

# **GREAT WESTERN OPERATING COMPANY**

**WELD COUNTY  
SEC 8-T3N-R67W  
BERRY IC 11-159HN**

**OWB**

**Plan: PROPOSAL 1**

## **Standard Planning Report**

**03 September, 2021**

Project: WELD COUNTY  
Site: SEC 8-T3N-R67W  
Well: BERRY IC 11-159HN  
Wellbore: OWB  
Design: PROPOSAL 1



Azimuths to True North  
Magnetic North: 7.90°

Magnetic Field  
Strength: 51832.8nT  
Dip Angle: 66.50°  
Date: 9/3/2021  
Model: IGRF2020

WELL DETAILS: BERRY IC 11-159HN

+N/-S	+E/-W	Northing	Easting	4843.00	Latitude	Longitude	Slot
0.00	0.00	1332317.06	3161759.07		40.244158°N	104.920527°W	

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	3633.00	0.00	0.00	3633.00	0.00	0.00	0.00	0.00	0.00	
3	4632.90	30.00	181.52	4587.84	-255.73	-6.79	3.00	181.52	38.97	
4	6673.25	30.00	181.52	6354.88	-1275.46	-33.86	0.00	0.00	194.36	
5	7802.68	90.00	272.23	6979.00	-1607.57	-763.53	8.00	90.61	960.06	BERRY 159HN-LP
6	12968.10	90.00	272.23	6979.00	-1406.52	-5925.03	0.00	0.00	6055.06	BERRY 159HN-MID PNT
7	13070.88	90.00	269.15	6979.00	-1405.28	-6027.80	3.00	-90.00	6156.85	BERRY 159HN-BTM PERF
8	18671.03	90.00	269.15	6979.00	-1488.65	-11627.32	0.00	0.00	11722.22	BERRY 159HN-BTM PERF
9	18672.61	90.00	269.19	6979.00	-1488.67	-11628.90	3.00	90.00	11723.79	BERRY 159HN-PBHL
10	18771.26	90.00	269.19	6979.00	-1490.06	-11727.54	0.00	0.00	11821.82	BERRY 159HN-PBHL

FORMATION TOP DETAILS

Formation data is available

PROJECT DETAILS: WELD COUNTY

Geodetic System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: Colorado Northern Zone

