



# **EPW\_RMP**

**SWEPI EXPLORATION - COLORADO**

**Herring Draw 1-9**

**Herring Draw 1-9**

**Herring Draw 1-9 Pilot**

**Plan: Herring Draw 1-9 Pilot**

## **Standard Survey Report**

**14 April, 2011**





# Shell EP Survey Report



<b>Company:</b>	EPW_RMP	<b>Local Co-ordinate Reference:</b>	Well Herring Draw 1-9
<b>Project:</b>	SWEPI EXPLORATION - COLORADO	<b>TVD Reference:</b>	WELLHEAD @ 6923.00ft
<b>Site:</b>	Herring Draw 1-9	<b>MD Reference:</b>	WELLHEAD @ 6923.00ft
<b>Well:</b>	Herring Draw 1-9	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Herring Draw 1-9 Pilot	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Herring Draw 1-9 Pilot	<b>Database:</b>	EDM_UA_Production

<b>Project</b>	SWEPI EXPLORATION - COLORADO		
<b>Map System:</b>	EPW NAD83	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD83 [1188_4269]		
<b>Map Zone:</b>	NAD83 / UTM 13N [1188_26913]		

Site		Herring Draw 1-9					
Site Position:		Northing:	14,656,022.44	usft	Latitude:	40° 19' 40.152 N	
From:	Lat/Long	Easting:	941,083.20	usft	Longitude:	107° 30' 32.665 W	
Position Uncertainty:	1.00	ft	Slot Radius:	13.200	in	Grid Convergence:	-1.62 °

Well	Herring Draw 1-9					
Well Position	+N/-S	0.00 ft	Northing:	14,656,063.11 usft	Latitude:	40° 19' 40.650 N
	+E/-W	0.00 ft	Easting:	941,427.26 usft	Longitude:	107° 30' 28.240 W
Position Uncertainty		1.00 ft	Wellhead Elevation:	6,912.00 ft	Ground Level:	6,912.00 ft

<b>Wellbore</b>	Herring Draw 1-9 Pilot				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2009	3/27/2011	10.24	66.54	52,812

<b>Design</b>	Herring Draw 1-9 Pilot				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	2,780.00	
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	229.71	

<b>Survey Tool Program</b>	<b>Date</b>	4/14/2011			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
0.00	2,780.00	Herring Draw 1-9 Horizontal (Herring Draw	EPW UNKNOWN	Survey tool used to measure well is unknown	
2,780.00	3,976.70	Herring Draw 1-9 Pilot (Herring Draw 1-9 P			

<b>Planned Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
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	



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<b>Site:</b>	Herring Draw 1-9	<b>MD Reference:</b>	WELLHEAD @ 6923.00ft
<b>Well:</b>	Herring Draw 1-9	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Herring Draw 1-9 Pilot	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Herring Draw 1-9 Pilot	<b>Database:</b>	EDM_UA_Production

