The choke manifold and accumulator will meet or exceed Onshore Order No. 2 (OSO #2) standards. The BOP equipment will be tested after any repairs to the equipment. Pipe rams, blind rams and annular preventer will be activated on each trip and weekly BOP drills will be conducted with each crew. All tests, maintenance, and BOP drills will be documented on rig "tower sheets".

Statement of Accumulator System and Location of Hydraulic Controls

*The drilling rig has not been selected for this well. Selection will take place after approval of this application is granted. Manual and/or hydraulic controls will be in compliance with OSO #2 for 5,000 psi system.*

*A remote accumulator will be used. Pressures, capacities, location of remote hydraulic and manual controls will be identified at a later time.*

MUD PROGRAM

0' - 2,000'	Spud Mud w/ LCM material, if necessary M.W.: <9.0 ppg
2,000' - TD	Water Based Mud w/ calcium carbonate, barium sulfate, and LCM material, if necessary M.W.: <9.0 ppg

*Sufficient mud materials to maintain mud properties, control lost circulation and to contain a "kick" will be available on location.*

AUXILIARY EQUIPMENT

- A. Upper Kelly cock; lower Kelly cock will be installed while drilling and tested with 5,000 psi BOP.
- B. Inside BOP or stabbing valve with handle (available on rig floor).
- C. Safety valve(s) and subs to fit all string connections in use.
- D. Mud monitoring will be with a flow sensor, pit level indicator, and visually observation.

LOGGING, CORING TESTING PROGRAM

- A. Gamma Ray, Resistivity, Neutron/Density Porosity, Quad combo, Crossed Dipole Sonic.
- B. Coring: Possible 200' core.
- C. Testing: None planned – Drill Stem tests may be run on shows of interest.

ABNORMAL CONDITIONS

- A. Pressures: No abnormal conditions are anticipated.  
Anticipated BHP gradient: 0.45 psi/ft
- B. Temperatures: No abnormal conditions are anticipated.
- C. H<sub>2</sub>S: None Anticipated.
- D. Estimated bottomhole pressure: 2,959 psi

ANTICIPATED START DATE

May 1, 2012

Hilcorp Energy Company  
**State of Colorado 14-9-16CH**  
 SHL: 140' FSL 690' FWL (SW/4 SW/4)  
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 Weld County, Colorado  
 Surface: Fee  
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### SURFACE CASING AND CENTRALIZER DESIGN

Proposed Total Depth:	6,575 ' TVD	10,829' MD
Proposed Depth of Surface Casing:	2,000 '	
Estimated Pressure Gradient:	0.45 psi/ft	
Bottom Hole Pressure at	6,575 '	
0.45 psi/ft x 6,575 ' T	= 2,959 psi	
Hydrostatic Head of gas/oil mud:	0.22 psi/ft	
0.22 psi/ft x 6,575 ' T	= 1,447 psi	

#### Maximum Design Surface Pressure

Bottom Hole Pressure	–	Hydrostatic Head	=
( 0.45 psi/ft x 6,575 TV )	–	( 0.22 psi/ft x 6,575 ' )	=
2,959 psi	–	1,447 psi	= 1,512 psi

#### Casing Strengths      13-3/8" 54.5#

<u>Wt.</u>	<u>Tension (lbs)</u>	<u>Burst (psi)</u>	<u>Collapse (psi)</u>
55 #	547,000	2,730	1,130
61 #	633,000	3,090	1,540

#### Safety Factors

Tension (Dry):	1.8	Burst:	1.0	Collapse:	1.125
Tension (Dry):	54.5 # / ft x 2,000 ' = 109,001 #				
	Safety Factor = $\frac{547,000}{109,001}$				5.02 ok
Burst:	Safety Factor = $\frac{2,730 \text{ psi}}{1,512 \text{ psi}}$				1.81 ok
Collapse:	Hydrostatic = 0.052 x 9.0 ppg x 2,000 ' = 936 psi				
	Safety Factor = $\frac{1,130 \text{ psi}}{936 \text{ psi}}$				1.21 ok

