

BLACK HILLS PLATEAU PRODUCTION COMPANY

DRILLING PROGRAM

Homer Deep Unit 9-41BH

SHL: 504' FNL, 245' FWL, NENE Sect. 9 T8S R98W
 BHL: 1575' FSL, 267' FEL NESW Sect. 14 T8S R98W
 Garfield & Mesa Counties, Colorado

NOTE: This drilling program is as of June 26, 2014. Well is being proposed as a horizontal in the Mancos/Niobrara formation.

1) Estimated Formation Tops of Important Geological Markers:

Location GL: 5,482' (Graded), KB: 5,500' (Estimated)

Formation	MD	TVD	Subsea TVD	Lithology	Oil/Gas/Water
Wasatch	Surface	Surface	Surface	Shale w/ SS Stringers	Possible Gas
Mesaverde	1033	1033	4467	Sandstone & Shale	Possible Gas
Cameo Coal	3033	3033	2467	Coal, Silt & Sandstone	Oil, Gas or Water
Rollins	3366	3366	2134	Sandstone	Oil, Gas or Water
Cozette	3541	3541	1959	Sandstone & Silt	Oil, Gas or Water
Corcoran	3752	3752	1748	Sandstone & Silt	Oil, Gas or Water
Mancos	4030	4030	1470	Shale & Silt	Oil, Gas or Water
Mancos 'A'*	4418	4418	1082	Shale & Silt	Oil, Gas or Water
Moab	5178	5178	322	Bentonite Marker	Bentonite
Mancos 'B'*	5615	5615	-115	Shale & Silt	Oil, Gas or Water
Niobrara*	6623	6623	-1123	Calcareous Shale & Silt	Oil, Gas or Water
Target* Rangley Bench	7995	7575	-2102	Calcareous Shale & Silt	Oil, Gas or Water
TD Horizontal	17145	7455	-2010		

* Projected completion intervals.

2) Proposed Casing and Cementing Program

Hole Size (in)	Casing Size (in)	Depth Set MD	Wt./Ft., Grade, & Joint	Cement
30	20	120	Line Pipe	To surface w/ Class 3; 320 sx
14-3/4	10-3/4	1,100	40.5#, J55, ST&C	Cemented to surface w/ Lead: 198 sx Class G (12.5 ppg) Tail: 271 sx Class G (14 ppg)
9-7/8	7-5/8	6,470	29.7#, N-80, LTC	Cemented 200' into surface casing w/ Lead: 850 sx TXI (12 ppg) Tail: 170 sx Class G (15.8 ppg)
6-1/8	4-1/2 x 5-1/2 Tapered String (x-over @ 6,300')	17,145	4-1/2: 11.6#, P-110, LTC 5-1/2: 17#, P-110, LTC	Cemented 200' into intermediate casing w/ Lead: 60 sx HALCEM (12.6 ppg) Tail: 900 sx HALCEM (13.5 ppg)

Yields:	Surface Lead	Class G	Yield = 2.11 ft ³ /sk (12.5 ppg)
	Surface Tail	Class G	Yield = 1.54 ft ³ /sk (14.0 ppg)
	Intermediate Lead	TXI	Yield = 2.88 ft ³ /sk (12.0 ppg)
	Intermediate Tail	Class G	Yield = 1.16 ft ³ /sk (15.8 ppg)
	Longstring Lead	HALCEM	Yield = 1.95 ft ³ /sk (12.6 ppg)
	Longstring Tail	ExpandaCem	Yield = 1.42 ft ³ /sk (13.5 ppg)

- The proposed casing and cementing program has been designed to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressures zones, and any prospectively valuable deposits of minerals. Any isolating medium other than cement shall receive approval prior to use.
- The surface casing shall be set at 1,000' and cemented back to surface either during the primary cement job or by remedial cementing. Cementing to surface will isolate all potential fresh water zones. Slurry designed for full coverage with 50% excess.
- Intermediate casing is designed to have cement lifted at least 200' above TOG. Actual cement volumes will be determined by caliper log plus 10% excess. If caliper logs are not available, volume will be assumed hole size to TD plus 25% excess.
- Production casing is designed to have cement lifted at least 200' into the intermediate shoe. Actual cement volumes will be determined by caliper log plus 10% excess. If caliper logs are not available cement volumes will be calculated at 25% excess.
- Centralizers will be installed per approved centralizer program from cement vendor.
- All waiting on cement times will be adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out. 2,500 psi compressive strength in 72 hours.

Casing Design (All casing will be new or reconditioned and tested to meet or exceed API standards):

Casing String				Casing Strength Properties			Minimum Design Factors		
Size (in)	Weight (lb/ft)	Grade	Connection	Collapse (psi)	Burst (psi)	Tensile (1000 lb)	Collapse	Burst	Tension
10-3/4	40.5	J/K-55	STC	1,580	3,130	420	1.10	1.10	1.80
7-5/8	29.7	N-80	LTC	4,790	6,890	575	1.10	1.10	1.80
5-1/2	17.0	P-110	LTC	7,460	10,640	546	1.10	1.10	1.80
4-1/2	11.6	P-110	DQX	7,560	10,690	367	1.10	1.10	1.80

Casing Design Considerations/Safety Factors:

A. Surface Casing @ 1,100' MD; 10-3/4" 40.5# J/K-55 STC

Purpose: Protect shallow fresh water and contain MASP to TD
 Maximum anticipated mud weight at surface casing depth: 9.0 ppg
 Maximum anticipated mud weight at intermediate TD: 9.8 ppg
 Maximum anticipated equivalent formation pressure at TD: 11.0 ppg
 TVD at intermediate casing point: 6,471 ft
 Surface setting depth: 1,100 ft
 Max pore pressure: 0.572 psi/ft

Collapse Design:

Evacuated casing with 9.0 ppg drilling fluid density
 Load = 9.0 ppg * 0.052 * 1100 ft 515 psig
 Rating 1,580 psig
 Safety Factor 3.07

Burst Design:

Assume kick with partially evacuated hole and influx gradient of 0.22 psi/ft
 (Calculations assume shoe will not break down)
 MASP (Load) 6,471 ft * (0.572-0.22) psi/ft 2,278 psig
 Rating 3,130 psig
 Safety Factor 1.37

Tensile Design:

Designed on Air Weight * Buoyancy + OverPull Margin
 Load = 1100 ft * 40.5 lb/ft * 0.862 + 100,000 lbs (OPM) 138,400 lbs
 Rating 420,000 lbs
 Safety Factor 3.03
 OverPull with S.F. = 420,000 lbs / 1.8 – 34,911 lbs 194,900 lbs

B. Intermediate Casing @ 6,470' MD; 7-5/8" 29.7# N-80 LTC

Maximum anticipated mud weight at Total Depth:	9.8 ppg
Maximum anticipated equivalent formation pressure at TD:	11.0 ppg
TVD at intermediate casing point:	6,470 ft
Assumed Gas Gradient for Production Operations:	0.22 psi/ft

Collapse Design:

Designed on evacuated casing properties with 9.8 ppg drilling fluid density with no internal back-up