System Datum: Mean Sea Level

SHL:  
1305' FNL, 765' FWL  
Sec 8-T3N-R67W

LP:  
2395' FSL, 1' FEL  
Sec 7-T3N-R67W

MID POINT:  
2395' FSL, 0' FWL  
Sec 7-T3N-R67W

BTM PERF:  
2396' FSL, 370' FEL  
Sec 11-T3N-R68W

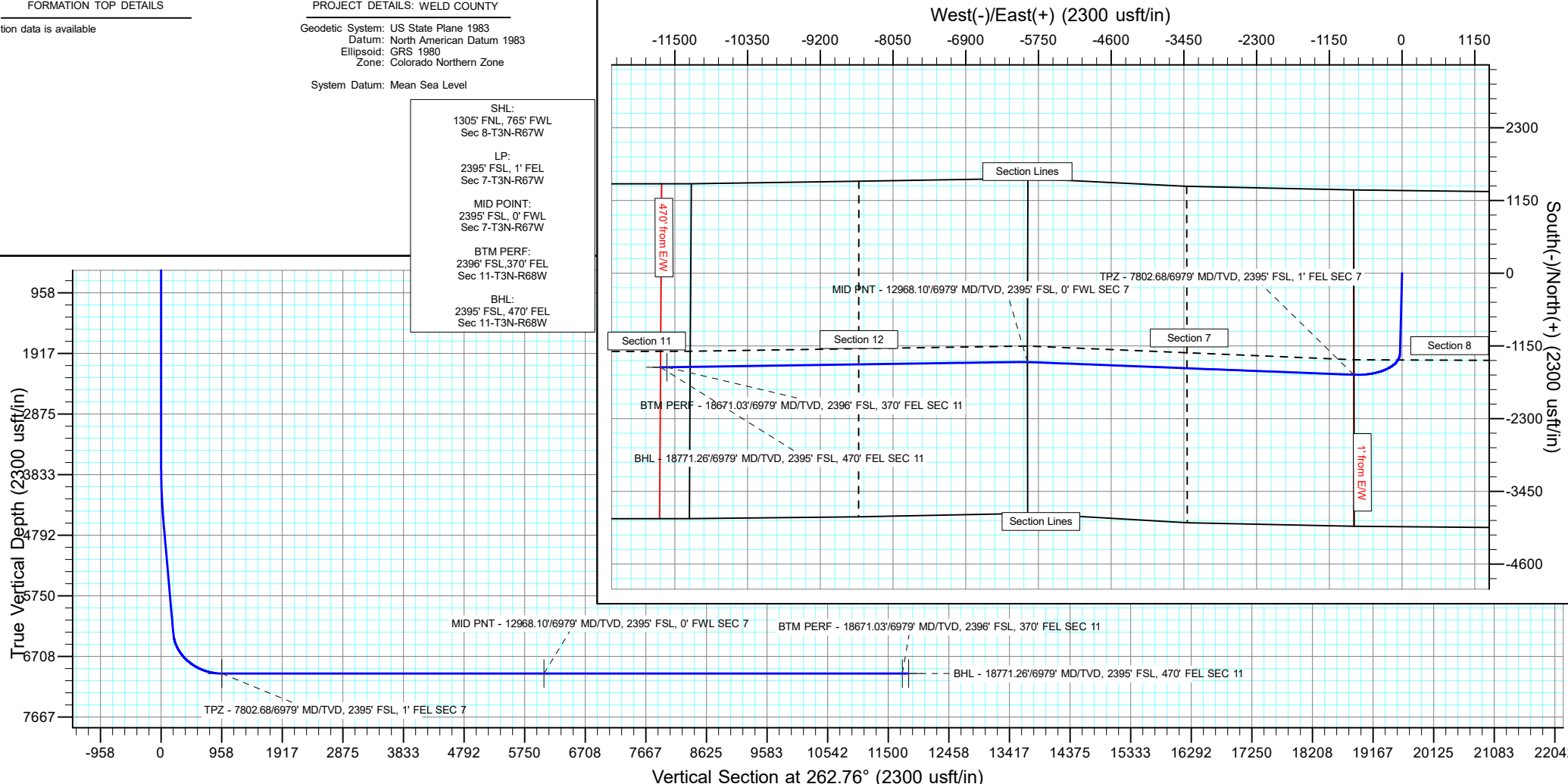
BHL:  
2395' FSL, 470' FEL  
Sec 11-T3N-R68W

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
3633.00	0.00	0.00	3633.00	0.00	0.00	0.00	0.00	Start Build 3.00
4632.90	30.00	181.52	4587.84	-255.73	-6.79	38.97	255.82	Start 2040.34 hold at 4632.90 MD
6673.25	30.00	181.52	6354.88	-1275.46	-33.86	194.36	1275.91	Start DLS 8.00 TFO 90.61
7802.68	90.00	272.23	6979.00	-1607.57	-763.53	960.06	2145.63	TPZ - 7802.68/6979' MD/TVD, 2395' FSL, 1' FEL SEC 7
12968.10	90.00	272.23	6979.00	-1406.52	-5925.03	6055.06	7311.05	MID PNT - 12968.10/6979' MD/TVD, 2395' FSL, 0' FWL SEC 7
13070.88	90.00	269.15	6979.00	-1405.28	-6027.80	6156.85	7413.84	Start 5600.15 hold at 13070.88 MD
18671.03	90.00	269.15	6979.00	-1488.65	-11627.32	11723.79	13013.98	BTM PERF - 18671.03/6979' MD/TVD, 2396' FSL, 370' FEL SEC 11
18672.61	90.00	269.19	6979.00	-1488.67	-11628.90	11723.79	13015.56	Start 98.65 hold at 18672.61 MD
18771.26	90.00	269.19	6979.00	-1490.06	-11727.54	11821.82	13114.21	BHL - 18771.26/6979' MD/TVD, 2395' FSL, 470' FEL SEC 11

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
BERRY 159HN-BTM PERF	6979.00	-1488.65	-11627.32	1330752.46	3150141.73	40.240064°N	104.962177°W	Point
- plan hits target center								
BERRY 159HN-LP	6979.00	-1607.57	-763.53	1330704.53	3161006.07	40.239745°N	104.923262°W	Point
- plan hits target center								
BERRY 159HN-MID PNT	6979.00	-1406.52	-5925.03	1330871.85	3155843.36	40.240295°N	104.941751°W	Point
- plan hits target center								
BERRY 159HN-PBHL	6979.00	-1490.06	-11727.54	1330750.40	3150041.52	40.240060°N	104.962536°W	Point
- plan hits target center								



## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BERRY IC 11-159HN
<b>Company:</b>	GREAT WESTERN OPERATING COMPANY	<b>TVD Reference:</b>	KB 20' @ 4863.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 20' @ 4863.00usft
<b>Site:</b>	SEC 8-T3N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	BERRY IC 11-159HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OWB		
<b>Design:</b>	PROPOSAL 1		

