

Occidental Petroleum

Weld County, CO (UTM-NAD83)

RAINBOW 24-9HZ PAD

RAINBOW 9-1HZ

OH

Design: OH

Standard Survey Report

02 June, 2023



Project: Weld County, CO (UTM-NAD83)
 Site: RAINBOW 24-9HZ PAD
 Well: RAINBOW 9-1HZ
 Wellbore: OH
 Design: OH
 Lat: 40.415144
 Long: -104.895999
 GL: 4949.00
 KB: PD 461 @ 4969.00usft



Azimuths to True North
 Magnetic North: 7.88°
 Magnetic Field
 Strength: 51800.1nT
 Dip Angle: 66.58°
 Date: 3/19/2023
 Model: HRGM

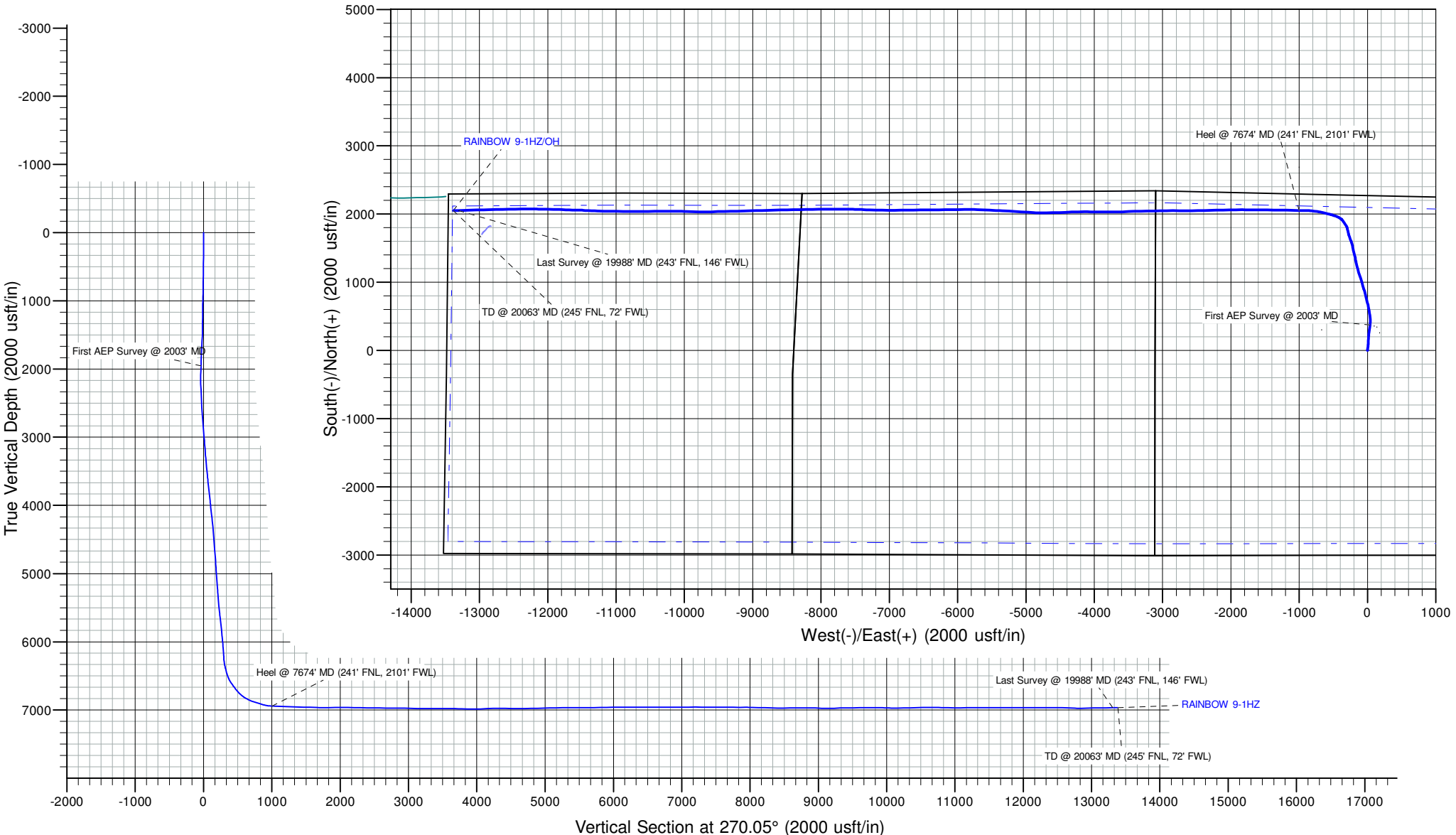
WELL DETAILS: RAINBOW 9-1HZ

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	14677926.62	1669365.14	40.415144	-104.895999

