

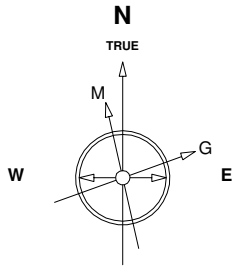
# Great Western Operating Company, LLC

**Location** Colorado  
**Field** Wattenburg  
**Installation** Raindance

**Slot** Slot W-10 - Raindance FD 20-319HNX  
**Well** Raindance FD 20-319HNX  
**Wellbore** Raindance FD 20-319HNX (PWB)

Created by admin  
Date plotted 17-Nov-2016

Plot reference is Raindance FD 20-319HNX (PWB).  
Ref wellpath is Raindance FD 20-319HNX (PWP#1).  
Coordinates are in Feet reference Slot W-10 - Raindance FD 20-319HNX.  
True Vertical Depths are reference Rig Datum.  
Measured Depths are reference Rig Datum.  
Rig Datum: Planned Datum #1  
Rig Datum to Mean Sea Level: 4809.00 ft.  
Plot North is aligned to TRUE North.

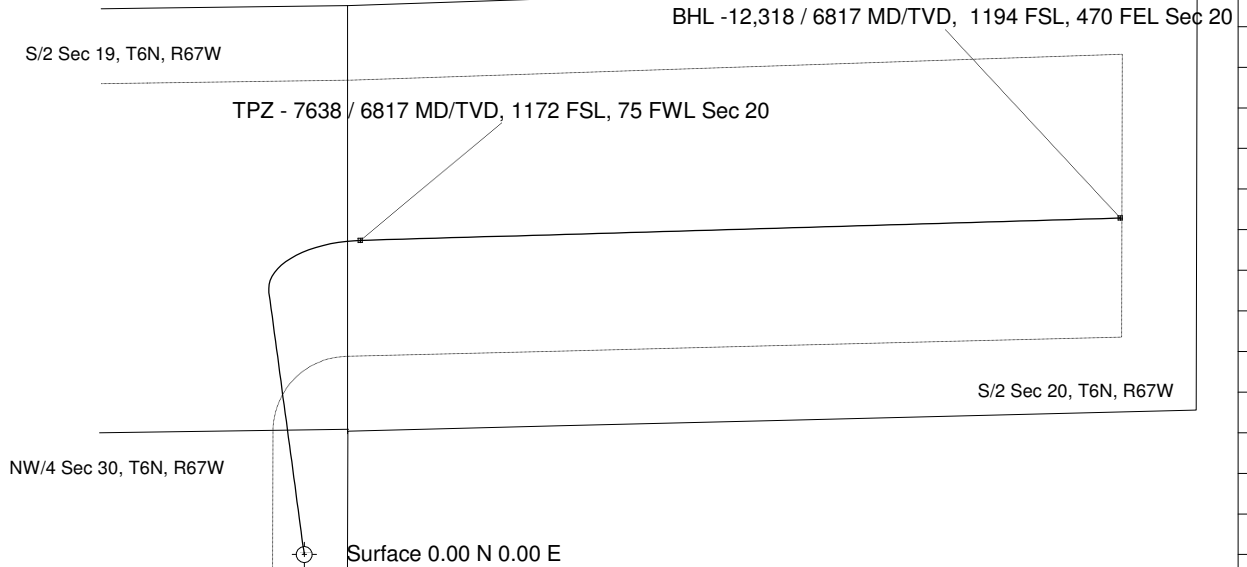
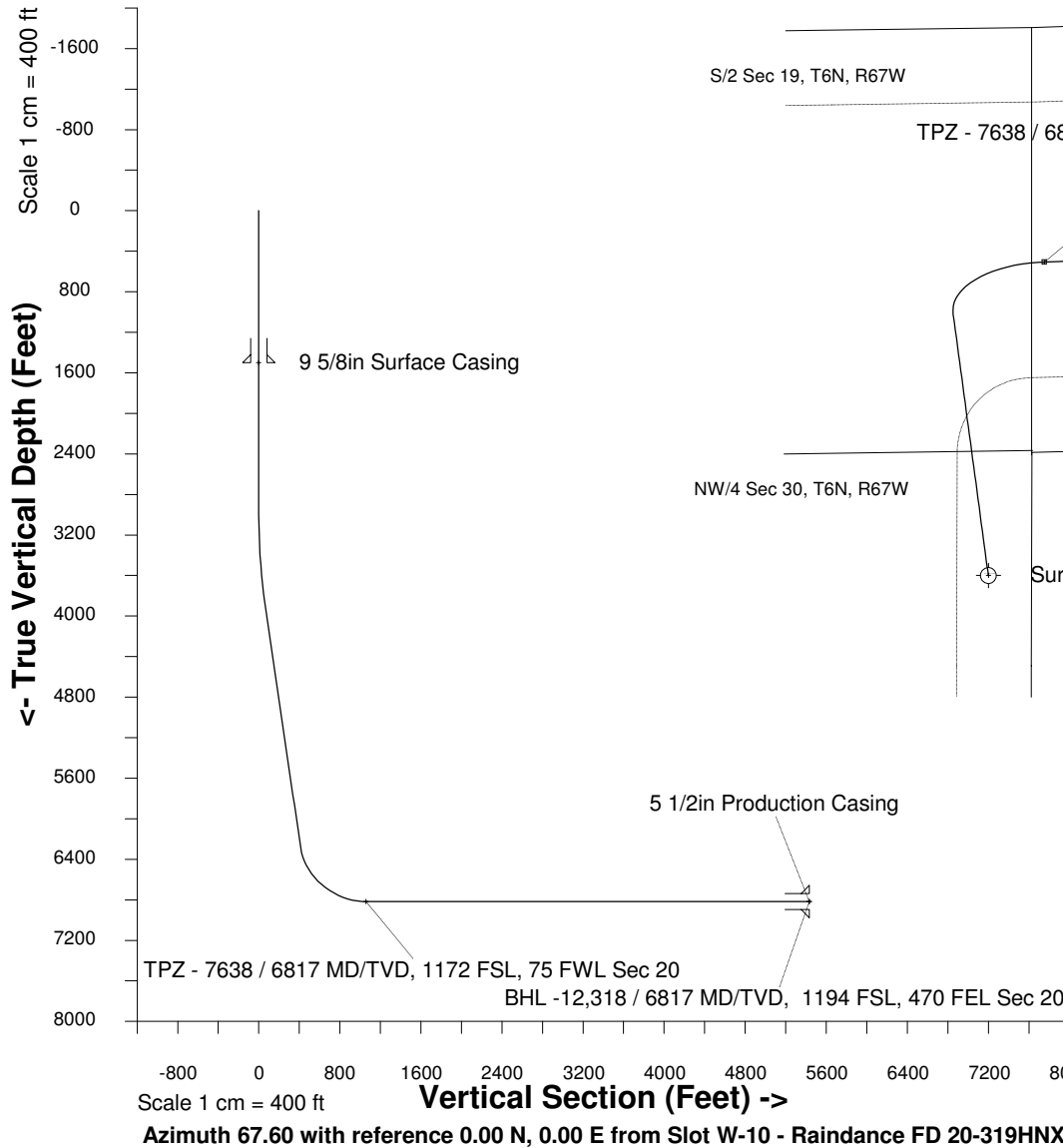


14-Nov-2016  
IGRF Model [1900.0-2020.0] Dip: -29.88 deg Field: 32206.0 nT  
Lat: S0 0 0.0000 Long: E3 0 0.0000 Elev: 4789.00 ft  
Magnetic North is 4.17 deg West of TRUE North  
To correct azimuth from Magnetic to TRUE subtract 4.17 deg