Use 2,000 ' 13-3/8" 54.5#

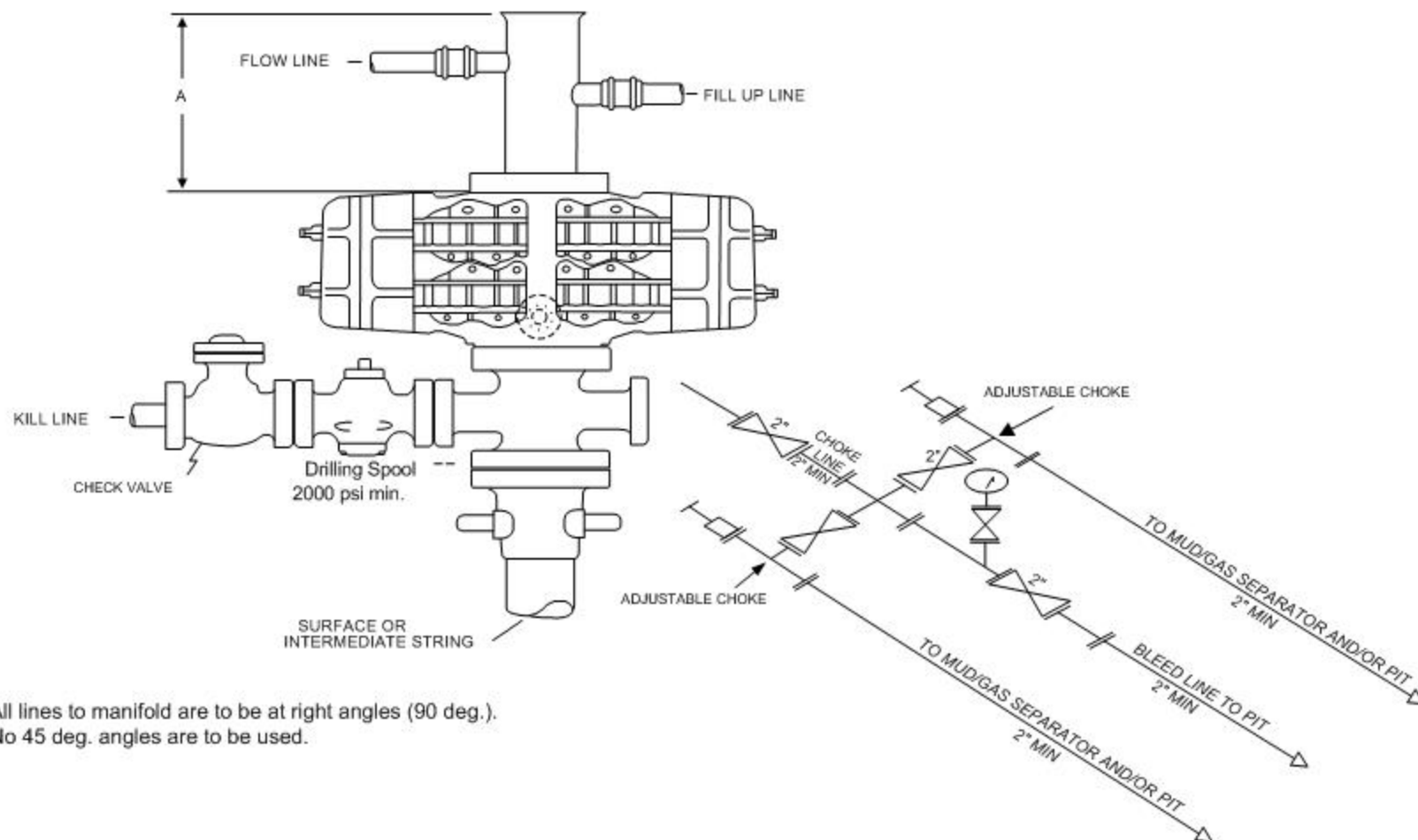
Use 2,000 psi minimum casinghead and BOP's

#### Centralizers

8 Total  
 1 near surface at 160'  
 3 -1 each at middle of bottom joint, second joint, third joint  
 4 -1 each at every other joint ±80 ' spacing  
 Total centralized ± 600 ' ( 1,400 ' – 2,000 ' )

Note that field experience indicates that additional centralizers greatly increase the chance of "sticking" the surface casing prior to reaching surface casing total depth.

ANNULAR PREVENTER MAY BE SUBSTITUTED FOR DOUBLE GATE PREVENTERS



All lines to manifold are to be at right angles (90 deg.).  
No 45 deg. angles are to be used.