SHL: 2273' FNL, 2096' FEL - Sec 9-T5N-R67W
 Heel: 241' FNL, 2101' FWL - Sec 9-T5N-R67W
 BHL: 245' FNL, 72' FWL - Sec 7-T5N-R67W

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation
2003.00	16.69	7.05	1952.80	372.32	37.31	-36.98	374.92	First AEP Survey @ 2003' MD
7674.00	88.35	271.22	6943.19	2053.68	-1000.28	1002.07	2639.78	Heel @ 7674' MD (241' FNL, 2101' FWL)
19988.00	91.05	268.55	6967.94	2052.06	-13307.96	13309.75	14951.72	Last Survey @ 19988' MD (243' FNL, 146' FWL)
20063.00	91.05	268.55	6966.56	2050.17	-13382.92	13384.71	15026.71	TD @ 20063' MD (245' FNL, 72' FWL)



Survey Report

Company: Occidental Petroleum	Local Co-ordinate Reference: Well RAINBOW 9-1HZ
Project: Weld County, CO (UTM-NAD83)	TVD Reference: PD 461 @ 4969.00usft
Site: RAINBOW 24-9HZ PAD	MD Reference: PD 461 @ 4969.00usft
Well: RAINBOW 9-1HZ	North Reference: True
Wellbore: OH	Survey Calculation Method: Minimum Curvature
Design: OH	Database: Fhartmann

Project Weld County, CO (UTM-NAD83)	
Map System: Universal Transverse Mercator (US Survey Feet)	System Datum: Ground Level
Geo Datum: North American Datum 1983	
Map Zone: Zone 13N (108 W to 102 W)	

Site RAINBOW 24-9HZ PAD		
Site Position:	Northing: 14,677,926.65 usft	Latitude: 40.415144
From: Lat/Long	Easting: 1,669,365.10 usft	Longitude: -104.895999
Position Uncertainty: 0.00 usft	Slot Radius: 13-3/16 "	

Well RAINBOW 9-1HZ			
Well Position	+N/-S 0.00 usft	Northing: 14,677,926.62 usft	Latitude: 40.415144
	+E/-W 0.00 usft	Easting: 1,669,365.14 usft	Longitude: -104.895999
Position Uncertainty	3.28 usft	Wellhead Elevation: usft	Ground Level: 4,949.00 usft
Grid Convergence:	0.07 °		

Wellbore OH					
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	HRGM	3/19/2023	7.88	66.58	51,800.08506866

Design OH					
Audit Notes:					
Version: 1.0	Phase: ACTUAL	Tie On Depth: 0.00			
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.00	0.00	0.00	270.05	

Survey Program		Date 6/2/2023
From	To	Survey (Wellbore)
(usft)	(usft)	
15.00	1,850.00	Surface (OH)
2,003.00	20,063.00	MWD (OH)
		Tool Name
		Description
		APC_ISCWSA REV 2 MWD+ Fixed:v2:crustal field declination
		APC_ISCWSA REV 2 MWD+ Fixed:v2:Rockies, crustal dec + 3-axis correction

Survey										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn	
Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate	
(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
91.00	0.40	298.33	91.00	0.13	-0.23	0.23	0.53	0.53	0.00	
179.00	0.11	335.46	179.00	0.35	-0.54	0.54	0.36	-0.33	42.19	
268.00	0.57	13.31	268.00	0.86	-0.47	0.47	0.55	0.52	42.53	
360.00	2.02	7.22	359.97	2.91	-0.16	0.17	1.58	1.58	-6.62	
451.00	3.10	5.39	450.88	6.95	0.27	-0.26	1.19	1.19	-2.01	
541.00	5.25	9.58	540.63	13.44	1.18	-1.17	2.41	2.39	4.66	
630.00	6.56	9.34	629.16	22.47	2.69	-2.67	1.47	1.47	-0.27	

Survey Report

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Project:	Weld County, CO (UTM-NAD83)	TVD Reference:	PD 461 @ 4969.00usft
Site:	RAINBOW 24-9HZ PAD	MD Reference:	PD 461 @ 4969.00usft
Well:	RAINBOW 9-1HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Fhartmann