Scale 1 cm = 250 ft

East (Feet) ->

-1000 -500 0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500



## WELL PROFILE DATA

Point	MD	Inc	Azi	TVD	North	East	deg/100ft	V. Sect
Tie on	0.00	0.00	0.00	0.00	S 0.00	W 0.00		0.00
KOP	2957.00	0.00	352.34	2957.00	S 0.00	W 0.00	0.00	0.00
End of Build	3957.13	30.00	352.34	3912.04	N 253.65	W 34.13	9.84	65.11
End of Hold	6707.97	30.00	352.34	6294.24	N 1616.94	W 217.56	0.00	415.08
Target TPZ - ...Sec 20	7637.85	90.00	88.32	6817.00	N 1933.79	E 345.58	32.81	1056.47
T.D. & Target BHL...	12318.17	90.00	88.32	6817.00	N 2070.92	E 5023.89	0.00	5433.98

SYSDRILL  
Closest Approach Summary Report  
Wellbore: Raindance FD 20-319HNX (PWB)  
Wellpath: Raindance FD 20-319HNX (PWP#1)

Ellipse separations are reported ONLY if BOTH wells have uncertainty data  
Only Depth and Magnetic Reference Field error terms are correlated across tie points  
Scan limit is calculated on CENTRE to CENTRE distance

Summary data uses Closest Approach clearance calculation for all minima  
Hole size/Casings ARE included  
Hole size/Casings are NOT subtracted from Centre-Centre distance  
Confidence limit of 95.00% / 2.80 SD.

Wellbore	
Name	Raindance FD 20-319HNX (PWB)
Created	15-Nov-2016
Last Revised	15-Nov-2016

Well	
Name	Raindance FD 20-319HNX
Government ID	
Last Revised	15-Nov-2016

Slot	
Name	Slot W-10 - Raindance FD 20-319HNX
Grid Northing	1411993.213
Grid Easting	3159321.201
Latitude	N40 27 46.4796
Longitude	W104 55 38.7012
North	25561841.840
East	-18483165.460

Installation	
Name	Raindance
Easting	41136929.757
Northing	12284170.646
Map Name	<unknown>
North Alignment	True

Field	
Name	Wattenburg
Easting	41136929.757
Northing	12284170.646
Map Name	<unknown>
North Alignment	Grid