Load = 9.8 ppg * 0.052 * 6,470 ft	3,297 psig
Rating	4,790 psig
Safety Factor	1.45

Burst Design:

Maximum Surface Shut-In Pressure

MASSIP (Load) = 6,470 ft * (0.572-0.22) psi/ft	2,277 psig
Rating	6,890 psig
Safety Factor	3.02

Tensile Design:

Designed on Air Weight * Buoyancy + OverPull Margin

Load = (6,470 ft * 29.7 lb/ft * 0.850) + 100,000 lbs (OPM)	263,400 lbs
Rating	575,000 lbs
Safety Factor	2.18
OverPull with S.F. = 575,000 lbs / 1.8 – 63,400 lbs	256,100 lbs

C. Production Casing @ 17,145' MD; 5-1/2" 17# P-110 x 4-1/2" 11.6# P-110

Maximum anticipated mud weight at Total Depth:	11.5 ppg
Maximum anticipated equivalent formation pressure at TD:	11.0 ppg
TVD at production casing point:	7,575 ft
Cross-Over Location	6,300 ft
Maximum Surface Treating Pressure for Fracture Operations	7,000 psig
Assumed Gas Gradient for Production Operations:	0.22 psi/ft

Collapse Design:

Designed on evacuated casing properties with 11.5 ppg drilling fluid density with no internal back-up

Load = 11.5 ppg * 0.052 * 7,575 ft	4,530 psig
Rating	7,460 psig
Safety Factor	1.65

Burst Design:

Design Consideration #1: Maximum Surface Shut-In Pressure

MASSIP (Load) = 7,575 ft * (0.572-0.22) psi/ft	2,666 psig
Rating	10,640 psig
Safety Factor	3.99

Design Consideration #2: Maximum Surface Treating Pressure During Frac Operations

MSTP	7,000 psig
Rating	10,640 psig
Safety Factor	1.52

Tensile Design:

Designed on Air Weight * Buoyancy + OverPull Margin

Load = (6,300 ft * 17.0 lb/ft + 1,680 ft * 11.6 lb/ft) * 0.824 + 100,000 lbs (OPM)	204,300 lbs
Rating	546,000 lbs
Safety Factor	2.67
OverPull with S.F. = 546,000 lbs / 1.8 – 104,300 lbs	199,000 lbs

3) Operator's Minimum Specifications for Pressure Control:

Please reference enclosed BOP Diagram.

The blowout preventer assembly shall consist of one 11" 5,000 psi double ram preventer, and an 11" 5,000 psi annular preventer. All will be hydraulically operated. The BOP pipe and blind rams will be hydraulically tested to 100% of working pressure (if isolated from the surface casing with a test plug) or to 70% of the internal yield of the surface casing after nippleing up. The annular preventer will be tested to 50% of its' working pressure rating for 10 minutes or until provisions for the test are met. The pipe rams and blind rams will be function tested on each trip out of the hole, but not more than once per day. All such checks will be noted on the daily Tour Sheets.

Accessories to the BOPE include an upper and lower kelly cock, a sub on the floor with a full opening valve to be stabbed into the drill string when the kelly is not in the drill string, a drill pipe float (except for lost circulation conditions), and a choke manifold with a pressure rating equivalent to the BOP stack. An accumulator with a minimum of 1.5 times the volume of fluid necessary to close all BOP equipment will be part of the BOP system.

Remote controls capable of both opening and closing all preventers will be readily accessible to the driller. A manual locking device (i.e., hand wheels) or automatic locking devices shall be installed as part of the system. The BOP will be kept in good mechanical working order. Checks and inspections will be recorded on daily Tour Sheets.

Primary BOP actuating control will be located either in the doghouse or on the rig floor.

Sufficient mud volume and weight material will be maintained on location to overcome any flows.

Auxiliary Equipment:

- a) A Kelly Cock will be kept in the drill string at all times.
- b) A float will be used at the bit at all times (except for lost circulation drilling condition).
- c) A full-opening drill pipe stabbing valve (inside BOP) with proper drill pipe connection will be on the rig floor at all times.
- d) The drilling fluids systems will be visually monitored at all times.

4) Mud Program:

Hole (in)	MD (ft)	Type	Weight (ppg)	Viscosity (cps)	Fluid Loss (cc)	Solids (%)
30	120	Spud Mud	8.9-9.4	60 - 80	<10	1 - 5
14-3/4	1,100	Gel/Polymer	9.0-10.0	50 - 65	≤6	≤6
9-7/8	6,500	Gel/Polymer	9.5-11.5	45 - 55	≤5	≤5-6
6-1/8	17,145	Gel/Polymer	10.0-12.0	40 - 45	≤5	≤5-6

* Sufficient mud material(s) to maintain mud properties, control lost circulation and contain a blowout will be available at the well site during drilling operations.

** A closed loop system will be utilized during drilling operations.

5) Auxiliary Equipment:

- 1. A Kelly Cock will be kept in the drill string at all times.
- 2. A float will be used at the bit at all times (except for lost circulation drilling condition).
- 3. A full-opening drill pipe stabbing valve (inside BOP) with proper drill pipe connection will be on the rig floor at all times.
- 4. The drilling fluids systems will be visually monitored at all times.

6) Testing, Logging and Core Programs:

Deviation Surveys:

0' to 1,100'

1,100' to 2,500'

2,500' to TD

Totco (7^º) – survey every ±210'
Totco (7^º) – survey every ±300'
±90 ft MWD w/ INC, AZM , & GR

Mud Log:

2-Man Unit with chromatograph

2,500' to TD

Samples:

100 ft samples

30 ft samples

10 ft samples

10-30 ft samples

2,500' to 2,900'

2,900' to 6,500'

6,500' to 8,500'

8,500' to TD

M/LWD Logging Program:

MWD Gamma Ray and/or Resistivity with surveys from 3,000' – TD

Open Hole Logging Program:

Triple Combo

1,000' to 6,500'

Cores: Possible sidewall cores in Williams Fork and/or Mancos

DST's: None planned

7) Anticipated Abnormal Pressures or Temperatures:

1. No abnormal pressures or temperatures are anticipated.
2. No H₂S gas has been encountered in or known to exist in the general area.
3. Pressures; Mancos pressure 0.572 psi/ft.
4. Estimated bottom-hole pressure is 4,332 psi.