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)	
721.00	7.44	8.99	719.48	33.42	4.45	-4.42	0.97	0.97	-0.38	
811.00	8.26	5.65	808.64	45.61	6.00	-5.96	1.04	0.91	-3.71	
901.00	10.11	5.98	897.48	59.90	7.46	-7.40	2.06	2.06	0.37	
991.00	11.80	5.98	985.84	76.91	9.24	-9.17	1.88	1.88	0.00	
1,081.00	14.01	2.87	1,073.56	96.94	10.74	-10.66	2.57	2.46	-3.46	
1,170.00	15.50	2.17	1,159.62	119.59	11.73	-11.63	1.69	1.67	-0.79	
1,261.00	17.21	3.07	1,246.94	145.18	12.91	-12.79	1.90	1.88	0.99	
1,351.00	18.16	2.53	1,332.68	172.49	14.25	-14.10	1.07	1.06	-0.60	
1,441.00	17.61	3.11	1,418.33	200.09	15.60	-15.43	0.64	-0.61	0.64	
1,530.00	18.93	4.97	1,502.84	227.92	17.59	-17.39	1.62	1.48	2.09	
1,620.00	18.63	8.91	1,588.06	256.67	21.08	-20.85	1.45	-0.33	4.38	
1,710.00	17.78	8.86	1,673.55	284.45	25.42	-25.17	0.94	-0.94	-0.06	
1,790.00	17.59	8.59	1,749.77	308.47	29.11	-28.84	0.26	-0.24	-0.34	
1,850.00	18.24	7.15	1,806.86	326.75	31.63	-31.34	1.31	1.08	-2.40	
2,003.00	16.69	7.05	1,952.80	372.32	37.31	-36.98	1.01	-1.01	-0.07	
First AEP Survey @ 2003' MD										
2,096.00	16.68	4.10	2,041.89	398.88	39.90	-39.55	0.91	-0.01	-3.17	
2,189.00	17.68	1.27	2,130.74	426.32	41.17	-40.80	1.40	1.08	-3.04	
2,281.00	18.71	357.82	2,218.14	455.03	40.92	-40.52	1.62	1.12	-3.75	
2,373.00	21.04	352.61	2,304.66	486.16	38.23	-37.81	3.18	2.53	-5.66	
2,466.00	20.05	352.79	2,391.75	518.53	34.08	-33.63	1.07	-1.06	0.19	
2,558.00	19.69	352.07	2,478.27	549.53	29.96	-29.48	0.47	-0.39	-0.78	
2,650.00	19.79	351.63	2,564.86	580.29	25.56	-25.05	0.19	0.11	-0.48	
2,743.00	20.57	347.26	2,652.16	611.80	19.66	-19.13	1.82	0.84	-4.70	
2,836.00	19.22	347.23	2,739.61	642.67	12.68	-12.12	1.45	-1.45	-0.03	
2,928.00	18.03	346.59	2,826.79	671.29	6.03	-5.44	1.31	-1.29	-0.70	
3,020.00	17.07	345.52	2,914.50	698.21	-0.65	1.26	1.10	-1.04	-1.16	
3,113.00	17.35	343.86	3,003.34	724.75	-7.92	8.55	0.61	0.30	-1.78	
3,205.00	18.43	345.78	3,090.89	752.02	-15.30	15.96	1.34	1.17	2.09	
3,297.00	19.34	348.88	3,177.94	781.07	-21.82	22.50	1.47	0.99	3.37	
3,389.00	19.40	347.48	3,264.73	810.93	-28.07	28.77	0.51	0.07	-1.52	
3,482.00	18.25	343.72	3,352.76	839.99	-35.50	36.23	1.80	-1.24	-4.04	
3,575.00	18.10	342.60	3,441.12	867.75	-43.90	44.66	0.41	-0.16	-1.20	
3,667.00	18.21	340.59	3,528.54	894.95	-52.95	53.73	0.69	0.12	-2.18	
3,762.00	19.41	346.28	3,618.47	924.29	-61.63	62.43	2.31	1.26	5.99	
3,855.00	21.94	344.00	3,705.48	956.01	-70.08	70.92	2.85	2.72	-2.45	
3,948.00	22.26	343.85	3,791.65	989.63	-79.77	80.64	0.35	0.34	-0.16	
4,041.00	22.33	344.29	3,877.69	1,023.55	-89.46	90.35	0.19	0.08	0.47	
4,133.00	20.28	343.35	3,963.40	1,055.66	-98.76	99.68	2.26	-2.23	-1.02	
4,225.00	17.51	340.64	4,050.44	1,084.00	-107.92	108.86	3.16	-3.01	-2.95	
4,318.00	17.15	339.81	4,139.22	1,110.07	-117.29	118.25	0.47	-0.39	-0.89	
4,410.00	18.36	340.40	4,226.83	1,136.45	-126.83	127.82	1.33	1.32	0.64	
4,502.00	19.19	345.43	4,313.94	1,164.73	-135.49	136.51	1.98	0.90	5.47	

Survey Report

Company:	Occidental Petroleum	Local Co-ordinate Reference:	Well RAINBOW 9-1HZ
Project:	Weld County, CO (UTM-NAD83)	TVD Reference:	PD 461 @ 4969.00usft
Site:	RAINBOW 24-9HZ PAD	MD Reference:	PD 461 @ 4969.00usft
Well:	RAINBOW 9-1HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Fhartmann