<b>Project</b>	WELD COUNTY		
<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		

<b>Site</b>	SEC 8-T3N-R67W			
<b>Site Position:</b>		<b>Northing:</b>	1,333,626.02 usft	<b>Latitude:</b> 40.247765°N
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,160,984.00 usft	<b>Longitude:</b> 104.923273°W
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.200 in	

<b>Well</b>	BERRY IC 11-159HN			
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	1,332,317.06 usft
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	3,161,759.07 usft
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	usft
<b>Grid Convergence:</b>		0.37 °	<b>Ground Level:</b>	4,843.00 usft

<b>Wellbore</b>	OWB				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2020	9/3/2021	7.90	66.50	51,832.78629089

<b>Design</b>	PROPOSAL 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	262.76

<b>Plan Survey Tool Program</b>	<b>Date</b>	9/3/2021		
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	0.00	18,770.99 PROPOSAL 1 (OWB)	MWD	
			OWSG MWD - Standard	

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<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 20' @ 4863.00usft
<b>Site:</b>	SEC 8-T3N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	BERRY IC 11-159HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OWB		
<b>Design:</b>	PROPOSAL 1		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,633.00	0.00	0.00	3,633.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,632.90	30.00	181.52	4,587.85	-255.73	-6.79	3.00	3.00	0.00	181.52	
6,673.25	30.00	181.52	6,354.89	-1,275.46	-33.86	0.00	0.00	0.00	0.00	
7,802.68	90.00	272.23	6,979.00	-1,607.57	-763.53	8.00	5.31	8.03	90.61	BERRY 159HN-LP
12,968.10	90.00	272.23	6,979.00	-1,406.52	-5,925.03	0.00	0.00	0.00	0.00	BERRY 159HN-MID F
13,070.88	90.00	269.15	6,979.00	-1,405.28	-6,027.80	3.00	0.00	-3.00	-90.00	BERRY 159HN-BTM
18,671.03	90.00	269.15	6,979.00	-1,488.65	-11,627.32	0.00	0.00	0.00	0.00	BERRY 159HN-BTM
18,672.61	90.00	269.19	6,979.00	-1,488.67	-11,628.90	3.00	0.00	3.00	90.00	BERRY 159HN-PBHL
18,771.26	90.00	269.19	6,979.00	-1,490.06	-11,727.54	0.00	0.00	0.00	0.00	BERRY 159HN-PBHL