2M CHOKE MANIFOLD EQUIPMENT – CONFIGURATION MAY VARY

### BLOWOUT PREVENTER

2,000 psi minimum

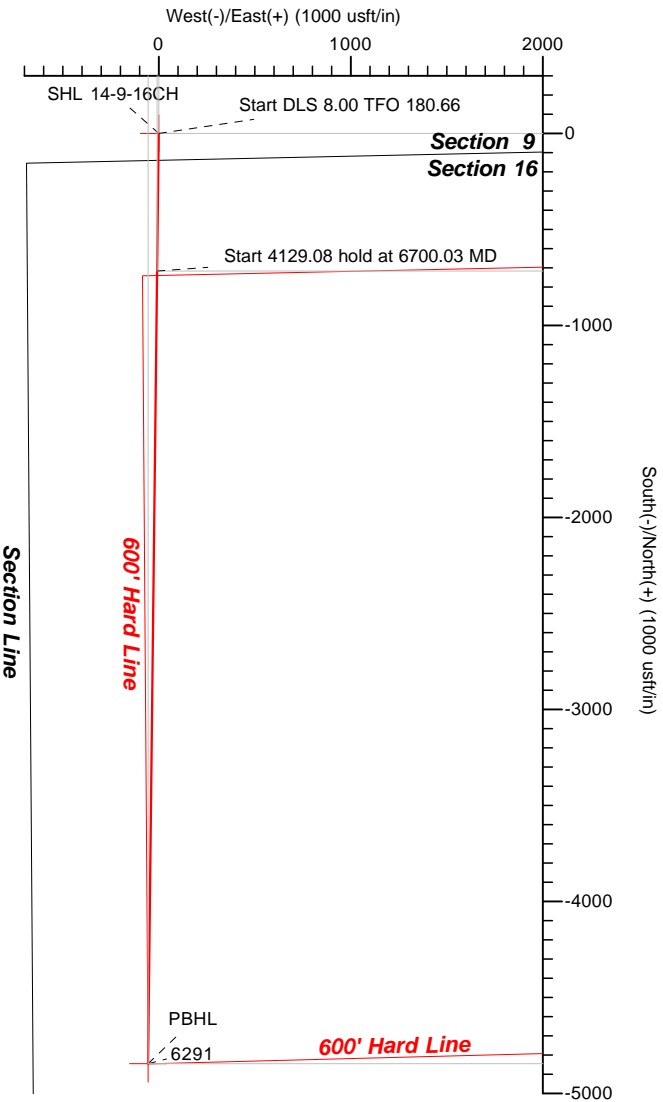
# HILCORP ENERGY COMPANY

Project: Weld County, CO  
 Site: State  
 Well: 14-9-16CH  
 Wellbore: OH  
 Design: Plan #1