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)	
4,595.00	19.73	346.07	4,401.63	1,194.76	-143.12	144.16	0.62	0.58	0.69	
4,688.00	19.24	345.19	4,489.30	1,224.81	-150.81	151.88	0.61	-0.53	-0.95	
4,781.00	17.93	346.12	4,577.45	1,253.53	-158.16	159.26	1.44	-1.41	1.00	
4,873.00	18.70	347.45	4,664.79	1,281.67	-164.77	165.88	0.95	0.84	1.45	
4,987.00	21.32	350.32	4,771.90	1,319.95	-172.22	173.38	2.45	2.30	2.52	
5,079.00	19.61	349.69	4,858.09	1,351.62	-177.80	178.98	1.87	-1.86	-0.68	
5,172.00	16.89	348.06	4,946.41	1,380.20	-183.39	184.59	2.98	-2.92	-1.75	
5,265.00	16.39	342.67	5,035.52	1,405.94	-190.09	191.32	1.74	-0.54	-5.80	
5,358.00	17.28	346.32	5,124.53	1,431.89	-197.27	198.52	1.49	0.96	3.92	
5,452.00	18.10	345.42	5,214.09	1,459.59	-204.25	205.52	0.92	0.87	-0.96	
5,545.00	19.99	350.33	5,302.00	1,489.25	-210.55	211.85	2.66	2.03	5.28	
5,639.00	20.88	348.98	5,390.08	1,521.53	-216.45	217.78	1.07	0.95	-1.44	
5,731.00	20.05	345.73	5,476.28	1,552.91	-223.48	224.83	1.53	-0.90	-3.53	
5,823.00	20.25	341.45	5,562.65	1,583.29	-232.43	233.81	1.62	0.22	-4.65	
5,915.00	17.17	338.44	5,649.78	1,611.02	-242.49	243.89	3.51	-3.35	-3.27	
6,008.00	16.93	340.24	5,738.70	1,636.53	-252.11	253.54	0.62	-0.26	1.94	
6,101.00	16.90	340.61	5,827.67	1,662.02	-261.17	262.62	0.12	-0.03	0.40	
6,194.00	16.43	338.91	5,916.77	1,687.04	-270.40	271.87	0.73	-0.51	-1.83	
6,286.00	21.15	347.98	6,003.86	1,715.44	-278.54	280.04	6.02	5.13	9.86	
6,378.00	18.41	344.60	6,090.42	1,745.69	-285.86	287.38	3.23	-2.98	-3.67	
6,471.00	18.50	349.96	6,178.65	1,774.37	-292.33	293.88	1.83	0.10	5.76	
6,563.00	14.81	343.97	6,266.78	1,800.06	-298.12	299.69	4.42	-4.01	-6.51	
6,657.00	22.88	327.62	6,355.73	1,827.10	-311.26	312.85	10.18	8.59	-17.39	
6,749.00	28.38	328.42	6,438.64	1,860.86	-332.30	333.92	5.99	5.98	0.87	
6,841.00	32.41	324.38	6,517.99	1,899.55	-358.12	359.78	4.91	4.38	-4.39	
6,933.00	37.80	304.15	6,593.48	1,935.56	-395.97	397.66	13.87	5.86	-21.99	
7,027.00	39.49	292.01	6,667.01	1,962.98	-447.60	449.31	8.25	1.80	-12.91	
7,120.00	42.66	287.67	6,737.12	1,983.63	-505.07	506.80	4.58	3.41	-4.67	
7,213.00	54.46	283.90	6,798.57	2,002.36	-572.07	573.82	13.04	12.69	-4.05	
7,305.00	63.60	283.30	6,845.87	2,020.87	-648.67	650.43	9.95	9.93	-0.65	
7,397.00	72.79	277.83	6,880.02	2,036.38	-732.53	734.31	11.41	9.99	-5.95	
7,489.00	72.13	276.60	6,907.75	2,047.40	-819.55	821.34	1.46	-0.72	-1.34	
7,582.00	77.66	270.13	6,932.00	2,052.59	-909.10	910.89	8.97	5.95	-6.96	
7,674.00	88.35	271.22	6,943.19	2,053.68	-1,000.28	1,002.07	11.68	11.62	1.18	
Heel @ 7674' MD (241' FNL, 2101' FWL)										
7,766.00	88.19	270.68	6,945.97	2,055.20	-1,092.22	1,094.02	0.61	-0.17	-0.59	
7,860.00	87.72	270.69	6,949.32	2,056.33	-1,186.16	1,187.95	0.50	-0.50	0.01	
7,953.00	87.98	270.82	6,952.81	2,057.55	-1,279.08	1,280.88	0.31	0.28	0.14	
8,045.00	88.31	270.73	6,955.79	2,058.79	-1,371.02	1,372.82	0.37	0.36	-0.10	
8,139.00	88.46	271.00	6,958.44	2,060.21	-1,464.98	1,466.77	0.33	0.16	0.29	
8,231.00	88.64	271.16	6,960.76	2,061.95	-1,556.93	1,558.73	0.26	0.20	0.17	
8,323.00	88.32	270.85	6,963.21	2,063.56	-1,648.88	1,650.68	0.48	-0.35	-0.34	
8,416.00	89.64	269.66	6,964.86	2,063.97	-1,741.86	1,743.67	1.91	1.42	-1.28	
8,508.00	90.96	270.84	6,964.38	2,064.37	-1,833.86	1,835.66	1.92	1.43	1.28	