#### Clearance Summary

Offset WellName	Offset Wellbore	Offset Slot	Offset Structure	Separation [ft]	MD[ft]	Diverging From[ft]	Ellipse Separation [ft]	Ellipse MD[ft]	Clearance Factor	Clearance MD[ft]
Raindance FD 20-282HC	Raindance FD 20-282HC (PWB)	Slot W-09 - Raindance FD 20-282HC	Raindance	9.910	2820.000	6886.920	4.780	2820.000	1.930	2820.000
Raindance FD 20-319HN	Raindance FD 20-319HN (PWB)	Slot W-11 - Raindance FD 20-319HN	Raindance	9.910	2957.000	6759.750	4.560	2957.000	1.850	2969.160
Raindance FC 23-312HC	Raindance FC 23-312HC (PWB)	Slot E-10 - Raindance FC 23-312HC	Raindance	16.770	2957.000	7939.630	11.420	2969.160	3.130	2969.160
Raindance FD 20-282HN	Raindance FD 20-282HN (PWB)	Slot W-08 - Raindance FD 20-282HN	Raindance	19.500	2471.000	6877.110	14.940	2471.000	4.270	2500.000
Raindance FC 23-312HN	Raindance FC 23-312HN (PWB)	Slot E-09 - Raindance FC 23-312HN	Raindance	19.700	2750.000	7819.630	14.680	2750.000	3.300	7800.000
Raindance FC 23-329HNX	Raindance FC 23-329HNX (PWB)	Slot E-11 - Raindance FC 23-329HNX	Raindance	20.340	2957.000	7160.250	15.000	2957.000	3.800	2969.160
Raindance FD 20-322HN	Raindance FD 20-322HN (PWB)	Slot W-12 - Raindance FD 20-322HN	Raindance	20.720	2957.000	6746.490	15.370	2957.000	3.870	2969.160
Raindance FC 23-289HN	Raindance FC 23-289HN (PWB)	Slot E-08 - Raindance FC 23-289HN	Raindance	26.280	2419.000	7998.250	21.810	2419.000	5.300	8087.270
Raindance FC 23-352HN	Raindance FC 23-352HN (PWB)	Slot E-12 - Raindance FC 23-352HN	Raindance	26.580	2957.000	7338.910	21.230	2957.000	4.960	2969.160
Raindance FD 20-242HN	Raindance FD 20-242HN (PWB)	Slot W-06 - Raindance FD 20-242HN	Raindance	29.400	2091.000	6924.800	25.450	2091.000	7.420	2132.550
Raindance FD 20-359HC	Raindance FD 20-359HC (PWB)	Slot W-13 - Raindance FD 20-359HC	Raindance	30.420	2957.000	7627.950	25.070	2957.000	5.680	2969.160
Raindance FC 23-289HNX	Raindance FC 23-289HNX (PWB)	Slot E-07 - Raindance FC 23-289HNX	Raindance	34.500	2076.000	7913.580	30.570	2076.000	8.730	2100.000
Raindance FC 23-369HN	Raindance FC 23-369HN (PWB)	Slot E-13 - Raindance FC 23-369HN	Raindance	34.570	2957.000	7059.930	29.230	2957.000	6.450	2969.160
Raindance FD 20-242HNX	Raindance FD 20-242HNX (PWB)	Slot W-06 - Raindance FD 20-242HNX	Raindance	39.300	1732.000	6916.990	35.920	1500.000	8.230	12318.170
Raindance FD 20-362HNX	Raindance FD 20-362HNX (PWB)	Slot W-14 - Raindance FD 20-362HNX	Raindance	40.220	2957.000	6563.010	34.870	2957.000	7.370	12300.000
Raindance FC 23-272HC	Raindance FC 23-272HC (PWB)	Slot E-06 - Raindance FC 23-272HC	Raindance	42.830	1970.000	8073.630	39.070	1970.000	11.320	2000.000
Raindance FC 23-369HC	Raindance FC 23-369HC (PWB)	Slot E-14 - Raindance FC 23-369HC	Raindance	43.360	2957.000	7195.980	38.250	2957.000	8.440	2985.560
Raindance FD 20-362HN	Raindance FD 20-362HN (PWB)	Slot W-15 - Raindance FD 20-362HN	Raindance	50.120	2957.000	6676.510	44.770	2957.000	8.420	12300.000