Azimuths to True North  
 Magnetic North: 8.52°

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

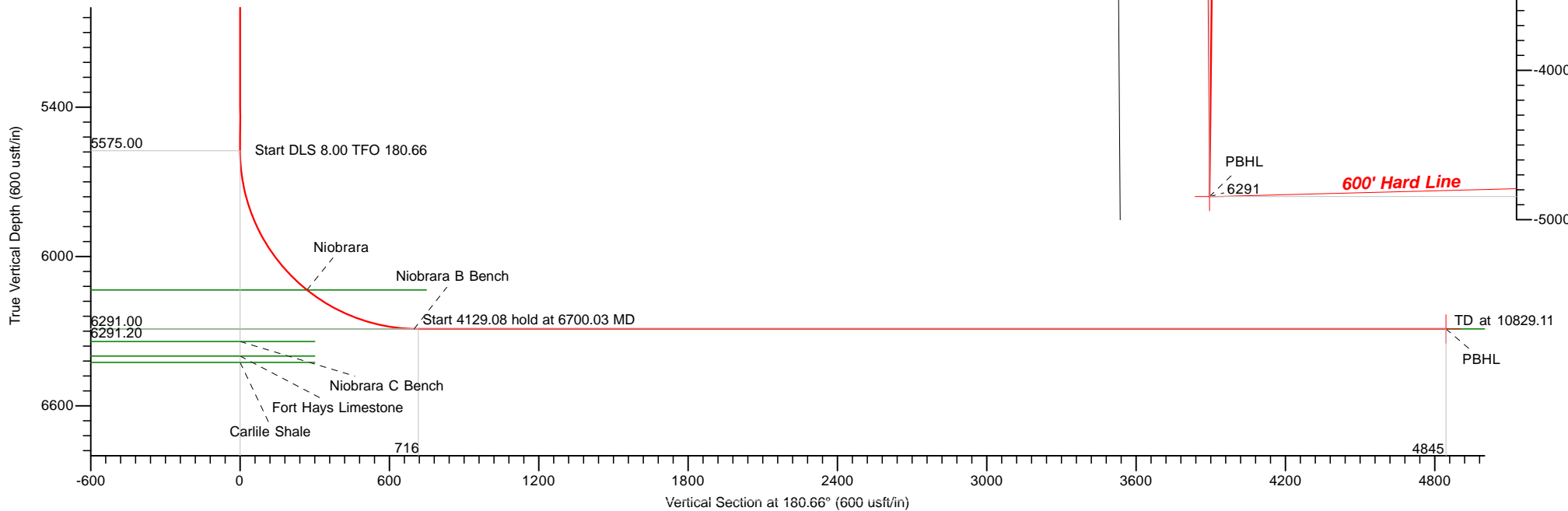


## DESIGN TARGET DETAILS

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' 59.95 N	104° 20' 8.77 W
PBHL	6291.00	-4844.99	-55.85	1325128.88	3325045.74	40° 13' 12.07 N	104° 20' 9.49 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	5575.00	0:00	0.00	5575.00	0.00	0.00	0.00	0.00	0.00	
3	6700.03	90:00	180.66	6291.20	-716.18	-8.26	8.00	180.66	716.23	
4	10829.11	90:00	180.66	6291.00	-4844.99	-55.85	0.00	0.00	4845.31	PBHL



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

Plan: Plan #1 (14-9-16CH/OH)

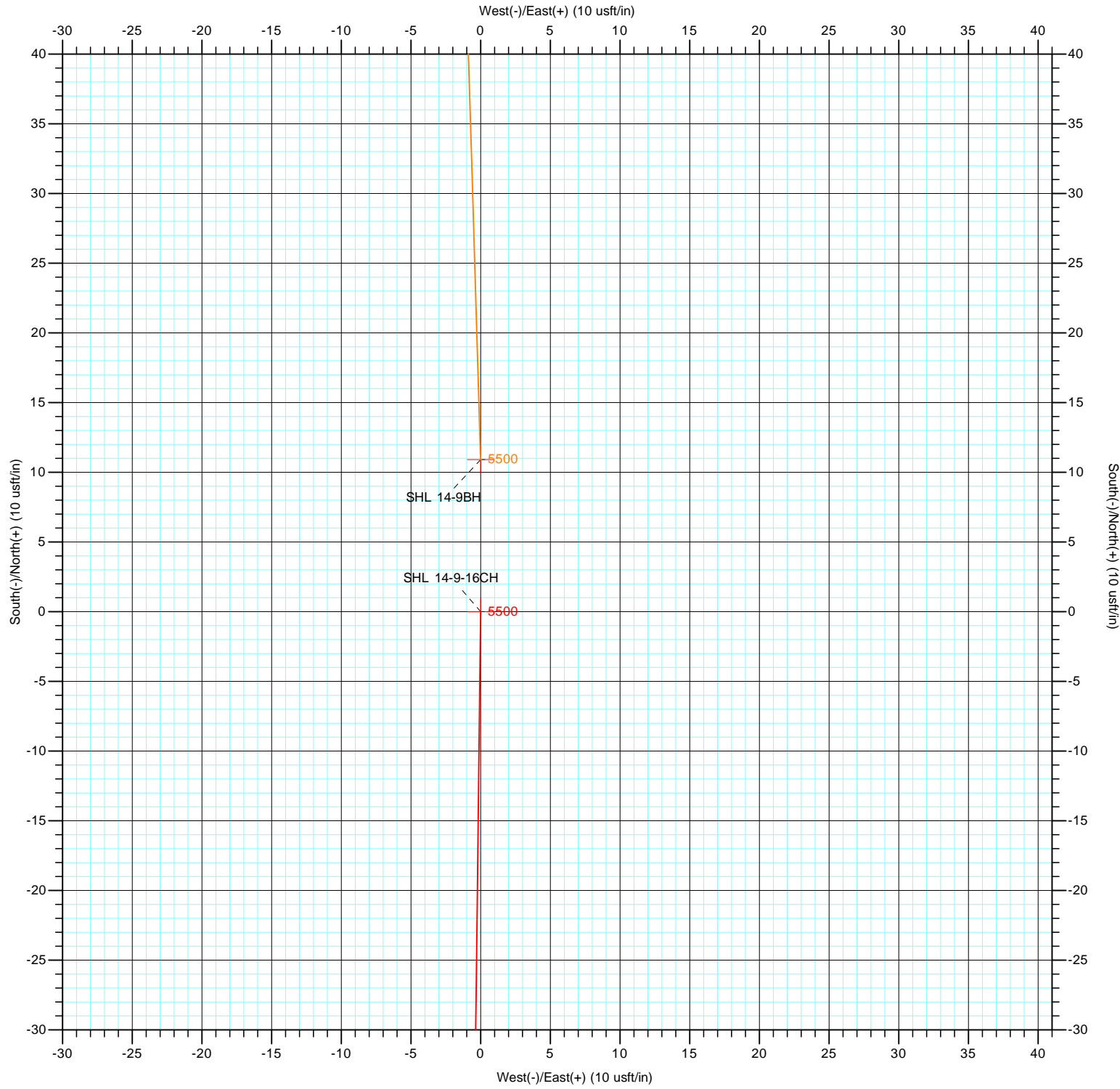
Created By: Justin Andoe  
 Date: 13:34, March 16 2012  
 Approved: \_\_\_\_\_  
 Date: \_\_\_\_\_