Survey Report

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Project:	Weld County, CO (UTM-NAD83)	TVD Reference:	PD 461 @ 4969.00usft
Site:	RAINBOW 24-9HZ PAD	MD Reference:	PD 461 @ 4969.00usft
Well:	RAINBOW 9-1HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Fhartmann

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)	
8,602.00	90.11	268.46	6,963.50	2,063.80	-1,927.85	1,929.65	2.69	-0.90	-2.53	
8,694.00	90.81	269.38	6,962.76	2,062.07	-2,019.82	2,021.62	1.26	0.76	1.00	
8,787.00	88.45	267.95	6,963.36	2,059.90	-2,112.79	2,114.59	2.97	-2.54	-1.54	
8,879.00	88.87	268.79	6,965.51	2,057.28	-2,204.72	2,206.52	1.02	0.46	0.91	
8,971.00	88.70	268.19	6,967.47	2,054.86	-2,296.67	2,298.46	0.68	-0.18	-0.65	
9,063.00	88.98	269.01	6,969.33	2,052.61	-2,388.62	2,390.41	0.94	0.30	0.89	
9,155.00	89.21	269.22	6,970.78	2,051.19	-2,480.60	2,482.39	0.34	0.25	0.23	
9,248.00	89.33	269.05	6,971.97	2,049.79	-2,573.58	2,575.37	0.22	0.13	-0.18	
9,340.00	90.03	269.56	6,972.48	2,048.67	-2,665.57	2,667.36	0.94	0.76	0.55	
9,432.00	89.68	270.68	6,972.71	2,048.87	-2,757.57	2,759.36	1.28	-0.38	1.22	
9,524.00	90.90	270.77	6,972.25	2,050.03	-2,849.56	2,851.35	1.33	1.33	0.10	
9,616.00	88.08	268.70	6,973.07	2,049.60	-2,941.54	2,943.33	3.80	-3.07	-2.25	
9,709.00	88.35	268.57	6,975.96	2,047.39	-3,034.47	3,036.26	0.32	0.29	-0.14	
9,802.00	88.80	269.23	6,978.28	2,045.61	-3,127.43	3,129.21	0.86	0.48	0.71	
9,894.00	89.20	269.10	6,979.88	2,044.26	-3,219.40	3,221.18	0.46	0.43	-0.14	
9,987.00	89.72	268.66	6,980.76	2,042.45	-3,312.38	3,314.16	0.73	0.56	-0.47	
10,079.00	90.99	269.06	6,980.19	2,040.62	-3,404.36	3,406.14	1.45	1.38	0.43	
10,171.00	89.09	267.56	6,980.12	2,037.90	-3,496.31	3,498.09	2.63	-2.07	-1.63	
10,264.00	89.31	267.24	6,981.42	2,033.69	-3,589.20	3,590.98	0.42	0.24	-0.34	
10,357.00	90.10	270.56	6,981.90	2,031.90	-3,682.17	3,683.94	3.67	0.85	3.57	
10,450.00	88.95	270.21	6,982.67	2,032.53	-3,775.17	3,776.94	1.29	-1.24	-0.38	
10,542.00	88.47	270.33	6,984.74	2,032.96	-3,867.14	3,868.91	0.54	-0.52	0.13	
10,635.00	89.67	269.79	6,986.25	2,033.06	-3,960.13	3,961.90	1.41	1.29	-0.58	
10,727.00	92.93	271.15	6,984.17	2,033.81	-4,052.09	4,053.86	3.84	3.54	1.48	
10,820.00	92.48	269.90	6,979.78	2,034.66	-4,144.98	4,146.75	1.43	-0.48	-1.34	
10,912.00	91.36	269.08	6,976.69	2,033.84	-4,236.92	4,238.69	1.51	-1.22	-0.89	
11,005.00	89.12	266.42	6,976.30	2,030.19	-4,329.83	4,331.60	3.74	-2.41	-2.86	
11,097.00	89.37	266.50	6,977.52	2,024.51	-4,421.65	4,423.41	0.29	0.27	0.09	
11,189.00	89.54	270.06	6,978.39	2,021.75	-4,513.59	4,515.35	3.87	0.18	3.87	
11,282.00	89.44	267.95	6,979.22	2,020.14	-4,606.56	4,608.33	2.27	-0.11	-2.27	
11,375.00	91.09	269.19	6,978.79	2,017.81	-4,699.53	4,701.29	2.22	1.77	1.33	
11,467.00	91.48	270.67	6,976.73	2,017.70	-4,791.50	4,793.26	1.66	0.42	1.61	
11,559.00	90.83	273.42	6,974.87	2,020.98	-4,883.42	4,885.18	3.07	-0.71	2.99	
11,652.00	91.25	274.37	6,973.18	2,027.30	-4,976.19	4,977.95	1.12	0.45	1.02	
11,746.00	90.76	273.47	6,971.53	2,033.73	-5,069.95	5,071.72	1.09	-0.52	-0.96	
11,837.00	91.79	273.44	6,969.51	2,039.21	-5,160.76	5,162.54	1.13	1.13	-0.03	
11,929.00	91.18	273.29	6,967.13	2,044.61	-5,252.57	5,254.35	0.68	-0.66	-0.16	
12,022.00	90.63	272.96	6,965.66	2,049.68	-5,345.42	5,347.21	0.69	-0.59	-0.35	
12,114.00	89.46	271.90	6,965.58	2,053.58	-5,437.34	5,439.13	1.72	-1.27	-1.15	
12,207.00	89.83	272.43	6,966.16	2,057.09	-5,530.27	5,532.06	0.70	0.40	0.57	
12,299.00	90.64	272.40	6,965.78	2,060.97	-5,622.18	5,623.98	0.88	0.88	-0.03	
12,391.00	90.88	272.27	6,964.56	2,064.71	-5,714.10	5,715.90	0.30	0.26	-0.14	
12,483.00	90.57	270.32	6,963.40	2,066.79	-5,806.06	5,807.86	2.15	-0.34	-2.12	