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<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 20' @ 4863.00usft
<b>Site:</b>	SEC 8-T3N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	BERRY IC 11-159HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OWB		
<b>Design:</b>	PROPOSAL 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,633.00	0.00	0.00	3,633.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Start Build 3.00</b>									
3,700.00	2.01	181.52	3,699.99	-1.17	-0.03	0.18	3.00	3.00	0.00
3,800.00	5.01	181.52	3,799.79	-7.29	-0.19	1.11	3.00	3.00	0.00
3,900.00	8.01	181.52	3,899.13	-18.63	-0.49	2.84	3.00	3.00	0.00
4,000.00	11.01	181.52	3,997.75	-35.14	-0.93	5.35	3.00	3.00	0.00
4,100.00	14.01	181.52	4,095.36	-56.79	-1.51	8.65	3.00	3.00	0.00
4,200.00	17.01	181.52	4,191.71	-83.52	-2.22	12.73	3.00	3.00	0.00
4,300.00	20.01	181.52	4,286.52	-115.25	-3.06	17.56	3.00	3.00	0.00
4,400.00	23.01	181.52	4,379.55	-151.90	-4.03	23.15	3.00	3.00	0.00
4,500.00	26.01	181.52	4,470.53	-193.37	-5.13	29.47	3.00	3.00	0.00
4,600.00	29.01	181.52	4,559.21	-239.54	-6.36	36.50	3.00	3.00	0.00
4,632.90	30.00	181.52	4,587.85	-255.73	-6.79	38.97	3.00	3.00	0.00
<b>Start 2040.34 hold at 4632.90 MD</b>									
4,700.00	30.00	181.52	4,645.95	-289.27	-7.68	44.08	0.00	0.00	0.00
4,800.00	30.00	181.52	4,732.56	-339.25	-9.01	51.70	0.00	0.00	0.00
4,900.00	30.00	181.52	4,819.17	-389.22	-10.33	59.31	0.00	0.00	0.00
5,000.00	30.00	181.52	4,905.77	-439.20	-11.66	66.93	0.00	0.00	0.00
5,100.00	30.00	181.52	4,992.38	-489.18	-12.99	74.54	0.00	0.00	0.00
5,200.00	30.00	181.52	5,078.98	-539.16	-14.32	82.16	0.00	0.00	0.00
5,300.00	30.00	181.52	5,165.59	-589.14	-15.64	89.77	0.00	0.00	0.00
5,400.00	30.00	181.52	5,252.19	-639.11	-16.97	97.39	0.00	0.00	0.00
5,500.00	30.00	181.52	5,338.80	-689.09	-18.30	105.01	0.00	0.00	0.00
5,600.00	30.00	181.52	5,425.40	-739.07	-19.62	112.62	0.00	0.00	0.00
5,700.00	30.00	181.52	5,512.01	-789.05	-20.95	120.24	0.00	0.00	0.00
5,800.00	30.00	181.52	5,598.61	-839.03	-22.28	127.85	0.00	0.00	0.00
5,900.00	30.00	181.52	5,685.22	-889.00	-23.60	135.47	0.00	0.00	0.00
6,000.00	30.00	181.52	5,771.82	-938.98	-24.93	143.08	0.00	0.00	0.00
6,100.00	30.00	181.52	5,858.43	-988.96	-26.26	150.70	0.00	0.00	0.00
6,200.00	30.00	181.52	5,945.03	-1,038.94	-27.58	158.32	0.00	0.00	0.00
6,300.00	30.00	181.52	6,031.64	-1,088.92	-28.91	165.93	0.00	0.00	0.00
6,400.00	30.00	181.52	6,118.24	-1,138.90	-30.24	173.55	0.00	0.00	0.00
6,500.00	30.00	181.52	6,204.85	-1,188.87	-31.57	181.16	0.00	0.00	0.00
6,600.00	30.00	181.52	6,291.45	-1,238.85	-32.89	188.78	0.00	0.00	0.00
6,673.25	30.00	181.52	6,354.89	-1,275.46	-33.86	194.36	0.00	0.00	0.00
<b>Start DLS 8.00 TFO 90.61</b>									
6,700.00	30.04	185.80	6,378.05	-1,288.81	-34.72	196.89	8.00	0.17	15.99
6,750.00	30.50	193.69	6,421.25	-1,313.60	-38.99	204.25	8.00	0.91	15.78
6,800.00	31.41	201.26	6,464.15	-1,338.08	-46.72	215.00	8.00	1.82	15.15
6,850.00	32.74	208.37	6,506.53	-1,362.12	-57.87	229.10	8.00	2.66	14.21
6,900.00	34.44	214.92	6,548.19	-1,385.63	-72.40	246.47	8.00	3.41	13.09
6,950.00	36.47	220.87	6,588.93	-1,408.47	-90.22	267.03	8.00	4.04	11.91
7,000.00	38.75	226.25	6,628.55	-1,430.53	-111.26	290.68	8.00	4.58	10.76
7,050.00	41.27	231.10	6,666.85	-1,451.72	-135.40	317.30	8.00	5.02	9.69
7,100.00	43.96	235.46	6,703.65	-1,471.92	-162.54	346.77	8.00	5.39	8.74
7,150.00	46.81	239.42	6,738.77	-1,491.04	-192.54	378.94	8.00	5.69	7.90
7,200.00	49.78	243.01	6,772.04	-1,508.99	-225.25	413.65	8.00	5.94	7.18
7,250.00	52.85	246.29	6,803.30	-1,525.67	-260.52	450.74	8.00	6.14	6.57
7,300.00	56.00	249.32	6,832.39	-1,541.01	-298.17	490.03	8.00	6.31	6.05
7,350.00	59.22	252.12	6,859.17	-1,554.92	-338.02	531.31	8.00	6.45	5.61
7,400.00	62.50	254.75	6,883.51	-1,567.36	-379.87	574.40	8.00	6.56	5.25
7,450.00	65.83	257.22	6,905.30	-1,578.24	-423.53	619.08	8.00	6.65	4.94