8) Anticipated Starting Dates and Approximate Duration:

Starting Date:

June 1, 2014

Spud Date:

June 28, 2014

Drilling Days:

40 days

Completion Days:

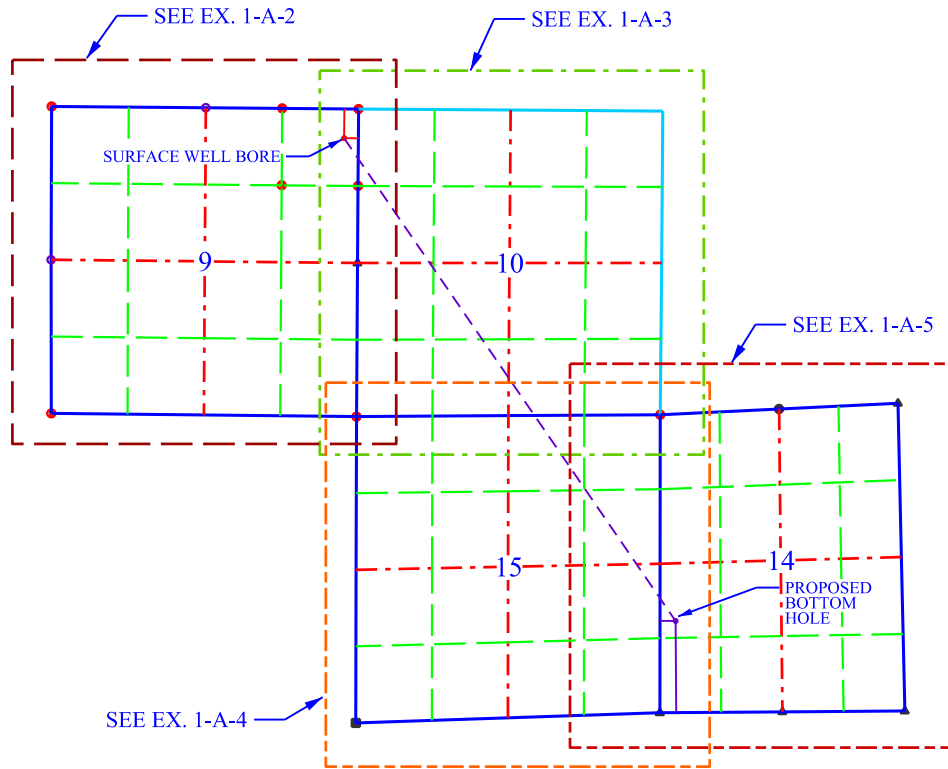
15 days

Notes: Per OnShore Order 1, 3/7/07 the former 8 point drilling plan (also referred to as the Subsurface Use Plan)

Due to the voluminous requirements of horizontal drilling, a larger well pad and pit are being proposed. The pit will be lined with 2 synthetic liners, each having a minimum of 24 mil thickness as per COGCC regulation 904.c.(1). The pit will contain freshwater and/or recycled flowback water for makeup water during drilling and fracture stimulation during completions.

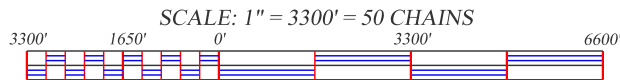
EXHIBIT I-A-1: WELL LOCATION PLAT (1 of 5)

T. 8 S., R. 98 W., 6TH P.M.



LEGEND:

- ⊕ WELL LOCATION AS STAKED
- () RECORD DIMENSIONS PER OFFICIAL GOV'T SURVEY
- M MEASURED THIS SURVEY
- C DIMENSIONS COMPUTED
- Ⓟ FOUND MONUMENT AS NOTED
- SURVEYED OR PROTRACTED POINT, NOTHING SET



CERTIFICATE OF SURVEYOR:

THIS IS TO CERTIFY THAT THIS SURVEY PLAT WAS MADE FROM NOTES TAKEN DURING A FIELD SURVEY MADE BY ME OR UNDER MY DIRECTION AND THAT IT CORRECTLY SHOWS THE LOCATION OF THE DRILLING SITE AS STAKED ON THE GROUND.



WELL NAME: HOMER DEEP UNIT 9-41BH
GRADED PAD ELEVATION: 5481.9 FEET

ELEVATION DATUM:

BM: NGS STATIONS "MC01", "MC07" & "MC08"
NAVD88 - GEOID 09
NAD83 (CORS96) (EPOCH: 2002.0)

SURFACE LOCATION: MEASURED AT 90° TO THE SECTION LINES
504 FEET, S 0°28'44" W OF THE NORTH LINE
245 FEET, N 89°36'37" W OF THE EAST LINE

GENERAL LOCATION: NE¼ NE¼, SECTION 9
T. 8 S., R. 98 W., 6TH P.M.
GARFIELD COUNTY, COLORADO

SURFACE WELL LOCATION: NAD_83 (CORS96) (EPOCH: 2002.0000)
LATITUDE: 39.37958° N (39°22'46.49" N)
LONGITUDE: 108.32323° W (108°19'23.62" W)
PDOP = 1.0

BOTTOM HOLE LOCATION: NAD_83 (CORS96) (EPOCH: 2002.0000)
LATITUDE: 39.35680° N (39°21'24.47" N)
LONGITUDE: 108.30308° W (108°18'11.09" W)

BASIS OF BEARINGS: PLANE PROJECTION

DATUM: NAD83 (CORS 96) (EPOCH 2002.0) @
NGS STATIONS "MC01", "MC07", & "MC08"
ORIGIN at SE CORNER, SECTION 16, T8S, R98W.
39°21'07.15853" N SF = 1.0000
108°19'21.06044" W
HEIGHT = 5871' ELEV = 5925'

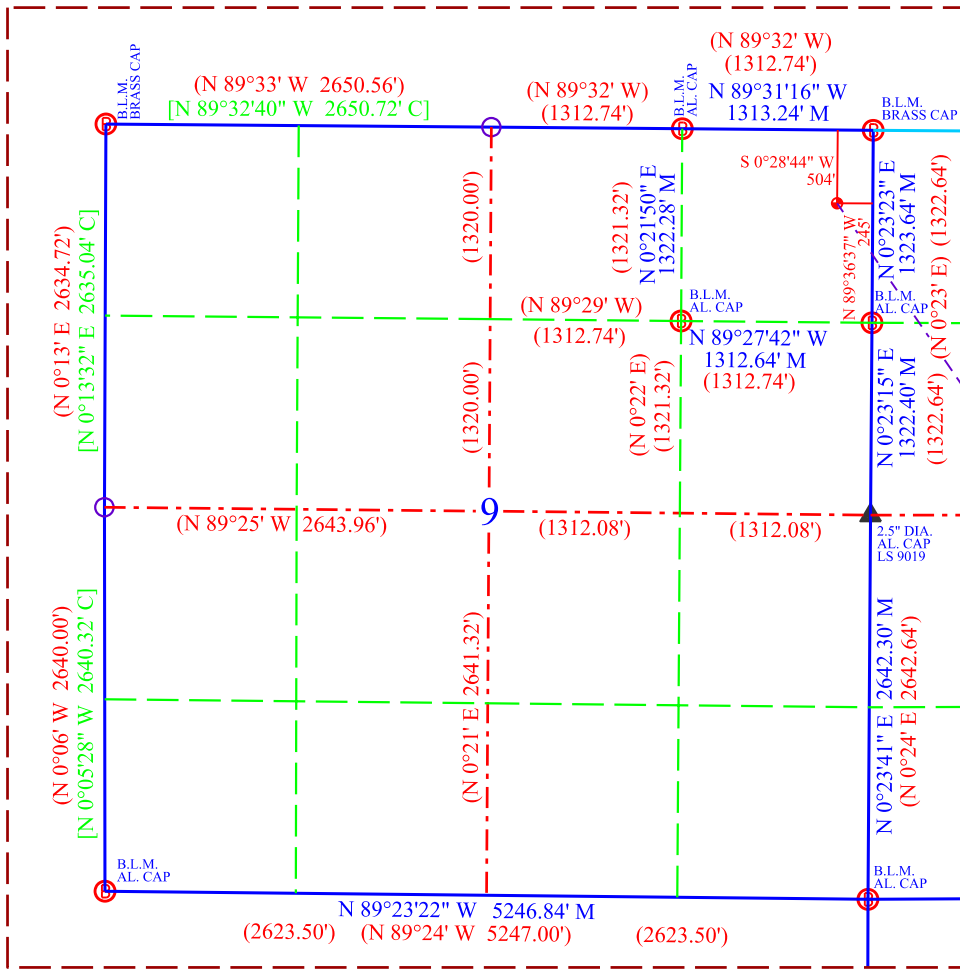
NOTES:

1. THERE ARE VISIBLE IMPROVEMENTS SUCH AS TRAILS OR NATURAL CHANNELS WITHIN 400' OF THE STAKED WELL LOCATION. SEE EX. I-B.
2. SURFACE USE IS NATIVE WOODS, NON CROP AND RANGE LAND.

<p>EXHIBIT I-A-1: WELL LOCATION PLAT (1 of 5) HOMER DEEP UNIT 9-41BH LOCATED IN NE¼ NE¼ OF SECTION 9 T. 8 S., R. 98 W., 6TH P.M. GARFIELD COUNTY, COLORADO</p>	<p>FIELD SURVEY DATE MAY 30, 2014</p>	<p>SURVEYOR PAUL REID, PLS</p>
	<p>DRAWING DATE JUNE 4, 2014</p>	<p>PROJECT NO. 25A12</p>
<p>OWNER: BLACK HILLS PLATEAU PRODUCTION COMPANY, LLC DENVER, COLORADO</p>	<p>PREPARED BY: PAUL A. REID, PLS PROFESSIONAL LAND SURVEYOR 1533 PINION DRIVE CHEYENNE, WYOMING 82001 (307) 637-3400 - FAX (307) 347-8589</p>	

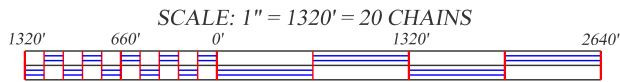
EXHIBIT I-A-2: WELL LOCATION PLAT (2 of 5)

T. 8 S., R. 98 W., 6TH P.M.



LEGEND:

- ⊕ WELL LOCATION AS STAKED
- () RECORD DIMENSIONS PER OFFICIAL GOV'T SURVEY
- M MEASURED THIS SURVEY
- C DIMENSIONS COMPUTED
- ⊗ FOUND MONUMENT AS NOTED
- SURVEYED OR PROTRACTED POINT, NOTHING SET



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WELL NAME: HOMER DEEP UNIT 9-41BH
GRADED PAD ELEVATION: 5481.9 FEET

ELEVATION DATUM:

BM: NGS STATIONS "MC01", "MC07" & "MC08"
NAVD88 - GEOID 09
NAD83 (CORS96) (EPOCH: 2002.0)

SURFACE LOCATION: MEASURED AT 90° TO THE SECTION LINES
504 FEET, S 0°28'44" W OF THE NORTH LINE
245 FEET, N 89°36'37" W OF THE EAST LINE

GENERAL LOCATION: NE¼ NE¼, SECTION 9
T. 8 S., R. 98 W., 6TH P.M.
GARFIELD COUNTY, COLORADO

SURFACE WELL LOCATION: NAD 83 (CORS96) (EPOCH: 2002.0000)
LATITUDE: 39.37958° N (39°22'46.49" N)
LONGITUDE: 108.32323° W (108°19'23.62" W)
PDOP = 1.0

BOTTOM HOLE LOCATION: NAD 83 (CORS96) (EPOCH: 2002.0000)
LATITUDE: 39.35680° N (39°21'24.47" N)
LONGITUDE: 108.30308° W (108°18'11.09" W)

BASIS OF BEARINGS: PLANE PROJECTION

DATUM: NAD83 (CORS 96) (EPOCH 2002.0) @
NGS STATIONS "MC01", "MC07", & "MC08"
ORIGIN at SE CORNER, SECTION 16, T8S, R98W.
39°21'07.15853" N SF = 1.0000
108°19'21.06044" W
HEIGHT = 5871' ELEV = 5925'

NOTES:

1. THERE ARE VISIBLE IMPROVEMENTS SUCH AS TRAILS OR NATURAL CHANNELS WITHIN 400' OF THE STAKED WELL LOCATION. SEE EX. I-B.
2. SURFACE USE IS NATIVE WOODS, NON CROP AND RANGE LAND.

EXHIBIT I-A-2: WELL LOCATION PLAT (2 of 5) HOMER DEEP UNIT 9-41BH LOCATED IN NE¼ NE¼ OF SECTION 9 T. 8 S., R. 98 W., 6TH P.M. GARFIELD COUNTY, COLORADO		FIELD SURVEY DATE MAY 30, 2014	SURVEYOR PAUL REID, PLS
OWNER: BLACK HILLS PLATEAU PRODUCTION COMPANY, LLC DENVER, COLORADO		DRAWING DATE JUNE 4, 2014	PROJECT NO. 25A12
		PREPARED BY: PAUL A. REID, PLS PROFESSIONAL LAND SURVEYOR 1533 PINION DRIVE CHEYENNE, WYOMING 82001 (307) 637-3400 - FAX (307) 347-8589	

EXHIBIT I-A-3: WELL LOCATION PLAT (3 of 5)

T. 8 S., R. 98 W., 6TH P.M.

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ELEVATION DATUM:

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NAVD88 - GEOID 09
NAD83 (CORS96) (EPOCH: 2002.0)

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245 FEET, N 89°36'37" W OF THE EAST LINE