Survey Report

Company:	Occidental Petroleum	Local Co-ordinate Reference:	Well RAINBOW 9-1HZ
Project:	Weld County, CO (UTM-NAD83)	TVD Reference:	PD 461 @ 4969.00usft
Site:	RAINBOW 24-9HZ PAD	MD Reference:	PD 461 @ 4969.00usft
Well:	RAINBOW 9-1HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Fhartmann

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)	
12,575.00	90.52	268.94	6,962.52	2,066.20	-5,898.05	5,899.86	1.50	-0.05	-1.50	
12,668.00	91.79	269.86	6,960.65	2,065.23	-5,991.03	5,992.83	1.69	1.37	0.99	
12,761.00	90.44	269.65	6,958.84	2,064.83	-6,084.01	6,085.81	1.47	-1.45	-0.23	
12,855.00	89.68	269.42	6,958.74	2,064.06	-6,178.00	6,179.80	0.84	-0.81	-0.24	
12,948.00	90.37	269.45	6,958.70	2,063.15	-6,271.00	6,272.80	0.74	0.74	0.03	
13,040.00	89.14	269.24	6,959.09	2,062.10	-6,362.99	6,364.79	1.36	-1.34	-0.23	
13,133.00	90.19	269.54	6,959.64	2,061.11	-6,455.98	6,457.78	1.17	1.13	0.32	
13,226.00	89.74	269.97	6,959.69	2,060.71	-6,548.98	6,550.78	0.67	-0.48	0.46	
13,318.00	90.21	268.90	6,959.73	2,059.80	-6,640.97	6,642.77	1.27	0.51	-1.16	
13,410.00	89.18	268.78	6,960.22	2,057.94	-6,732.95	6,734.75	1.13	-1.12	-0.13	
13,502.00	90.72	269.08	6,960.30	2,056.22	-6,824.93	6,826.73	1.71	1.67	0.33	
13,595.00	89.57	269.16	6,960.07	2,054.79	-6,917.92	6,919.71	1.24	-1.24	0.09	
13,687.00	91.05	270.81	6,959.57	2,054.77	-7,009.91	7,011.70	2.41	1.61	1.79	
13,780.00	90.71	271.64	6,958.14	2,056.76	-7,102.88	7,104.67	0.96	-0.37	0.89	
13,873.00	89.64	271.65	6,957.86	2,059.43	-7,195.84	7,197.63	1.15	-1.15	0.01	
13,966.00	89.06	271.58	6,958.91	2,062.05	-7,288.80	7,290.59	0.63	-0.62	-0.08	
14,058.00	89.64	272.82	6,959.96	2,065.58	-7,380.72	7,382.52	1.49	0.63	1.35	
14,150.00	89.23	270.85	6,960.87	2,068.52	-7,472.66	7,474.47	2.19	-0.45	-2.14	
14,243.00	90.20	272.63	6,961.33	2,071.35	-7,565.62	7,567.42	2.18	1.04	1.91	
14,336.00	89.77	269.54	6,961.35	2,073.11	-7,658.59	7,660.39	3.35	-0.46	-3.32	
14,428.00	89.89	270.29	6,961.63	2,072.97	-7,750.59	7,752.39	0.83	0.13	0.82	