Raindance FD 20-239HC	Raindance FD 20-239HC (PWB)	Slot W-05 - Raindance FD 20-239HC	Raindance	50.220	1750.000	6965.140	46.820	1750.000	11.460	12318.170
Raindance FC 23-392HNX	Raindance FC 23-392HNX (PWB)	Slot E-15 - Raindance FC 23-392HNX	Raindance	52.510	2957.000	6758.530	47.160	2957.000	9.780	2985.560
Raindance FC 23-249HN	Raindance FC 23-249HN (PWB)	Slot E-05 - Raindance FC 23-249HN	Raindance	52.980	1635.000	8068.140	49.600	1500.000	15.680	1500.000
Raindance FD 20-239HN	Raindance FD 20-239HN (PWB)	Slot W-04 - Raindance FD 20-239HN	Raindance	59.820	1490.000	6956.130	56.460	1492.780	11.030	12318.170
Raindance FD 20-399HC	Raindance FC 23-399HC (PWB)	Slot W-16 - Raindance FD 20-399HC	Raindance	60.020	2957.000	2957.000	54.680	2957.000	11.170	3000.000
Raindance FC 23-232HN	Raindance FC 23-232HN (PWB)	Slot E-04 - Raindance FC 23-232HN	Raindance	62.350	1516.000	8079.010	58.970	1500.000	18.450	1500.000
Raindance FC 26-009HN	Raindance FC 26-009HN (PWB)	Slot E-16 - Raindance FC 26-009HN	Raindance	62.960	2957.000	6881.830	57.620	2957.000	11.720	3000.000
Raindance FD 20-202HN	Raindance FD 20-202HN (PWB)	Slot W-03 - Raindance FD 20-202HN	Raindance	69.720	959.000	6990.180	67.210	959.000	15.080	12318.170
Raindance FC 26-169HN	Raindance FC 26-169HN (PWB)	Slot W-17 - Raindance FC 26-169HN	Raindance	70.300	2957.000	2957.000	64.950	2957.000	13.060	3001.970
Raindance FC 23-232HNX	Raindance FC 23-232HNX (PWB)	Slot E-03 - Raindance FC 23-232HNX	Raindance	71.990	1248.000	8070.870	69.020	1248.000	23.730	1328.740
Raindance FC 26-032HN	Raindance FC 26-032HN (PWB)	Slot E-17 - Raindance FC 26-032HN	Raindance	72.470	2957.000	6733.180	67.120	2957.000	13.470	3000.000
Raindance FD 20-202HNX	Raindance FD 20-202HNX (PWB)	Slot W-02 - Raindance FD 20-202HNX	Raindance	79.620	600.000	6988.190	77.690	600.000	15.780	12318.170
Raindance FC 26-169HNX	Raindance FC 26-169HNX (PWB)	Slot W-18 - Raindance FC 26-169HNX	Raindance	80.200	2957.000	2957.000	74.850	2957.000	14.890	3001.970
Raindance FC 23-209HC	Raindance FC 23-209HC (PWB)	Slot E-02 - Raindance FC 23-209HC	Raindance	81.700	985.000	8054.460	79.150	985.000	27.790	8743.440
Raindance FC 26-032HC	Raindance FC 26-032HC (PWB)	Slot E-18 - Raindance FC 26-032HC	Raindance	82.070	2957.000	6845.320	76.720	2957.000	15.240	3001.970
Raindance FC 26-192HC	Raindance FC 26-192HC (PWB)	Slot W-19 - Raindance FC 26-192HC	Raindance	90.100	2957.000	2957.000	84.750	2957.000	16.710	3018.370
Raindance FC 23-209HN	Raindance FC 23-209HN (PWB)	Slot E-01 - Raindance FC 23-209HN	Raindance	91.000	645.000	8072.010	88.990	645.000	31.610	8907.480
Raindance FC 26-049HN	Raindance FC 26-049HN (PWB)	Slot E-19 - Raindance FC 26-049HN	Raindance	91.570	2957.000	6567.400	86.230	2957.000	16.990	3018.370