HILCORP ENERGY COMPANY

Project: Weld County, CO  
Site: State  
Well: 14-9-16CH  
Wellbore: OH  
Design: Plan #1



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 #1 (14-9-16CH/OH)  
State  
Created By: Tyler Carlson  
Date: 16:54, March 15 2012  
Approved: \_\_\_\_\_  
Date: \_\_\_\_\_

## Planning Report

<b>Database:</b>	EDM 5000.1 Multi_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 #1		

<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' 59.95 N
From:	Lat/Long	Easting:	3,325,037.98 usft	Longitude:	104° 20' 8.77 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' 59.95 N
	+E/-W	0.00 usft	Easting:	3,325,037.98 usft	Longitude:	104° 20' 8.77 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 #1			
<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 (deg:min)	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	
5,575.00	0:00	0.00	5,575.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,700.03	90:00	180.66	6,291.20	-716.18	-8.26	8.00	8.00	-15.94	180.66	
10,829.11	90:00	180.66	6,291.00	-4,844.99	-55.85	0.00	0.00	0.00	0.00	PBHL




# Planning Report

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<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 #1		

Planned Survey									
Measured Depth (usft)	Inclination (deg:min)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>SHL 14-9BH - SHL 14-9-16CH</b>									
12.00	0:00	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Parkman</b>									
100.00	0:00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0:00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0:00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0:00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0:00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0:00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0:00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0:00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0:00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0:00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0:00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0:00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0:00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0:00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0:00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0:00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0:00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0:00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0:00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0:00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0:00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0:00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0:00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0:00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0:00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0:00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0:00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0:00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0:00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0:00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0:00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0:00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0:00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0:00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0:00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0:00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0:00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0:00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0:00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,945.00	0:00	0.00	3,945.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Sussex</b>									
4,000.00	0:00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0:00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0:00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0:00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0:00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0:00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0:00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0:00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00

# Planning Report

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<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 #1		