14,520.00	89.64	268.79	6,962.00	2,072.23	-7,842.58	7,844.39	1.65	-0.27	-1.63	
14,612.00	90.38	270.70	6,961.99	2,071.82	-7,934.57	7,936.38	2.23	0.80	2.08	
14,707.00	88.11	268.51	6,963.24	2,071.17	-8,029.55	8,031.36	3.32	-2.39	-2.31	
14,799.00	88.58	268.15	6,965.90	2,068.49	-8,121.47	8,123.28	0.64	0.51	-0.39	
14,892.00	88.84	269.22	6,967.99	2,066.36	-8,214.42	8,216.22	1.18	0.28	1.15	
14,985.00	88.66	269.28	6,970.02	2,065.14	-8,307.39	8,309.19	0.20	-0.19	0.06	
15,077.00	88.31	269.37	6,972.45	2,064.06	-8,399.36	8,401.15	0.39	-0.38	0.10	
15,169.00	90.63	268.42	6,973.30	2,062.28	-8,491.33	8,493.12	2.72	2.52	-1.03	
15,262.00	91.55	269.07	6,971.53	2,060.24	-8,584.29	8,586.08	1.21	0.99	0.70	
15,354.00	89.18	268.16	6,970.95	2,058.02	-8,676.25	8,678.04	2.76	-2.58	-0.99	
15,446.00	90.35	268.81	6,971.32	2,055.59	-8,768.22	8,770.01	1.45	1.27	0.71	
15,539.00	90.79	268.61	6,970.40	2,053.50	-8,861.19	8,862.98	0.52	0.47	-0.22	
15,631.00	88.24	268.34	6,971.18	2,051.05	-8,953.14	8,954.93	2.79	-2.77	-0.29	
15,724.00	88.27	268.12	6,974.01	2,048.18	-9,046.06	9,047.84	0.24	0.03	-0.24	
15,816.00	90.27	268.75	6,975.18	2,045.66	-9,138.01	9,139.79	2.28	2.17	0.68	
15,907.00	90.94	268.70	6,974.22	2,043.64	-9,228.98	9,230.76	0.74	0.74	-0.05	
16,002.00	91.99	268.72	6,971.79	2,041.50	-9,323.92	9,325.70	1.11	1.11	0.02	
16,094.00	90.93	268.81	6,969.45	2,039.52	-9,415.87	9,417.65	1.16	-1.15	0.10	
16,187.00	90.43	268.39	6,968.34	2,037.25	-9,508.84	9,510.61	0.70	-0.54	-0.45	
16,279.00	90.64	266.31	6,967.48	2,032.99	-9,600.73	9,602.50	2.27	0.23	-2.26	
16,372.00	91.38	270.75	6,965.84	2,030.61	-9,693.66	9,695.43	4.84	0.80	4.77	
16,464.00	89.57	272.11	6,965.08	2,032.90	-9,785.62	9,787.39	2.46	-1.97	1.48	

Survey Report

Company:	Occidental Petroleum	Local Co-ordinate Reference:	Well RAINBOW 9-1HZ
Project:	Weld County, CO (UTM-NAD83)	TVD Reference:	PD 461 @ 4969.00usft
Site:	RAINBOW 24-9HZ PAD	MD Reference:	PD 461 @ 4969.00usft
Well:	RAINBOW 9-1HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Fhartmann