## Planned Survey

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)
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
2,041.60	0.00	0.00	2,041.60	0.00	0.00	0.00	0.00	0.00	0.00
2,050.00	0.50	229.37	2,050.00	-0.02	-0.03	0.04	6.00	6.00	0.00
2,100.00	3.50	229.37	2,099.96	-1.16	-1.35	1.79	6.00	6.00	0.00
2,150.00	6.50	229.37	2,149.77	-4.00	-4.66	6.15	6.00	6.00	0.00
2,200.00	9.50	229.37	2,199.27	-8.54	-9.95	13.11	6.00	6.00	0.00
2,250.00	12.50	229.37	2,248.35	-14.75	-17.19	22.65	6.00	6.00	0.00
2,300.00	15.50	229.37	2,296.86	-22.63	-26.37	34.75	6.00	6.00	0.00
2,350.00	18.50	229.37	2,344.67	-32.15	-37.47	49.37	6.00	6.00	0.00
2,400.00	21.50	229.37	2,391.65	-43.28	-50.45	66.47	6.00	6.00	0.00
2,450.00	24.50	229.37	2,437.66	-56.01	-65.27	86.01	6.00	6.00	0.00
2,500.00	27.50	229.37	2,482.60	-70.28	-81.91	107.93	6.00	6.00	0.00
2,550.00	30.50	229.37	2,526.32	-86.06	-100.31	132.17	6.00	6.00	0.00
2,600.00	33.50	229.37	2,568.72	-103.32	-120.41	158.66	6.00	6.00	0.00
2,650.00	36.50	229.37	2,609.67	-121.99	-142.18	187.34	6.00	6.00	0.00
2,700.00	39.50	229.37	2,649.06	-142.04	-165.54	218.12	6.00	6.00	0.00
2,750.00	42.50	229.37	2,686.79	-163.40	-190.43	250.92	6.00	6.00	0.00
2,780.00	44.30	229.37	2,708.59	-176.82	-206.08	271.53	6.00	6.00	0.00
2,800.00	44.30	229.38	2,722.90	-185.91	-216.68	285.50	0.05	0.00	0.08
2,900.00	44.31	229.46	2,794.46	-231.35	-269.73	355.35	0.05	0.00	0.08
3,000.00	44.31	229.54	2,866.03	-276.72	-322.85	425.20	0.05	0.00	0.08
3,100.00	44.31	229.61	2,937.59	-322.01	-376.02	495.05	0.05	0.00	0.08
3,200.00	44.31	229.69	3,009.16	-367.24	-429.26	564.91	0.05	0.00	0.08
3,300.00	44.32	229.76	3,080.72	-412.40	-482.56	634.77	0.05	0.00	0.08
3,400.00	44.32	229.84	3,152.29	-457.50	-535.92	704.63	0.05	0.00	0.08
3,500.00	44.32	229.91	3,223.85	-502.52	-589.34	774.50	0.05	0.00	0.08
3,600.00	44.32	229.99	3,295.41	-547.47	-642.82	844.36	0.05	0.00	0.08
3,700.00	44.32	230.07	3,366.98	-592.36	-696.37	914.23	0.05	0.00	0.08
3,800.00	44.33	230.14	3,438.54	-637.18	-749.98	984.10	0.05	0.00	0.08
3,900.00	44.33	230.22	3,510.11	-681.92	-803.64	1,053.97	0.05	0.00	0.08
3,976.71	44.33	230.27	3,565.00	-716.20	-844.85	1,107.57	0.05	0.00	0.08



# Shell EP Survey Report



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<b>Project:</b>	SWEPI EXPLORATION - COLORADO	<b>TVD Reference:</b>	WELLHEAD @ 6923.00ft
<b>Site:</b>	Herring Draw 1-9	<b>MD Reference:</b>	WELLHEAD @ 6923.00ft
<b>Well:</b>	Herring Draw 1-9	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Herring Draw 1-9 Pilot	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Herring Draw 1-9 Pilot	<b>Database:</b>	EDM_UA_Production

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
Pilot BHLHD1-9	0.00	0.00	3,565.00	-716.20	-844.85	14,655,346.91	940,582.41	40° 19' 33.340 N	107° 30' 38.880 W
- plan misses target center by 0.02ft at 3976.71ft MD (3564.98 TVD, -716.20 N, -844.85 E)									
- Point									

Checked By: _____	Approved By: _____	Date: _____
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WFU Herring Draw 1-9

T4N, R90W, SEC9  
Wellbore Diagram

Updated: 3/25/2011  
Location: Section 9 Township 4N Range 90W Moffat County, Colorado  
Unit Williams Fork Unit  
API Number: Pending Elevation: 6926 GL  
Target Zone: Niobrara Shale 6937 KB

Surface Section

Hole: 13-1/2"  
Depth: 500' MD  
Casing: 10-3/4" 40.5# J-55, ST&C  
Cement Top: Surface  
Mud Weight: 8.4 ppg

Intermediate Section

Hole: 9-7/8"  
Depth: 2791' MD / 2717' TVD  
Casing: 7-5/8", 29.7#, P-110 LT&C  
Cement Top : 2150' MD/TVD  
Mud Weight: AIR DRILLED (5.2 ppg)  
Contingency Aerated Water (5.2ppg)