GENERAL LOCATION: NE¼ NE¼, SECTION 9
T. 8 S., R. 98 W., 6TH P.M.
GARFIELD COUNTY, COLORADO

SURFACE WELL LOCATION: NAD_83 (CORS96) (EPOCH: 2002.0000)
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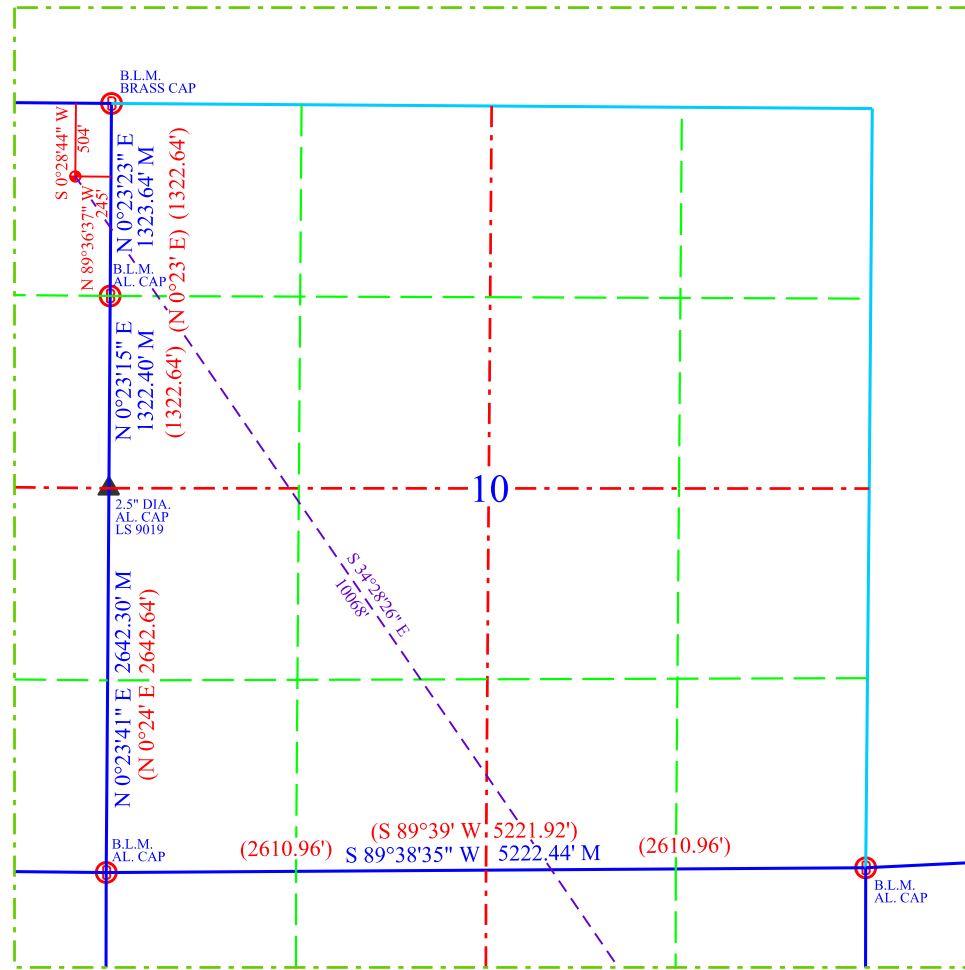
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HEIGHT = 5871' ELEV = 5925'

NOTES:

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2. SURFACE USE IS NATIVE WOODS, NON CROP AND RANGE LAND.



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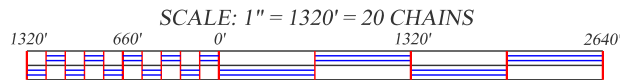


EXHIBIT I-A-3: WELL LOCATION PLAT (3 of 5)
HOMER DEEP UNIT 9-41BH

LOCATED IN
NE¼ NE¼ OF SECTION 9
T. 8 S., R. 98 W., 6TH P.M.
GARFIELD COUNTY, COLORADO

OWNER: **BLACK HILLS PLATEAU
PRODUCTION COMPANY, LLC
DENVER, COLORADO**

FIELD SURVEY DATE
MAY 30, 2014

SURVEYOR
PAUL REID, PLS

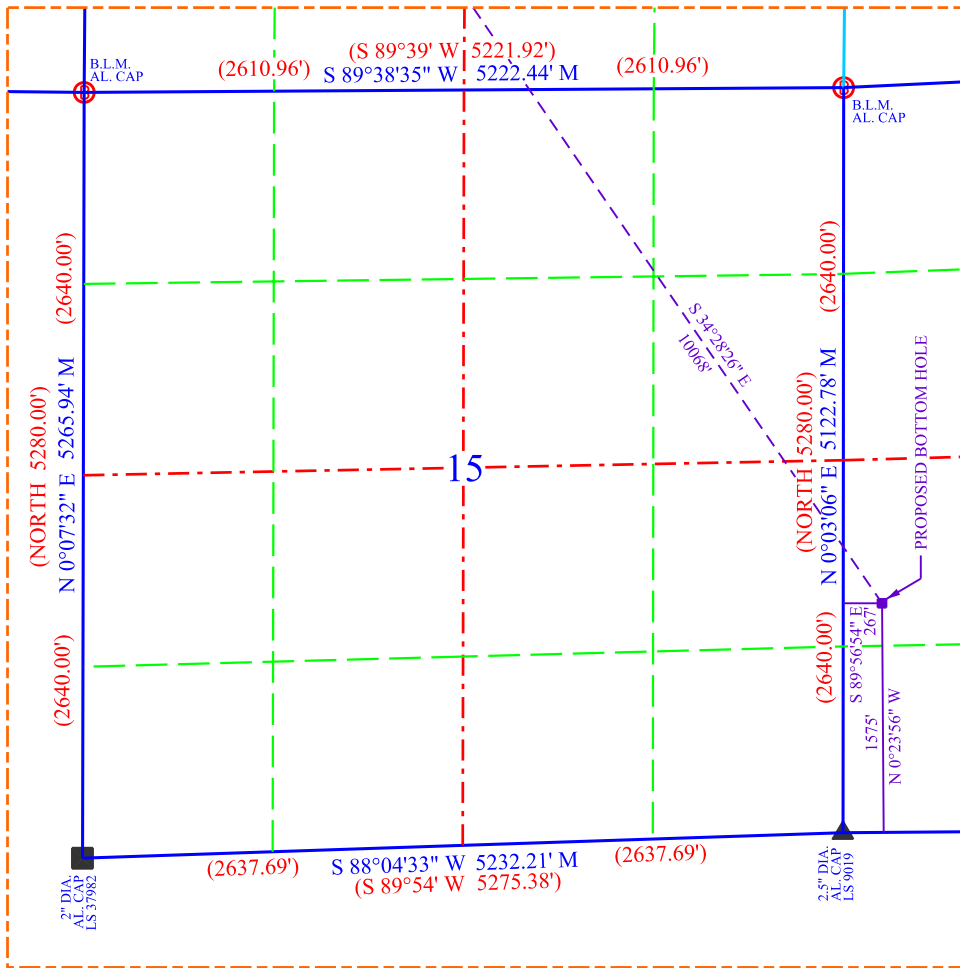
DRAWING DATE
JUNE 4, 2014

PROJECT NO.
25A12

PREPARED BY: **PAUL A. REID, PLS**
PROFESSIONAL LAND SURVEYOR
1533 PINION DRIVE
CHEYENNE, WYOMING 82001
(307) 637-3400 - FAX (307) 347-8589

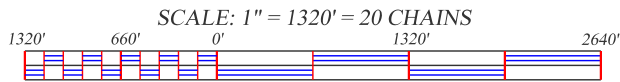
EXHIBIT I-A-4: WELL LOCATION PLAT (4 of 5)

T. 8 S., R. 98 W., 6TH P.M.



LEGEND:

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- M MEASURED THIS SURVEY
- C DIMENSIONS COMPUTED
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ELEVATION DATUM:

BM: NGS STATIONS "MC01", "MC07" & "MC08"
NAVD88 - GEOID 09
NAD83 (CORS96) (EPOCH: 2002.0)

SURFACE LOCATION: MEASURED AT 90° TO THE SECTION LINES
504 FEET, S 0°28'44" W OF THE NORTH LINE
245 FEET, N 89°36'37" W OF THE EAST LINE