Raindance FC 26-209HN	Raindance FC 26-209HN (PWB)	Slot W-20 - Raindance FC 26-209HN	Raindance	100.000	2957.000	2957.000	94.660	2957.000	18.530	3018.370
Raindance FC 26-072HNX	Raindance FC 26-072HNX (PWB)	Slot E-20 - Raindance FC 26-072HNX	Raindance	101.270	2957.000	6341.900	95.920	2957.000	18.770	3018.370
Raindance FC 26-232HN	Raindance FC 26-232HN (PWB)	Slot W-21 - Raindance FC 26-232HN	Raindance	109.600	2889.000	2889.000	104.360	2889.000	20.710	2969.160
Raindance FC 26-089HC	Raindance FC 26-089HC (PWB)	Slot E-21 - Raindance FC 26-089HC	Raindance	112.070	2957.000	8366.140	106.720	2957.000	20.760	3018.370
Raindance FC 26-232HNX	Raindance FC 26-232HNX (PWB)	Slot W-22 - Raindance FC 26-232HNX	Raindance	119.500	2530.000	2530.000	114.840	2530.000	25.280	2624.670
Raindance FC 26-089HN	Raindance FC 26-089HN (PWB)	Slot E-22 - Raindance FC 26-089HN	Raindance	121.760	2957.000	8321.770	116.410	2957.000	22.530	3034.780
Raindance FC 26-249HC	Raindance FC 26-249HC (PWB)	Slot W-23 - Raindance FC 26-249HC	Raindance	130.420	2400.000	2400.000	125.970	2400.000	28.810	2500.000
Raindance FC 26-112HN	Raindance FC 26-112HN (PWB)	Slot E-23 - Raindance FC 26-112HN	Raindance	131.400	2957.000	8351.860	126.050	2957.000	24.290	3034.780
GWOGCO - H-Y 20-54	GWOGCO - H-Y 20-54 (AWB)	ZZ-GWOGCO - H-Y 20-54	Raindance	135.240	11429.620	11429.620	74.500	11450.130	2.160	11466.540
Raindance FC 26-272HN	Raindance FC 26-272HN (PWB)	Slot W-24 - Raindance FC 26-272HN	Raindance	140.320	2052.000	2052.000	136.430	2052.000	35.210	2165.350
GWOGCO - H-Y 20-53	GWOGCO - H-Y 20-53 (AWB)	ZZ-GWOGCO - H-Y 20-53	Raindance	140.650	8918.130	8918.130	114.400	8923.880	4.930	8989.500
Raindance FC 26-112HNX	Raindance FC 26-112HNX (PWB)	Slot E-24 - Raindance FC 26-112HNX	Raindance	141.120	2957.000	8366.140	135.770	2957.000	26.060	3051.180
Raindance FC 26-289HN	Raindance FC 26-289HN (PWB)	Slot W-25 - Raindance FC 26-289HN	Raindance	149.910	1679.000	1679.000	146.540	1500.000	43.980	1837.270
Raindance FC 26-129HC	Raindance FC 26-129HC (PWB)	Slot E-25 - Raindance FC 26-129HC	Raindance	150.920	2957.000	8136.480	145.570	2957.000	27.850	3051.180
GWOGCO - H-Y 20-23-18	GWOGCO - H-Y 20-23-18 (AWB)	ZZ-GWOGCO - H-Y 20-23-18	Raindance	151.330	10184.300	10184.300	111.130	10203.410	3.460	10252.620
Raindance FC 26-289HNX	Raindance FC 26-289HNX (PWB)	Slot W-26 - Raindance FC 26-289HNX	Raindance	159.820	1319.000	1319.000	156.730	1319.000	49.550	1476.380
Raindance FC 26-152HN	Raindance FC 26-152HN (PWB)	Slot E-26 - Raindance FC 26-152HN	Raindance	160.730	2957.000	8178.900	155.380	2957.000	29.630	3051.180
Raindance FC 26-312HC	Raindance FC 26-312HC (PWB)	Slot W-27 - Raindance FC 26-312HC	Raindance	169.720	1181.100	1181.100	166.850	1181.100	56.080	1377.950
Raindance FC 26-352HNX	Raindance FC 26-352HNX (PWB)	Slot E-27 - Raindance FC 26-352HNX	Raindance	171.380	900.000	900.000	168.960	900.000	66.170	1115.490