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)	
16,556.00	89.32	271.52	6,965.97	2,035.82	-9,877.57	9,879.34	0.70	-0.27	-0.64	
16,648.00	86.90	272.15	6,969.01	2,038.76	-9,969.47	9,971.24	2.72	-2.63	0.68	
16,742.00	88.43	270.65	6,972.84	2,041.06	-10,063.36	10,065.13	2.28	1.63	-1.60	
16,834.00	90.80	270.27	6,973.45	2,041.79	-10,155.34	10,157.12	2.61	2.58	-0.41	
16,927.00	91.71	269.37	6,971.42	2,041.50	-10,248.32	10,250.10	1.38	0.98	-0.97	
17,019.00	91.83	269.69	6,968.58	2,040.75	-10,340.27	10,342.05	0.37	0.13	0.35	
17,112.00	90.88	269.63	6,966.38	2,040.20	-10,433.24	10,435.02	1.02	-1.02	-0.06	
17,204.00	92.11	269.75	6,963.98	2,039.70	-10,525.21	10,526.99	1.34	1.34	0.13	
17,296.00	89.41	270.41	6,962.76	2,039.83	-10,617.19	10,618.97	3.02	-2.93	0.72	
17,390.00	89.85	269.33	6,963.36	2,039.61	-10,711.19	10,712.96	1.24	0.47	-1.15	
17,483.00	88.07	269.77	6,965.05	2,038.88	-10,804.17	10,805.94	1.97	-1.91	0.47	
17,576.00	88.76	270.59	6,967.62	2,039.18	-10,897.13	10,898.90	1.15	0.74	0.88	
17,669.00	89.60	270.81	6,968.96	2,040.31	-10,990.11	10,991.89	0.93	0.90	0.24	
17,761.00	90.29	270.79	6,969.04	2,041.60	-11,082.10	11,083.88	0.75	0.75	-0.02	
17,853.00	91.45	270.73	6,967.65	2,042.82	-11,174.08	11,175.86	1.26	1.26	-0.07	
17,945.00	90.05	271.52	6,966.44	2,044.62	-11,266.05	11,267.83	1.75	-1.52	0.86	
18,039.00	90.20	272.62	6,966.24	2,048.02	-11,359.99	11,361.77	1.18	0.16	1.17	
18,132.00	89.81	274.03	6,966.23	2,053.41	-11,452.83	11,454.62	1.57	-0.42	1.52	
18,225.00	89.41	270.92	6,966.86	2,057.43	-11,545.73	11,547.52	3.37	-0.43	-3.34	
18,318.00	90.34	271.71	6,967.07	2,059.56	-11,638.70	11,640.50	1.31	1.00	0.85	
18,412.00	91.56	272.83	6,965.51	2,063.28	-11,732.61	11,734.41	1.76	1.30	1.19	
18,506.00	90.04	271.73	6,964.19	2,067.02	-11,826.53	11,828.33	2.00	-1.62	-1.17	
18,598.00	89.53	270.77	6,964.54	2,069.03	-11,918.50	11,920.30	1.18	-0.55	-1.04	
18,691.00	89.74	271.11	6,965.13	2,070.56	-12,011.49	12,013.29	0.43	0.23	0.37	
18,783.00	90.07	271.81	6,965.28	2,072.90	-12,103.46	12,105.26	0.84	0.36	0.76	
18,876.00	89.94	269.67	6,965.28	2,074.10	-12,196.44	12,198.25	2.31	-0.14	-2.30	
18,968.00	90.94	270.58	6,964.57	2,074.30	-12,288.44	12,290.24	1.47	1.09	0.99	
19,061.00	89.26	269.21	6,964.41	2,074.13	-12,381.43	12,383.24	2.33	-1.81	-1.47	
19,153.00	88.96	268.85	6,965.84	2,072.57	-12,473.41	12,475.21	0.51	-0.33	-0.39	
19,246.00	88.51	268.90	6,967.89	2,070.75	-12,566.37	12,568.17	0.49	-0.48	0.05	
19,339.00	88.23	268.79	6,970.54	2,068.87	-12,659.31	12,661.11	0.32	-0.30	-0.12	
19,432.00	88.00	268.76	6,973.59	2,066.89	-12,752.24	12,754.04	0.25	-0.25	-0.03	
19,524.00	90.67	268.69	6,974.66	2,064.84	-12,844.20	12,846.00	2.90	2.90	-0.08	
19,617.00	91.73	268.82	6,972.71	2,062.82	-12,937.16	12,938.95	1.15	1.14	0.14	
19,709.00	89.81	268.01	6,971.48	2,060.28	-13,029.11	13,030.90	2.27	-2.09	-0.88	
19,801.00	91.19	268.61	6,970.68	2,057.56	-13,121.06	13,122.85	1.64	1.50	0.65	
19,893.00	90.56	268.05	6,969.27	2,054.88	-13,213.01	13,214.80	0.92	-0.68	-0.61	
19,988.00	91.05	268.55	6,967.94	2,052.06	-13,307.96	13,309.75	0.74	0.52	0.53	
Last Survey @ 19988' MD (243' FNL, 146' FWL)										
20,063.00	91.05	268.55	6,966.56	2,050.17	-13,382.92	13,384.71	0.00	0.00	0.00	
TD @ 20063' MD (245' FNL, 72' FWL)										

Survey Report

Company:	Occidental Petroleum	Local Co-ordinate Reference:	Well RAINBOW 9-1HZ
Project:	Weld County, CO (UTM-NAD83)	TVD Reference:	PD 461 @ 4969.00usft
Site:	RAINBOW 24-9HZ PAD	MD Reference:	PD 461 @ 4969.00usft
Well:	RAINBOW 9-1HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Fhartmann

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
2,003.00	1,952.80	372.32	37.31	First AEP Survey @ 2003' MD	
7,674.00	6,943.19	2,053.68	-1,000.28	Heel @ 7674' MD (241' FNL, 2101' FWL)	
19,988.00	6,967.94	2,052.06	-13,307.96	Last Survey @ 19988' MD (243' FNL, 146' FWL)	
20,063.00	6,966.56	2,050.17	-13,382.92	TD @ 20063' MD (245' FNL, 72' FWL)	

Checked By: _____	Approved By: _____	Date: _____
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