GENERAL LOCATION: NE¼ NE¼, SECTION 9
T. 8 S., R. 98 W., 6TH P.M.
GARFIELD COUNTY, COLORADO

SURFACE WELL LOCATION: NAD_83 (CORS96) (EPOCH: 2002.0000)
LATITUDE: 39.37958° N (39°22'46.49" N)
LONGITUDE: 108.32323° W (108°19'23.62" W)
PDOP = 1.0

BOTTOM HOLE LOCATION: NAD_83 (CORS96) (EPOCH: 2002.0000)
LATITUDE: 39.35680° N (39°21'24.47" N)
LONGITUDE: 108.30308° W (108°18'11.09" W)

BASIS OF BEARINGS: PLANE PROJECTION

DATUM: NAD83 (CORS 96) (EPOCH 2002.0) @
NGS STATIONS "MC01", "MC07", & "MC08"
ORIGIN at SE CORNER, SECTION 16, T8S, R98W.
39°21'07.15853" N SF = 1.0000
108°19'21.06044" W
HEIGHT = 5871' ELEV = 5925'

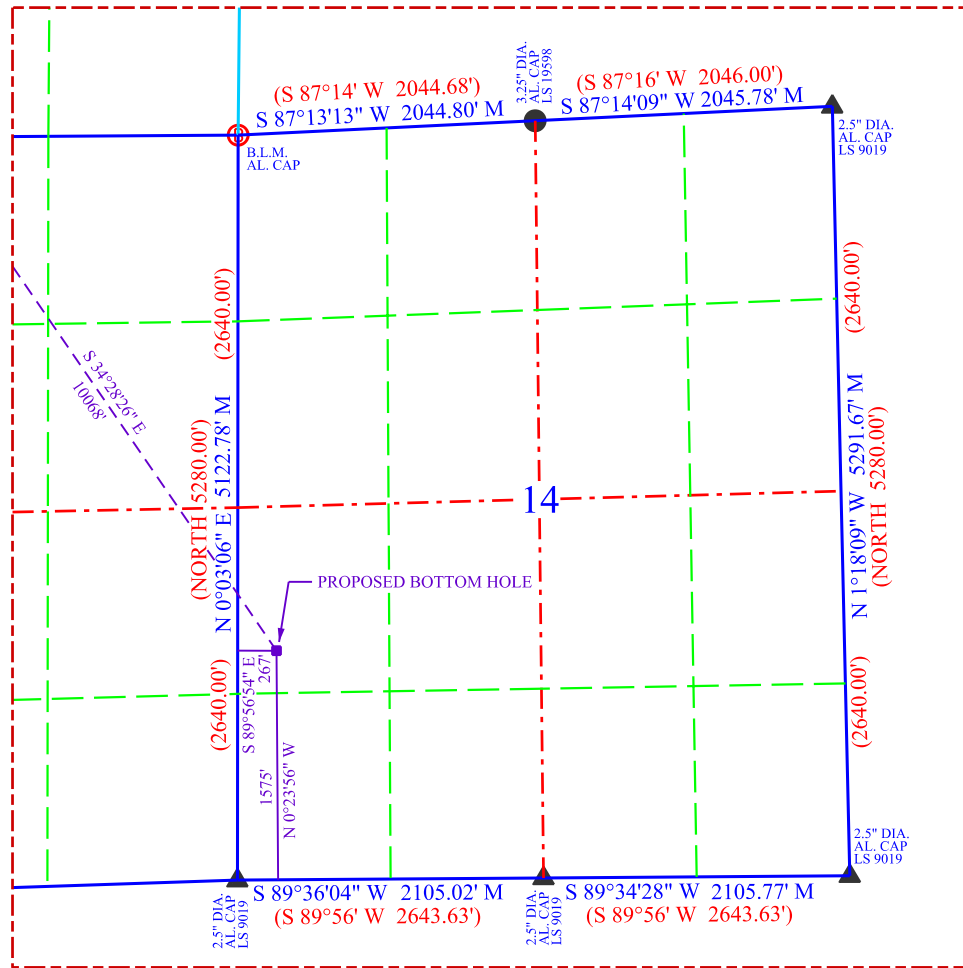
NOTES:

1. THERE ARE VISIBLE IMPROVEMENTS SUCH AS TRAILS OR NATURAL CHANNELS WITHIN 400' OF THE STAKED WELL LOCATION. SEE EX. I-B.
2. SURFACE USE IS NATIVE WOODS, NON CROP AND RANGE LAND.

EXHIBIT I-A-4: WELL LOCATION PLAT (4 of 5) HOMER DEEP UNIT 9-41BH LOCATED IN NE¼ NE¼ OF SECTION 9 T. 8 S., R. 98 W., 6TH P.M. GARFIELD COUNTY, COLORADO		FIELD SURVEY DATE MAY 30, 2014	SURVEYOR PAUL REID, PLS
OWNER: BLACK HILLS PLATEAU PRODUCTION COMPANY, LLC DENVER, COLORADO		DRAWING DATE JUNE 4, 2014	PROJECT NO. 25A12
		PREPARED BY: PAUL A. REID, PLS PROFESSIONAL LAND SURVEYOR 1533 PINION DRIVE CHEYENNE, WYOMING 82001 (307) 637-3400 - FAX (307) 347-8589	

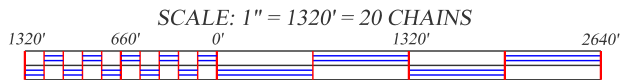
EXHIBIT I-A-5: WELL LOCATION PLAT (5 of 5)

T. 8 S., R. 98 W., 6TH P.M.



LEGEND:

- ⊕ WELL LOCATION AS STAKED
- () RECORD DIMENSIONS PER OFFICIAL GOV'T SURVEY
- M MEASURED THIS SURVEY
- C DIMENSIONS COMPUTED
- Ⓟ FOUND MONUMENT AS NOTED
- SURVEYED OR PROTRACTED POINT, NOTHING SET



CERTIFICATE OF SURVEYOR:

THIS IS TO CERTIFY THAT THIS SURVEY PLAT WAS MADE FROM NOTES TAKEN DURING A FIELD SURVEY MADE BY ME OR UNDER MY DIRECTION AND THAT IT CORRECTLY SHOWS THE LOCATION OF THE DRILLING SITE AS STAKED ON THE GROUND.