Offset WellName	Offset Wellbore	Offset Slot	Offset Structure	Separation [ft]	MD[ft]	Diverging From[ft]	Ellipse Separation [ft]	Ellipse MD[ft]	Clearance Factor	Clearance MD[ft]
Raindance FC 26-312HN	Raindance FC 26-312HN (PWB)	Slot W-28 - Raindance FC 26-312HN	Raindance	180.640	838.000	838.000	178.320	838.000	71.860	1082.680
Raindance FC 26-369HC	Raindance FC 26-369HC (PWB)	Slot E-28 - Raindance FC 26-369HC	Raindance	181.200	800.000	800.000	178.950	800.000	73.910	1049.870
Raindance FC 26-329HN	Raindance FC 26-329HN (PWB)	Slot W-29 - Raindance FC 26-329HN	Raindance	190.230	600.000	600.000	188.300	600.000	87.520	918.640
Raindance FC 26-369HN	Raindance FC 26-369HN (PWB)	Slot E-29 - Raindance FC 26-369HN	Raindance	191.040	700.000	700.000	188.950	700.000	82.540	984.250
Raindance FC 26-392HN	Raindance FC 26-392HN (PWB)	Slot W-30 - Raindance FC 26-392HN	Raindance	200.140	600.000	600.000	198.210	600.000	91.660	918.640
Raindance FC 26-392HNX	Raindance FC 26-392HNX (PWB)	Slot E-30 - Raindance FC 26-392HNX	Raindance	200.880	600.000	600.000	198.950	600.000	92.210	918.640
GWOGCO - H-Y 20-34	GWOGCO - H-Y 20-34 (AWB)	ZZ-GWOGCO - H-Y 20-34	Raindance	515.720	10805.320	10805.320	468.220	10777.560	10.360	10679.130
GWOGCO - H-Y 20-23	GWOGCO - H-Y 20-23 (AWB)	ZZ-GWOGCO - H-Y 20-23	Raindance	748.990	9541.670	9541.670	717.760	9563.650	18.850	9973.750
GWOGCO - Raindance FD 19-21HN	GWOGCO - Raindance FD 19-21HN (AWB)	ZZ-GWOGCO - Raindance FD 19-21HN	Raindance	776.410	7037.400	7037.400	715.040	7053.810	12.130	7185.040
GWOGCO - H-Y 29-31-2	GWOGCO - H-Y 29-31-2 (AWB)	ZZ-GWOGCO - H-Y 29-31-2	Raindance	1173.100	11491.030	11491.030	1114.700	11482.940	19.880	11368.110
GWOGCO - H-Y 29-21-3	GWOGCO - H-Y 29-21-3 (AWB)	ZZ-GWOGCO - H-Y 29-21-3	Raindance	1173.850	10162.980	10162.980	1137.270	10154.200	31.420	9973.750
GWOGCO - H-Y 29-21-4	GWOGCO - H-Y 29-21-4 (AWB)	ZZ-GWOGCO - H-Y 29-21-4	Raindance	1175.880	8841.860	8841.860	1151.290	8841.860	47.790	8809.060
Extraction - Kodak 03	Extraction - Kodak 03 (AWB)	ZZ-Extraction - Kodak 03	Raindance	1280.390	8030.650	9670.290	1173.320	8038.060	11.940	8087.270
GWOGCO - H-Y 29-52	GWOGCO - H-Y 29-52 (AWB)	ZZ-GWOGCO - H-Y 29-52	Raindance	1801.050	3576.120	8759.840	1791.820	3592.520	102.740	8874.670
GWOGCO - H-Y 29-31	GWOGCO - H-Y 29-31 (AWB)	ZZ-GWOGCO - H-Y 29-31	Raindance	1842.210	10800.000	10800.000	1795.660	10800.000	39.570	10777.560
GWOGCO - H-Y 29-21	GWOGCO - H-Y 29-21 (AWB)	ZZ-GWOGCO - H-Y 29-21	Raindance	2188.270	25.000	9423.300				
GWOGCO - H-Y 29-31-8	GWOGCO - H-Y 29-31-8 (AWB)	ZZ-GWOGCO - H-Y 29-31-8	Raindance	2194.120	82.020	10078.210	2193.040	82.020	70.550	10433.070
Extraction - Kodak 06	Extraction - Kodak 06 (AWB)	ZZ-Extraction - Kodak 06	Raindance	2198.990	6251.200	11784.300	2115.490	6300.000	20.810	8070.870
GWOGCO - H-Y 29-51	GWOGCO - H-Y 29-51 (AWB)	ZZ-GWOGCO - H-Y 29-51	Raindance	2210.250	25.000	11400.610	2209.200	65.620	45.030	11646.980
Extraction - Kodak 09	Extraction - Kodak 09 (AWB)	ZZ-Extraction - Kodak 09	Raindance	2526.010	6039.830	7939.630	2438.650	6085.960	24.850	8005.250