Planned Survey									
Measured Depth (usft)	Inclination (deg:min)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,800.00	0:00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0:00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0:00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0:00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0:00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0:00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00
5,400.00	0:00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0:00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,575.00	0:00	0.00	5,575.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	2:00	180.66	5,600.00	-0.44	-0.01	0.44	8.00	8.00	0.00
5,650.00	6:00	180.66	5,649.86	-3.92	-0.05	3.92	8.00	8.00	0.00
5,700.00	10:00	180.66	5,699.37	-10.88	-0.13	10.88	8.00	8.00	0.00
5,750.00	14:00	180.66	5,748.26	-21.27	-0.25	21.27	8.00	8.00	0.00
5,800.00	18:00	180.66	5,796.32	-35.05	-0.40	35.05	8.00	8.00	0.00
5,850.00	22:00	180.66	5,843.29	-52.15	-0.60	52.15	8.00	8.00	0.00
5,900.00	26:00	180.66	5,888.96	-72.48	-0.84	72.48	8.00	8.00	0.00
5,950.00	30:00	180.66	5,933.10	-95.95	-1.11	95.95	8.00	8.00	0.00
6,000.00	34:00	180.66	5,975.49	-122.43	-1.41	122.44	8.00	8.00	0.00
6,050.00	38:00	180.66	6,015.94	-151.82	-1.75	151.83	8.00	8.00	0.00
6,100.00	42:00	180.66	6,054.23	-183.95	-2.12	183.96	8.00	8.00	0.00
6,150.00	46:00	180.66	6,090.19	-218.67	-2.52	218.68	8.00	8.00	0.00
6,200.00	50:00	180.66	6,123.64	-255.82	-2.95	255.83	8.00	8.00	0.00
6,216.34	51:18	180.66	6,134.00	-268.45	-3.09	268.47	8.00	8.00	0.00
<b>Niobrara</b>									
6,250.00	54:00	180.66	6,154.42	-295.21	-3.40	295.23	8.00	8.00	0.00
6,300.00	58:00	180.66	6,182.37	-336.65	-3.88	336.67	8.00	8.00	0.00
6,350.00	62:00	180.66	6,207.36	-379.94	-4.38	379.96	8.00	8.00	0.00
6,400.00	66:00	180.66	6,229.28	-424.87	-4.90	424.89	8.00	8.00	0.00
6,450.00	70:00	180.66	6,248.01	-471.21	-5.43	471.24	8.00	8.00	0.00
6,500.00	74:00	180.66	6,263.45	-518.75	-5.98	518.79	8.00	8.00	0.00
6,550.00	78:00	180.66	6,275.55	-567.25	-6.54	567.29	8.00	8.00	0.00
6,600.00	82:00	180.66	6,284.23	-616.48	-7.11	616.52	8.00	8.00	0.00
6,650.00	86:00	180.66	6,289.45	-666.19	-7.68	666.24	8.00	8.00	0.00
6,683.19	88:39	180.66	6,291.00	-699.34	-8.06	699.39	8.00	8.00	0.00
<b>Niobrara B Bench</b>									
6,700.03	90:00	180.66	6,291.20	-716.18	-8.26	716.23	8.00	8.00	0.00
 6,800.00	90:00	180.66	6,291.19	-816.14	-9.41	816.20	0.00	0.00	0.00
6,900.00	90:00	180.66	6,291.19	-916.14	-10.56	916.20	0.00	0.00	0.00
7,000.00	90:00	180.66	6,291.18	-1,016.13	-11.71	1,016.20	0.00	0.00	0.00
7,100.00	90:00	180.66	6,291.18	-1,116.12	-12.87	1,116.20	0.00	0.00	0.00
7,200.00	90:00	180.66	6,291.17	-1,216.12	-14.02	1,216.20	0.00	0.00	0.00
7,300.00	90:00	180.66	6,291.17	-1,316.11	-15.17	1,316.20	0.00	0.00	0.00
7,400.00	90:00	180.66	6,291.16	-1,416.10	-16.32	1,416.20	0.00	0.00	0.00
7,500.00	90:00	180.66	6,291.16	-1,516.10	-17.48	1,516.20	0.00	0.00	0.00
7,600.00	90:00	180.66	6,291.15	-1,616.09	-18.63	1,616.20	0.00	0.00	0.00
7,700.00	90:00	180.66	6,291.15	-1,716.08	-19.78	1,716.20	0.00	0.00	0.00
7,800.00	90:00	180.66	6,291.14	-1,816.08	-20.93	1,816.20	0.00	0.00	0.00
7,900.00	90:00	180.66	6,291.14	-1,916.07	-22.09	1,916.20	0.00	0.00	0.00
8,000.00	90:00	180.66	6,291.14	-2,016.06	-23.24	2,016.20	0.00	0.00	0.00
8,100.00	90:00	180.66	6,291.13	-2,116.06	-24.39	2,116.20	0.00	0.00	0.00
8,200.00	90:00	180.66	6,291.13	-2,216.05	-25.55	2,216.20	0.00	0.00	0.00
8,300.00	90:00	180.66	6,291.12	-2,316.04	-26.70	2,316.20	0.00	0.00	0.00
8,400.00	90:00	180.66	6,291.12	-2,416.04	-27.85	2,416.20	0.00	0.00	0.00
8,500.00	90:00	180.66	6,291.11	-2,516.03	-29.00	2,516.20	0.00	0.00	0.00