Directional Hole Sections

Pilot Hole

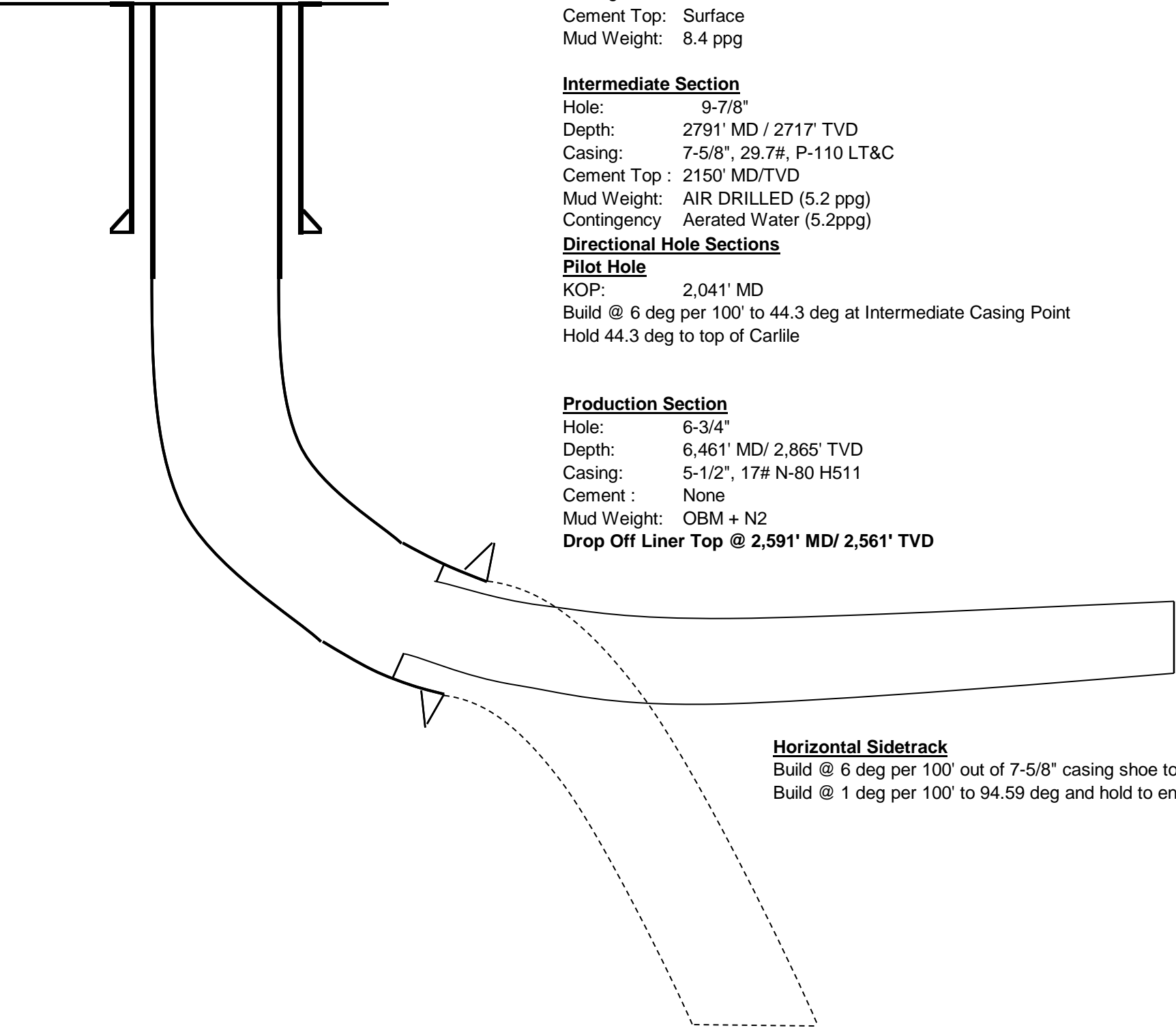
KOP: 2,041' MD  
Build @ 6 deg per 100' to 44.3 deg at Intermediate Casing Point  
Hold 44.3 deg to top of Carlile

Production Section

Hole: 6-3/4"  
Depth: 6,461' MD/ 2,865' TVD  
Casing: 5-1/2", 17# N-80 H511  
Cement : None  
Mud Weight: OBM + N2  
Drop Off Liner Top @ 2,591' MD/ 2,561' TVD

Horizontal Sidetrack

Build @ 6 deg per 100' out of 7-5/8" casing shoe to land horizontal  
Build @ 1 deg per 100' to 94.59 deg and hold to end of section



Project: SWEPI EXPLORATION - COLORADO  
Site: Herring Draw 1-9  
Well: Herring Draw 1-9  
Wellbore: Herring Draw 19 Pilot  
Design: Herring Draw 1-9 Pilot

SITE DETAILS: Herring Draw 1-9

Site Centre Latitude: 40° 19' 40.152 N  
Longitude: 107° 30' 32.665 W

Positional Uncertainty: 1.00  
Convergence: -1.62  
Local North: Grid