WELL NAME: HOMER DEEP UNIT 9-41BH
GRADED PAD ELEVATION: 5481.9 FEET

ELEVATION DATUM:

BM: NGS STATIONS "MC01", "MC07" & "MC08"
NAVD88 - GEOID 09
NAD83 (CORS96) (EPOCH: 2002.0)

SURFACE LOCATION: MEASURED AT 90° TO THE SECTION LINES
504 FEET, S 0°28'44" W OF THE NORTH LINE
245 FEET, N 89°36'37" W OF THE EAST LINE

GENERAL LOCATION: NE 1/4 NE 1/4, SECTION 9
T. 8 S., R. 98 W., 6TH P.M.
GARFIELD COUNTY, COLORADO

SURFACE WELL LOCATION: NAD_83 (CORS96) (EPOCH: 2002.0000)
LATITUDE: 39.37958° N (39°22'46.49" N)
LONGITUDE: 108.32323° W (108°19'23.62" W)
PDOP = 1.0

BOTTOM HOLE LOCATION: NAD_83 (CORS96) (EPOCH: 2002.0000)
LATITUDE: 39.35680° N (39°21'24.47" N)
LONGITUDE: 108.30308° W (108°18'11.09" W)

BASIS OF BEARINGS: PLANE PROJECTION

DATUM: NAD83 (CORS 96) (EPOCH 2002.0) @
NGS STATIONS "MC01", "MC07", & "MC08"
ORIGIN at SE CORNER, SECTION 16, T8S, R98W.
39°21'07.15853" N SF = 1.0000
108°19'21.06044" W
HEIGHT = 5871' ELEV = 5925'

NOTES:

1. THERE ARE VISIBLE IMPROVEMENTS SUCH AS TRAILS OR NATURAL CHANNELS WITHIN 400' OF THE STAKED WELL LOCATION. SEE EX. I-B.
2. SURFACE USE IS NATIVE WOODS, NON CROP AND RANGE LAND.

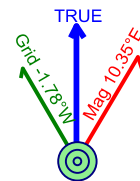
EXHIBIT I-A-5: WELL LOCATION PLAT (5 of 5) HOMER DEEP UNIT 9-41BH LOCATED IN NE 1/4 NE 1/4 OF SECTION 9 T. 8 S., R. 98 W., 6TH P.M. GARFIELD COUNTY, COLORADO		FIELD SURVEY DATE MAY 30, 2014	SURVEYOR PAUL REID, PLS
OWNER: BLACK HILLS PLATEAU PRODUCTION COMPANY, LLC DENVER, COLORADO		DRAWING DATE JUNE 4, 2014	PROJECT NO. 25A12
		PREPARED BY: PAUL A. REID, PLS PROFESSIONAL LAND SURVEYOR 1533 PINION DRIVE CHEYENNE, WYOMING 82001 (307) 637-3400 - FAX (307) 347-8589	



Job Number:	12xxx	Elevation GL:	5482.00 ft	RKB:	18.00 ft
Company:	Black Hills Plateau Production Co.	Projection System:	US State Plane 1983		
Lease/Well:	HDU 9-41BH	Projection Group:	Colorado Central Zone		
Location:	Garfield County, CO	Projection Datum:	GRS80		
Rig Name:	SST Energy #66	Mag. Declination:	10.35° (C:\HawkEye\IGRF2010.MIF)		
State/Country:	CO/ Garfield	Grid Convergence:	-1.78001 W		
Country:	USA	Date:	Tuesday, June 17, 2014		

NOVA Directional Inc. Survey Report

Calculated by HawkEye Software
 Minimum Curvature Method
 Vertical Section Plane 147.21°
 Northing (US ft): 1575542.01 Easting (US ft): 2202091.10
 Latitude: 39°22'46.4880" N Longitude: -108°19'23.6280" W
 Well Location: 504 FNL, 245 FEL, Section 9, T8S, R98W, Sixth Principal Meridian, Garfield County, CO
 Direction Reference: True North



Measured Depth (Ft)	INC Deg	AZM Deg	TVD (Ft)	Subsea TVD (Ft)	EW (Ft)	NS (Ft)	VS (Ft)	DLS °/100 Ft	Latitude Dec. Deg	Longitude Dec. Deg
Surface										
0.00	0.00	0.00	0.00	5500.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
500.00	0.00	0.00	500.00	5000.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
1/2 Casing 10 3/4"										
1000.00	0.00	0.00	1000.00	4500.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
Mesaverde										
1033.00	0.00	0.00	1033.00	4467.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
1500.00	0.00	0.00	1500.00	4000.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
2000.00	0.00	0.00	2000.00	3500.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
2500.00	0.00	0.00	2500.00	3000.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
3000.00	0.00	0.00	3000.00	2500.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
Cameo										
3033.00	0.00	0.00	3033.00	2467.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
Rollins										
3366.00	0.00	0.00	3366.00	2134.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
3500.00	0.00	0.00	3500.00	2000.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
Cozzette										
3541.00	0.00	0.00	3541.00	1959.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
Corcoran										
3752.00	0.00	0.00	3752.00	1748.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
4000.00	0.00	0.00	4000.00	1500.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
Mancos										
4030.00	0.00	0.00	4030.00	1470.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
Mancos A										
4418.00	0.00	0.00	4418.00	1082.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
4500.00	0.00	0.00	4500.00	1000.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
5000.00	0.00	0.00	5000.00	500.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
MOAB										
5178.00	0.00	0.00	5178.00	322.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
5500.00	0.00	0.00	5500.00	0.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
Mancos B										
5615.00	0.00	0.00	5615.00	-115.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
6000.00	0.00	0.00	6000.00	-500.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
1/2 Casing 7 5/8"										
6470.00	0.00	0.00	6470.00	-970.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
6500.00	0.00	0.00	6500.00	-1000.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
Niobrara										
6623.00	0.00	0.00	6623.00	-1123.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
KOP-Begin Build @ 8.00°/ 100 Ft										
6857.00	0.00	1.27	6857.00	-1357.00	0.00	0.00	0.00	0.00	39.3795800	-108.3232300
6887.00	2.40	155.00	6886.99	-1386.99	0.27	-0.57	0.62	8.00	39.3795784	-108.3232291
6917.00	4.80	155.00	6916.93	-1416.93	1.06	-2.28	2.49	8.00	39.3795737	-108.3232262
6947.00	7.20	155.00	6946.76	-1446.76	2.39	-5.12	5.60	8.00	39.3795659	-108.3232216
6977.00	9.60	155.00	6976.44	-1476.44	4.24	-9.09	9.94	8.00	39.3795550	-108.3232150