## Planning Report

<b>Database:</b>	EDM 5000.1 Multi_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 #1		

Planned Survey										
Measured Depth (usft)	Inclination (deg:min)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,600.00	90:00	180.66	6,291.11	-2,616.02	-30.16	2,616.20	0.00	0.00	0.00	
8,700.00	90:00	180.66	6,291.10	-2,716.02	-31.31	2,716.20	0.00	0.00	0.00	
8,800.00	90:00	180.66	6,291.10	-2,816.01	-32.46	2,816.20	0.00	0.00	0.00	
8,900.00	90:00	180.66	6,291.09	-2,916.00	-33.61	2,916.20	0.00	0.00	0.00	
9,000.00	90:00	180.66	6,291.09	-3,016.00	-34.77	3,016.20	0.00	0.00	0.00	
9,100.00	90:00	180.66	6,291.08	-3,115.99	-35.92	3,116.20	0.00	0.00	0.00	
9,200.00	90:00	180.66	6,291.08	-3,215.98	-37.07	3,216.20	0.00	0.00	0.00	
9,300.00	90:00	180.66	6,291.07	-3,315.98	-38.22	3,316.20	0.00	0.00	0.00	
9,400.00	90:00	180.66	6,291.07	-3,415.97	-39.38	3,416.20	0.00	0.00	0.00	
9,500.00	90:00	180.66	6,291.06	-3,515.96	-40.53	3,516.20	0.00	0.00	0.00	
9,600.00	90:00	180.66	6,291.06	-3,615.96	-41.68	3,616.20	0.00	0.00	0.00	
9,700.00	90:00	180.66	6,291.05	-3,715.95	-42.84	3,716.20	0.00	0.00	0.00	
9,800.00	90:00	180.66	6,291.05	-3,815.94	-43.99	3,816.20	0.00	0.00	0.00	
9,900.00	90:00	180.66	6,291.04	-3,915.94	-45.14	3,916.20	0.00	0.00	0.00	
10,000.00	90:00	180.66	6,291.04	-4,015.93	-46.29	4,016.20	0.00	0.00	0.00	
10,100.00	90:00	180.66	6,291.03	-4,115.92	-47.45	4,116.20	0.00	0.00	0.00	
10,200.00	90:00	180.66	6,291.03	-4,215.92	-48.60	4,216.20	0.00	0.00	0.00	
10,300.00	90:00	180.66	6,291.03	-4,315.91	-49.75	4,316.20	0.00	0.00	0.00	
10,400.00	90:00	180.66	6,291.02	-4,415.90	-50.90	4,416.20	0.00	0.00	0.00	
10,500.00	90:00	180.66	6,291.02	-4,515.90	-52.06	4,516.20	0.00	0.00	0.00	
10,600.00	90:00	180.66	6,291.01	-4,615.89	-53.21	4,616.20	0.00	0.00	0.00	
10,700.00	90:00	180.66	6,291.01	-4,715.88	-54.36	4,716.20	0.00	0.00	0.00	
10,800.00	90:00	180.66	6,291.00	-4,815.88	-55.51	4,816.20	0.00	0.00	0.00	
10,829.11	90:00	180.66	6,291.00	-4,844.99	-55.85	4,845.31	0.00	0.00	0.00	
PBHL										

Design Targets										
Target Name	Dip Angle (deg:min)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
SHL 14-9-16CH	0:00	0.00	0.00	0.00	0.00	1,329,974.18	3,325,037.98	40° 13' 59.95 N	104° 20' 8.77 W	
- plan hits target center										
- Point										
PBHL	0:00	0.00	6,291.00	-4,844.99	-55.85	1,325,128.88	3,325,045.75	40° 13' 12.07 N	104° 20' 9.49 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		
6,216.34	6,134.00	Niobrara		0.00		
6,683.19	6,291.00	Niobrara B Bench		0.00		