# Planning Report

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<b>Company:</b>	GREAT WESTERN OPERATING COMPANY	<b>TVD Reference:</b>	KB 20' @ 4863.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 20' @ 4863.00usft
<b>Site:</b>	SEC 8-T3N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	BERRY IC 11-159HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OWB		
<b>Design:</b>	PROPOSAL 1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
7,500.00	69.19	259.56	6,924.43	-1,587.53	-468.77	665.13	8.00	6.73	4.69	
7,550.00	72.59	261.80	6,940.80	-1,595.17	-515.39	712.34	8.00	6.79	4.48	
7,600.00	76.01	263.96	6,954.33	-1,601.13	-563.14	760.46	8.00	6.84	4.32	
7,650.00	79.44	266.05	6,964.96	-1,605.37	-611.80	809.27	8.00	6.87	4.19	
7,700.00	82.89	268.10	6,972.64	-1,607.89	-661.13	858.52	8.00	6.90	4.10	
7,750.00	86.35	270.12	6,977.32	-1,608.65	-710.90	907.99	8.00	6.92	4.04	
7,802.68	90.00	272.23	6,979.00	-1,607.57	-763.53	960.06	8.00	6.93	4.00	
Start 5165.42 hold at 7802.68 MD										
7,900.00	90.00	272.23	6,979.00	-1,603.78	-860.77	1,056.05	0.00	0.00	0.00	
8,000.00	90.00	272.23	6,979.00	-1,599.89	-960.70	1,154.69	0.00	0.00	0.00	
8,100.00	90.00	272.23	6,979.00	-1,596.00	-1,060.62	1,253.33	0.00	0.00	0.00	
8,200.00	90.00	272.23	6,979.00	-1,592.11	-1,160.55	1,351.96	0.00	0.00	0.00	
8,300.00	90.00	272.23	6,979.00	-1,588.22	-1,260.47	1,450.60	0.00	0.00	0.00	
8,400.00	90.00	272.23	6,979.00	-1,584.32	-1,360.39	1,549.24	0.00	0.00	0.00	
8,500.00	90.00	272.23	6,979.00	-1,580.43	-1,460.32	1,647.87	0.00	0.00	0.00	
8,600.00	90.00	272.23	6,979.00	-1,576.54	-1,560.24	1,746.51	0.00	0.00	0.00	
8,700.00	90.00	272.23	6,979.00	-1,572.65	-1,660.17	1,845.15	0.00	0.00	0.00	
8,800.00	90.00	272.23	6,979.00	-1,568.75	-1,760.09	1,943.78	0.00	0.00	0.00	
8,900.00	90.00	272.23	6,979.00	-1,564.86	-1,860.02	2,042.42	0.00	0.00	0.00	
9,000.00	90.00	272.23	6,979.00	-1,560.97	-1,959.94	2,141.06	0.00	0.00	0.00	
9,100.00	90.00	272.23	6,979.00	-1,557.08	-2,059.86	2,239.70	0.00	0.00	0.00	
9,200.00	90.00	272.23	6,979.00	-1,553.18	-2,159.79	2,338.33	0.00	0.00	0.00	
9,300.00	90.00	272.23	6,979.00	-1,549.29	-2,259.71	2,436.97	0.00	0.00	0.00	
9,400.00	90.00	272.23	6,979.00	-1,545.40	-2,359.64	2,535.61	0.00	0.00	0.00	
9,500.00	90.00	272.23	6,979.00	-1,541.51	-2,459.56	2,634.24	0.00	0.00	0.00	
9,600.00	90.00	272.23	6,979.00	-1,537.62	-2,559.49	2,732.88	0.00	0.00	0.00	
9,700.00	90.00	272.23	6,979.00	-1,533.72	-2,659.41	2,831.52	0.00	0.00	0.00	
9,800.00	90.00	272.23	6,979.00	-1,529.83	-2,759.33	2,930.15	0.00	0.00	0.00	
9,900.00	90.00	272.23	6,979.00	-1,525.94	-2,859.26	3,028.79	0.00	0.00	0.00	
10,000.00	90.00	272.23	6,979.00	-1,522.05	-2,959.18	3,127.43	0.00	0.00	0.00	
10,100.00	90.00	272.23	6,979.00	-1,518.15	-3,059.11	3,226.06	0.00	0.00	0.00	
10,200.00	90.00	272.23	6,979.00	-1,514.26	-3,159.03	3,324.70	0.00	0.00	0.00	
10,300.00	90.00	272.23	6,979.00	-1,510.37	-3,258.96	3,423.34	0.00	0.00	0.00	
10,400.00	90.00	272.23	6,979.00	-1,506.48	-3,358.88	3,521.97	0.00	0.00	0.00	
10,500.00	90.00	272.23	6,979.00	-1,502.58	-3,458.80	3,620.61	0.00	0.00	0.00	
10,600.00	90.00	272.23	6,979.00	-1,498.69	-3,558.73	3,719.25	0.00	0.00	0.00	
10,700.00	90.00	272.23	6,979.00	-1,494.80	-3,658.65	3,817.88	0.00	0.00	0.00	
10,800.00	90.00	272.23	6,979.00	-1,490.91	-3,758.58	3,916.52	0.00	0.00	0.00	
10,900.00	90.00	272.23	6,979.00	-1,487.02	-3,858.50	4,015.16	0.00	0.00	0.00	
11,000.00	90.00	272.23	6,979.00	-1,483.12	-3,958.42	4,113.79	0.00	0.00	0.00	
11,100.00	90.00	272.23	6,979.00	-1,479.23	-4,058.35	4,212.43	0.00	0.00	0.00	
11,200.00	90.00	272.23	6,979.00	-1,475.34	-4,158.27	4,311.07	0.00	0.00	0.00	
11,300.00	90.00	272.23	6,979.00	-1,471.45	-4,258.20	4,409.70	0.00	0.00	0.00	
11,400.00	90.00	272.23	6,979.00	-1,467.55	-4,358.12	4,508.34	0.00	0.00	0.00	
11,500.00	90.00	272.23	6,979.00	-1,463.66	-4,458.05	4,606.98	0.00	0.00	0.00	
11,600.00	90.00	272.23	6,979.00	-1,459.77	-4,557.97	4,705.61	0.00	0.00	0.00	
11,700.00	90.00	272.23	6,979.00	-1,455.88	-4,657.89	4,804.25	0.00	0.00	0.00	
11,800.00	90.00	272.23	6,979.00	-1,451.98	-4,757.82	4,902.89	0.00	0.00	0.00	
11,900.00	90.00	272.23	6,979.00	-1,448.09	-4,857.74	5,001.52	0.00	0.00	0.00	
12,000.00	90.00	272.23	6,979.00	-1,444.20	-4,957.67	5,100.16	0.00	0.00	0.00	
12,100.00	90.00	272.23	6,979.00	-1,440.31	-5,057.59	5,198.80	0.00	0.00	0.00	
12,200.00	90.00	272.23	6,979.00	-1,436.42	-5,157.52	5,297.43	0.00	0.00	0.00	
12,300.00	90.00	272.23	6,979.00	-1,432.52	-5,257.44	5,396.07	0.00	0.00	0.00	
12,400.00	90.00	272.23	6,979.00	-1,428.63	-5,357.36	5,494.71	0.00	0.00	0.00	

# Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BERRY IC 11-159HN
<b>Company:</b>	GREAT WESTERN OPERATING COMPANY	<b>TVD Reference:</b>	KB 20' @ 4863.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 20' @ 4863.00usft
<b>Site:</b>	SEC 8-T3N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	BERRY IC 11-159HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OWB		
<b>Design:</b>	PROPOSAL 1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
12,500.00	90.00	272.23	6,979.00	-1,424.74	-5,457.29	5,593.34	0.00	0.00	0.00	
12,600.00	90.00	272.23	6,979.00	-1,420.85	-5,557.21	5,691.98	0.00	0.00	0.00	
12,700.00	90.00	272.23	6,979.00	-1,416.95	-5,657.14	5,790.62	0.00	0.00	0.00	
12,800.00	90.00	272.23	6,979.00	-1,413.06	-5,757.06	5,889.25	0.00	0.00	0.00	
12,900.00	90.00	272.23	6,979.00	-1,409.17	-5,856.98	5,987.89	0.00	0.00	0.00	
12,968.10	90.00	272.23	6,979.00	-1,406.52	-5,925.03	6,055.06	0.00	0.00	0.00	
Start DLS 3.00 TFO -90.00										
13,000.00	90.00	271.27	6,979.00	-1,405.54	-5,956.92	6,086.57	3.00	0.00	-3.00	
13,070.88	90.00	269.15	6,979.00	-1,405.28	-6,027.80	6,156.85	3.00	0.00	-3.00	
Start 5600.15 hold at 13070.88 MD										
13,100.00	90.00	269.15	6,979.00	-1,405.72	-6,056.91	6,185.79	0.00	0.00	0.00	
13,200.00	90.00	269.15	6,979.00	-1,407.20	-6,156.90	6,285.16	0.00	0.00	0.00	
13,300.00	90.00	269.15	6,979.00	-1,408.69	-6,256.89	6,384.54	0.00	0.00	0.00	
13,400.00	90.00	269.15	6,979.00	-1,410.18	-6,356.88	6,483.92	0.00	0.00	0.00	
13,500.00	90.00	269.15	6,979.00	-1,411.67	-6,456.87	6,583.30	0.00	0.00	0.00	
13,600.00	90.00	269.15	6,979.00	-1,413.16	-6,556.85	6,682.68	0.00	0.00	0.00	
13,700.00	90.00	269.15	6,979.00	-1,414.65	-6,656.84	6,782.06	0.00	0.00	0.00	
13,800.00	90.00	269.15	6,979.00	-1,416.14	-6,756.83	6,881.44	0.00	0.00	0.00	
13,900.00	90.00	269.15	6,979.00	-1,417.62	-6,856.82	6,980.82	0.00	0.00	0.00	
14,000.00	90.00	269.15	6,979.00	-1,419.11	-6,956.81	7,080.20	0.00	0.00	0.00	
14,100.00	90.00	269.15	6,979.00	-1,420.60	-7,056.80	7,179.58	0.00	0.00	0.00	
14,200.00	90.00	269.15	6,979.00	-1,422.09	-7,156.79	7,278.96	0.00	0.00	0.00	
14,300.00	90.00	269.15	6,979.00	-1,423.58	-7,256.78	7,378.34	0.00	0.00	0.00	
14,400.00	90.00	269.15	6,979.00	-1,425.07	-7,356.77	7,477.71	0.00	0.00	0.00	
14,500.00	90.00	269.15	6,979.00	-1,426.56	-7,456.76	7,577.09	0.00	0.00	0.00	
14,600.00	90.00	269.15	6,979.00	-1,428.05	-7,556.74	7,676.47	0.00	0.00	0.00	
14,700.00	90.00	269.15	6,979.00	-1,429.53	-7,656.73	7,775.85	0.00	0.00	0.00	
14,800.00	90.00	269.15	6,979.00	-1,431.02	-7,756.72	7,875.23	0.00	0.00	0.00	
14,900.00	90.00	269.15	6,979.00	-1,432.51	-7,856.71	7,974.61	0.00	0.00	0.00	
15,000.00	90.00	269.15	6,979.00	-1,434.00	-7,956.70	8,073.99	0.00	0.00	0.00	
15,100.00	90.00	269.15	6,979.00	-1,435.49	-8,056.69	8,173.37	0.00	0.00	0.00	
15,200.00	90.00	269.15	6,979.00	-1,436.98	-8,156.68	8,272.75	0.00	0.00	0.00	
15,300.00	90.00	269.15	6,979.00	-1,438.47	-8,256.67	8,372.13	0.00	0.00	0.00	
15,400.00	90.00	269.15	6,979.00	-1,439.95	-8,356.66	8,471.51	0.00	0.00	0.00	
15,500.00	90.00	269.15	6,979.00	-1,441.44	-8,456.64	8,570.88	0.00	0.00	0.00	
15,600.00	90.00	269.15	6,979.00	-1,442.93	-8,556.63	8,670.26	0.00	0.00	0.00	
15,700.00	90.00	269.15	6,979.00	-1,444.42	-8,656.62	8,769.64	0.00	0.00	0.00	
15,800.00	90.00	269.15	6,979.00	-1,445.91	-8,756.61	8,869.02	0.00	0.00	0.00	
15,900.00	90.00	269.15	6,979.00	-1,447.40	-8,856.60	8,968.40	0.00	0.00	0.00	
16,000.00	90.00	269.15	6,979.00	-1,448.89	-8,956.59	9,067.78	0.00	0.00	0.00	
16,100.00	90.00	269.15	6,979.00	-1,450.37	-9,056.58	9,167.16	0.00	0.00	0.00	
16,200.00	90.00	269.15	6,979.00	-1,451.86	-9,156.57	9,266.54	0.00	0.00	0.00	
16,300.00	90.00	269.15	6,979.00	-1,453.35	-9,256.56	9,365.92	0.00	0.00	0.00	
16,400.00	90.00	269.15	6,979.00	-1,454.84	-9,356.54	9,465.30	0.00	0.00	0.00	
16,500.00	90.00	269.15	6,979.00	-1,456.33	-9,456.53	9,564.68	0.00	0.00	0.00	
16,600.00	90.00	269.15	6,979.00	-1,457.82	-9,556.52	9,664.05	0.00	0.00	0.00	
16,700.00	90.00	269.15	6,979.00	-1,459.31	-9,656.51	9,763.43	0.00	0.00	0.00	
16,800.00	90.00	269.15	6,979.00	-1,460.79	-9,756.50	9,862.81	0.00	0.00	0.00	
16,900.00	90.00	269.15	6,979.00	-1,462.28	-9,856.49	9,962.19	0.00	0.00	0.00	
17,000.00	90.00	269.15	6,979.00	-1,463.77	-9,956.48	10,061.57	0.00	0.00	0.00	
17,100.00	90.00	269.15	6,979.00	-1,465.26	-10,056.47	10,160.95	0.00	0.00	0.00	
17,200.00	90.00	269.15	6,979.00	-1,466.75	-10,156.46	10,260.33	0.00	0.00	0.00	
17,300.00	90.00	269.15	6,979.00	-1,468.24	-10,256.45	10,359.71	0.00	0.00	0.00	
17,400.00	90.00	269.15	6,979.00	-1,469.73	-10,356.43	10,459.09	0.00	0.00	0.00	

## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BERRY IC 11-159HN
<b>Company:</b>	GREAT WESTERN OPERATING COMPANY	<b>TVD Reference:</b>	KB 20' @ 4863.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 20' @ 4863.00usft
<b>Site:</b>	SEC 8-T3N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	BERRY IC 11-159HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OWB		
<b>Design:</b>	PROPOSAL 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
17,500.00	90.00	269.15	6,979.00	-1,471.21	-10,456.42	10,558.47	0.00	0.00	0.00
17,600.00	90.00	269.15	6,979.00	-1,472.70	-10,556.41	10,657.85	0.00	0.00	0.00
17,700.00	90.00	269.15	6,979.00	-1,474.19	-10,656.40	10,757.23	0.00	0.00	0.00
17,800.00	90.00	269.15	6,979.00	-1,475.68	-10,756.39	10,856.60	0.00	0.00	0.00
17,900.00	90.00	269.15	6,979.00	-1,477.17	-10,856.38	10,955.98	0.00	0.00	0.00
18,000.00	90.00	269.15	6,979.00	-1,478.66	-10,956.37	11,055.36	0.00	0.00	0.00
18,100.00	90.00	269.15	6,979.00	-1,480.15	-11,056.36	11,154.74	0.00	0.00	0.00
18,200.00	90.00	269.15	6,979.00	-1,481.63	-11,156.35	11,254.12	0.00	0.00	0.00
18,300.00	90.00	269.15	6,979.00	-1,483.12	-11,256.33	11,353.50	0.00	0.00	0.00
18,400.00	90.00	269.15	6,979.00	-1,484.61	-11,356.32	11,452.88	0.00	0.00	0.00
18,500.00	90.00	269.15	6,979.00	-1,486.10	-11,456.31	11,552.26	0.00	0.00	0.00
18,600.00	90.00	269.15	6,979.00	-1,487.59	-11,556.30	11,651.64	0.00	0.00	0.00
18,671.03	90.00	269.15	6,979.00	-1,488.65	-11,627.32	11,722.23	0.00	0.00	0.00
<b>Start Turn 3.00</b>									
18,672.61	90.00	269.19	6,979.00	-1,488.67	-11,628.90	11,723.79	3.00	0.00	3.00
<b>Start 98.65 hold at 18672.61 MD</b>									
18,700.00	90.00	269.19	6,979.00	-1,489.05	-11,656.29	11,751.01	0.00	0.00	0.00
18,771.26	90.00	269.19	6,979.00	-1,490.06	-11,727.54	11,821.83	0.00	0.00	0.00
<b>TD at 18771.26</b>									