Measured Depth (Ft)	INC Deg	AZM Deg	TVD (Ft)	Subsea TVD (Ft)	EW (Ft)	NS (Ft)	VS (Ft)	DLS %/100 Ft	Latitude Dec. Deg	Longitude Dec. Deg
7007.00	12.00	155.00	7005.91	-1505.91	6.61	-14.18	15.51	8.00	39.3795411	-108.3232066
7037.00	14.40	155.00	7035.11	-1535.11	9.51	-20.39	22.29	8.00	39.3795240	-108.3231964
7067.00	16.80	155.00	7064.00	-1564.00	12.92	-27.70	30.29	8.00	39.3795039	-108.3231843
7097.00	19.20	155.00	7092.53	-1592.53	16.84	-36.10	39.47	8.00	39.3794809	-108.3231704
7127.00	21.60	155.00	7120.65	-1620.65	21.26	-45.58	49.83	8.00	39.3794549	-108.3231548
7157.00	24.00	155.00	7148.30	-1648.30	26.17	-56.12	61.35	8.00	39.3794259	-108.3231374
Build and Turn @ 8.00°/100 Ft										
7169.50	25.00	155.00	7159.68	-1659.68	28.36	-60.81	66.48	8.00	39.3794130	-108.3231297
7199.50	27.37	154.21	7186.60	-1686.60	34.04	-72.77	79.61	8.00	39.3793802	-108.3231096
7229.50	29.75	153.53	7212.94	-1712.94	40.36	-85.65	93.86	8.00	39.3793449	-108.3230872
7259.50	32.13	152.94	7238.67	-1738.67	47.31	-99.42	109.20	8.00	39.3793070	-108.3230626
7289.50	34.52	152.43	7263.74	-1763.74	54.87	-114.06	125.60	8.00	39.3792668	-108.3230359
7319.50	36.90	151.98	7288.10	-1788.10	63.04	-129.55	143.04	8.00	39.3792243	-108.3230070
7349.50	39.29	151.57	7311.70	-1811.70	71.79	-145.85	161.49	8.00	39.3791796	-108.3229760
7379.50	41.68	151.20	7334.52	-1834.52	81.12	-162.95	180.92	8.00	39.3791326	-108.3229430
7409.50	44.07	150.87	7356.50	-1856.50	91.01	-180.80	201.28	8.00	39.3790836	-108.3229080
7439.50	46.46	150.56	7377.62	-1877.62	101.43	-199.39	222.55	8.00	39.3790326	-108.3228712
7469.50	48.85	150.28	7397.83	-1897.83	112.37	-218.67	244.69	8.00	39.3789796	-108.3228324
7499.50	51.24	150.02	7417.09	-1917.09	123.82	-238.61	267.65	8.00	39.3789249	-108.3227920
7529.50	53.63	149.77	7435.38	-1935.38	135.75	-259.18	291.40	8.00	39.3788684	-108.3227498
7559.50	56.02	149.54	7452.66	-1952.66	148.14	-280.34	315.90	8.00	39.3788103	-108.3227059
7589.50	58.42	149.32	7468.90	-1968.90	160.96	-302.06	341.10	8.00	39.3787507	-108.3226605
7619.50	60.81	149.11	7484.07	-1984.07	174.21	-324.29	366.96	8.00	39.3786896	-108.3226137
7649.50	63.20	148.92	7498.15	-1998.15	187.85	-347.00	393.44	8.00	39.3786273	-108.3225655
7679.50	65.60	148.73	7511.12	-2011.12	201.85	-370.14	420.48	8.00	39.3785638	-108.3225159
7709.50	67.99	148.54	7522.94	-2022.94	216.20	-393.69	448.04	8.00	39.3784991	-108.3224651
7739.50	70.39	148.37	7533.59	-2033.59	230.87	-417.58	476.08	8.00	39.3784335	-108.3224132
7769.50	72.78	148.19	7543.07	-2043.07	245.84	-441.79	504.53	8.00	39.3783670	-108.3223603
7799.50	75.17	148.03	7551.35	-2051.35	261.07	-466.27	533.36	8.00	39.3782998	-108.3223064
7829.50	77.57	147.86	7558.42	-2058.42	276.54	-490.98	562.51	8.00	39.3782320	-108.3222517
7859.50	79.96	147.70	7564.26	-2064.26	292.23	-515.87	591.93	8.00	39.3781637	-108.3221962
7889.50	82.36	147.54	7568.87	-2068.87	308.10	-540.91	621.58	8.00	39.3780949	-108.3221400
7919.50	84.75	147.39	7572.24	-2072.24	324.13	-566.04	651.38	8.00	39.3780259	-108.3220833
7949.50	87.15	147.23	7574.36	-2074.36	340.29	-591.22	681.31	8.00	39.3779568	-108.3220261
7979.50	89.54	147.08	7575.22	-2075.22	356.56	-616.41	711.29	8.00	39.3778876	-108.3219686
Target - Hold @ 90.75°,147.00° Azm										
7994.60	90.75	147.00	7575.18	-2075.18	364.77	-629.08	726.39	8.00	39.3778528	-108.3219395
8494.60	90.75	147.00	7568.64	-2068.64	637.07	-1048.38	1226.35	0.00	39.3767016	-108.3209763
8994.60	90.75	147.00	7562.09	-2062.09	909.36	-1467.68	1726.30	0.00	39.3755504	-108.3200130
9494.60	90.75	147.00	7555.55	-2055.55	1181.66	-1886.98	2226.25	0.00	39.3743992	-108.3190498
9994.60	90.75	147.00	7549.00	-2049.00	1453.96	-2306.28	2726.21	0.00	39.3732480	-108.3180867
10494.60	90.75	147.00	7542.46	-2042.46	1726.25	-2725.58	3226.16	0.00	39.3720967	-108.3171235
10994.60	90.75	147.00	7535.91	-2035.91	1998.55	-3144.88	3726.11	0.00	39.3709455	-108.3161604
11494.60	90.75	147.00	7529.37	-2029.37	2270.85	-3564.18	4226.07	0.00	39.3697942	-108.3151974
11994.60	90.75	147.00	7522.82	-2022.82	2543.14	-3983.48	4726.02	0.00	39.3686429	-108.3142343
12494.60	90.75	147.00	7516.28	-2016.28	2815.44	-4402.78	5225.98	0.00	39.3674917	-108.3132713
12994.60	90.75	147.00	7509.73	-2009.73	3087.73	-4822.08	5725.93	0.00	39.3663404	-108.3123083
13494.60	90.75	147.00	7503.19	-2003.19	3360.03	-5241.38	6225.88	0.00	39.3651891	-108.3113454
13994.60	90.75	147.00	7496.64	-1996.64	3632.33	-5660.67	6725.84	0.00	39.3640378	-108.3103824
14494.60	90.75	147.00	7490.10	-1990.10	3904.62	-6079.97	7225.79	0.00	39.3628865	-108.3094196
14994.60	90.75	147.00	7483.56	-1983.56	4176.92	-6499.27	7725.74	0.00	39.3617352	-108.3084567
15494.60	90.75	147.00	7477.01	-1977.01	4449.22	-6918.57	8225.70	0.00	39.3605838	-108.3074939
15994.60	90.75	147.00	7470.47	-1970.47	4721.51	-7337.87	8725.65	0.00	39.3594325	-108.3065311
16494.60	90.75	147.00	7463.92	-1963.92	4993.81	-7757.17	9225.61	0.00	39.3582812	-108.3055683
16994.60	90.75	147.00	7457.38	-1957.38	5266.10	-8176.47	9725.56	0.00	39.3571298	-108.3046056

Measured Depth (Ft)	INC Deg	AZM Deg	TVD (Ft)	Subsea TVD (Ft)	EW (Ft)	NS (Ft)	VS (Ft)	DLS °/100 Ft	Latitude Dec. Deg	Longitude Dec. Deg
BH - Proposed End of Lateral										
17144.60	90.75	147.00	7455.41	-1955.41	5347.79	-8302.26	9875.55	0.00	39.3567844	-108.3043168

CASING DATA						
Size (in)	Weight (Lbs/Ft)	ID (in)	OD (in)	Top TVD (Ft)	Set TVD (Ft)	
10 3/4	40.5	10.1	11.8	1000.0	1000.0	
7 5/8	29.7	6.9	8.5	6470.0	6470.0	