KMG - ONYX 13-29	KMG - ONYX 13-29 (AWB)	ZZ-KMG - ONYX 13-29	Raindance	2705.270	2957.000	8030.560	2699.270	2957.000	201.080	10744.750
Walter - THAYER 1-30	Walter - THAYER 1-30 (AWB)	ZZ-Walter - THAYER 1-30	Raindance	2804.390	4370.770	4370.770	2793.610	4429.130	146.000	6856.960
Extraction - Kodak 10	Extraction - Kodak 10 (AWB)	ZZ-Extraction - Kodak 10	Raindance	3123.210	5703.880	7965.060	3033.680	5757.870	31.440	8021.650
Extraction - Kodak 13	Extraction - Kodak 13 (AWB)	ZZ-Extraction - Kodak 13	Raindance	3386.850	5528.220	10100.000	3296.510	5577.430	34.490	8038.060
Walter - THAYER 2-30	Walter - THAYER 2-30 (AWB)	ZZ-Walter - THAYER 2-30	Raindance	3678.700	2957.000	2957.000	3671.750	2957.000	282.350	6800.000
Extraction - RAINDANCE 7	Extraction - RAINDANCE 7 (AWB)	ZZ-Extraction - RAINDANCE 7	Raindance	4231.770	0.000	11122.050	4230.170	1213.910	70.730	12318.170
Extraction - RAINDANCE 8	Extraction - RAINDANCE 8 (PWB)	ZZ-Extraction - RAINDANCE 8	Raindance	4236.610	2078.000	2078.000	4232.540	2083.330	71.040	12318.170
Extraction - RAINDANCE 1-1-32	Extraction - RAINDANCE 1-1-32 (PWB)	ZZ-Extraction - RAINDANCE 1-1-32	Raindance	4239.490	1826.000	1826.000	4235.820	1837.270	230.670	12318.170
Extraction - RAINDANCE 9	Extraction - RAINDANCE 9 (PWB)	ZZ-Extraction - RAINDANCE 9	Raindance	4245.640	2230.970	2230.970	4241.330	2230.970	72.640	12318.170
Extraction - RAINDANCE 2	Extraction - RAINDANCE 2 (PWB)	ZZ-Extraction - RAINDANCE 2	Raindance	4247.230	1828.000	1828.000	4243.570	1837.270	74.970	12318.170
Extraction - RAINDANCE 3	Extraction - RAINDANCE 3 (PWB)	ZZ-Extraction - RAINDANCE 3	Raindance	4251.490	1509.190	1509.190	4247.970	1500.000	77.210	12318.170
Extraction - RAINDANCE 4	Extraction - RAINDANCE 4 (PWB)	ZZ-Extraction - RAINDANCE 4	Raindance	4255.690	1828.000	1828.000	4252.030	1837.270	78.230	12318.170
Extraction - RAINDANCE 5	Extraction - RAINDANCE 5 (PWB)	ZZ-Extraction - RAINDANCE 5	Raindance	4259.940	1828.000	1828.000	4256.270	1837.270	81.640	12318.170
Extraction - RAINDANCE 6	Extraction - RAINDANCE 6 (PWB)	ZZ-Extraction - RAINDANCE 6	Raindance	4268.000	787.400	787.400	4265.630	787.400	83.770	12318.170
UNKNOWN - KENNETH THAYER 1	UNKNOWN - KENNETH THAYER 1 (AWB)	ZZ-UNKNOWN - KENNETH THAYER 1	Raindance	5567.860	2957.000	2957.000	5560.730	2957.000	372.900	6900.000
UNI OIL - MACLOUGHAN 25-1	UNI OIL - MACLOUGHAN 25-1 (AWB)	ZZ-UNI OIL - MACLOUGHAN 25-1	Raindance	8211.610	2957.000	2957.000	8204.670	2969.160	404.270	7086.610
Ranchers - Retta J 1	Ranchers - Retta J 1 (AWB)	ZZ-Ranchers - Retta J 1	Raindance	10133.510	0.000	0.000	10132.510	0.000	628.040	12318.170

All data is in Feet unless otherwise stated  
Coordinates are from Slot MD's are from Rig and TVD's are from Rig (Planned Datum #1 4800.0ft above Mean Sea Level)  
Vertical Section is from 0.00N 0.00E on azimuth 67.600 degrees  
Prepared by Great Western Operating Company  
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