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
BERRY 159HN-PBHL - plan hits target center - Point	0.00	0.00	6,979.00	-1,490.06	-11,727.54	1,330,750.40	3,150,041.52	40.240060°N	104.962536°W
BERRY 159HN-LP - plan hits target center - Point	0.00	0.00	6,979.00	-1,607.57	-763.53	1,330,704.53	3,161,006.07	40.239745°N	104.923262°W
BERRY 159HN-BTM PE - plan hits target center - Point	0.00	0.00	6,979.00	-1,488.65	-11,627.32	1,330,752.46	3,150,141.73	40.240064°N	104.962177°W
BERRY 159HN-MID PN - plan hits target center - Point	0.00	0.00	6,979.00	-1,406.52	-5,925.03	1,330,871.85	3,155,843.36	40.240295°N	104.941751°W



## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BERRY IC 11-159HN
<b>Company:</b>	GREAT WESTERN OPERATING COMPANY	<b>TVD Reference:</b>	KB 20' @ 4863.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 20' @ 4863.00usft
<b>Site:</b>	SEC 8-T3N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	BERRY IC 11-159HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OWB		
<b>Design:</b>	PROPOSAL 1		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3,633.00	3,633.00	0.00	0.00	Start Build 3.00
4,632.90	4,587.85	-255.73	-6.79	Start 2040.34 hold at 4632.90 MD
6,673.25	6,354.89	-1,275.46	-33.86	Start DLS 8.00 TFO 90.61
7,802.68	6,979.00	-1,607.57	-763.53	Start 5165.42 hold at 7802.68 MD
12,968.10	6,979.00	-1,406.52	-5,925.03	Start DLS 3.00 TFO -90.00
13,070.88	6,979.00	-1,405.28	-6,027.80	Start 5600.15 hold at 13070.88 MD
18,671.03	6,979.00	-1,488.65	-11,627.32	Start Turn 3.00
18,672.61	6,979.00	-1,488.67	-11,628.90	Start 98.65 hold at 18672.61 MD
18,771.26	6,979.00	-1,490.06	-11,727.54	TD at 18771.26