

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_ROBERTSON PAD

ROBERTSON 16C-19HZ

ROBERTSON 16C-19HZ

Plan: ROBERTSON 16C-19HZ (wp01)

Standard Planning Report

08 March, 2011





Database:	edm5000p	Local Co-ordinate Reference:	Well ROBERTSON 16C-19HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	17' RKB + 4936' GL @ 4953.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	17' RKB + 4936' GL @ 4953.00ft
Site:	WELD_ROBERTSON PAD	North Reference:	True
Well:	ROBERTSON 16C-19HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	ROBERTSON 16C-19HZ		
Design:	ROBERTSON 16C-19HZ (wp01)		

Project	COLORADO NORTHERN ZONE - 83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		WELD_ROBERTSON PAD			
Site Position:		Northing:	1,291,783.91 ft	Latitude:	40.130759
From:	Lat/Long	Easting:	3,254,353.38 ft	Longitude:	-104.590333
Position Uncertainty:	0.00 ft	Slot Radius:	0 "	Grid Convergence:	0.59

Well	ROBERTSON 16C-19HZ					
Well Position	+N-S	0.35 ft	Northing:	1,291,784.87 ft	Latitude:	40.130760
	+E-W	59.84 ft	Easting:	3,254,413.21 ft	Longitude:	-104.590119
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,936.00 ft

Wellbore	ROBERTSON 16C-19HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/8/2011	8.78	66.87	53,036

Design	ROBERTSON 16C-19HZ (wp01)				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	167.25	

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	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	
1,050.00	0.00	0.00	1,050.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,527.31	9.55	83.51	1,525.10	4.48	39.42	2.00	2.00	0.00	83.51	
6,588.42	9.55	83.51	6,516.14	99.29	873.39	0.00	0.00	0.00	0.00	
7,734.13	90.71	179.29	7,234.00	-624.00	1,004.00	8.00	7.08	8.36	95.58	
7,738.60	90.75	179.27	7,233.94	-628.47	1,004.06	1.00	0.93	-0.36	-21.08	
11,774.27	90.75	179.27	7,181.00	-4,663.47	1,055.19	0.00	0.00	0.00	0.00	ROBERTSON 16C-

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Site:	WELD_ROBERTSON PAD	North Reference:	True
Well:	ROBERTSON 16C-19HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	ROBERTSON 16C-19HZ		
Design:	ROBERTSON 16C-19HZ (wp01)		

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)
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
9 5/8"									
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,050.00	0.00	0.00	1,050.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,100.00	1.00	83.51	1,100.00	0.05	0.43	0.05	2.00	2.00	0.00
1,200.00	3.00	83.51	1,199.93	0.44	3.90	0.43	2.00	2.00	0.00
1,300.00	5.00	83.51	1,299.68	1.23	10.83	1.19	2.00	2.00	0.00
1,400.00	7.00	83.51	1,399.13	2.41	21.22	2.33	2.00	2.00	0.00
1,500.00	9.00	83.51	1,498.15	3.98	35.04	3.85	2.00	2.00	0.00
1,527.31	9.55	83.51	1,525.10	4.48	39.42	4.33	2.00	2.00	0.00
Start 5061.12 hold at 1527.31 MD									
1,600.00	9.55	83.51	1,596.79	5.84	51.40	5.64	0.00	0.00	0.00
1,700.00	9.55	83.51	1,695.40	7.72	67.87	7.45	0.00	0.00	0.00
1,800.00	9.55	83.51	1,794.02	9.59	84.35	9.26	0.00	0.00	0.00
1,900.00	9.55	83.51	1,892.63	11.46	100.83	11.07	0.00	0.00	0.00
2,000.00	9.55	83.51	1,991.25	13.34	117.31	12.88	0.00	0.00	0.00
2,100.00	9.55	83.51	2,089.86	15.21	133.79	14.69	0.00	0.00	0.00
2,200.00	9.55	83.51	2,188.48	17.08	150.26	16.50	0.00	0.00	0.00
2,300.00	9.55	83.51	2,287.09	18.95	166.74	18.31	0.00	0.00	0.00
2,400.00	9.55	83.51	2,385.71	20.83	183.22	20.12	0.00	0.00	0.00
2,500.00	9.55	83.51	2,484.33	22.70	199.70	21.93	0.00	0.00	0.00
2,600.00	9.55	83.51	2,582.94	24.57	216.18	23.74	0.00	0.00	0.00
2,700.00	9.55	83.51	2,681.56	26.45	232.65	25.55	0.00	0.00	0.00
2,800.00	9.55	83.51	2,780.17	28.32	249.13	27.36	0.00	0.00	0.00
2,900.00	9.55	83.51	2,878.79	30.19	265.61	29.17	0.00	0.00	0.00
3,000.00	9.55	83.51	2,977.40	32.07	282.09	30.98	0.00	0.00	0.00
3,100.00	9.55	83.51	3,076.02	33.94	298.57	32.79	0.00	0.00	0.00
3,200.00	9.55	83.51	3,174.63	35.81	315.04	34.60	0.00	0.00	0.00
3,300.00	9.55	83.51	3,273.25	37.69	331.52	36.41	0.00	0.00	0.00
3,400.00	9.55	83.51	3,371.86	39.56	348.00	38.21	0.00	0.00	0.00
3,500.00	9.55	83.51	3,470.48	41.43	364.48	40.02	0.00	0.00	0.00
3,600.00	9.55	83.51	3,569.09	43.31	380.96	41.83	0.00	0.00	0.00
3,700.00	9.55	83.51	3,667.71	45.18	397.43	43.64	0.00	0.00	0.00
3,800.00	9.55	83.51	3,766.32	47.05	413.91	45.45	0.00	0.00	0.00
3,900.00	9.55	83.51	3,864.94	48.93	430.39	47.26	0.00	0.00	0.00
4,000.00	9.55	83.51	3,963.55	50.80	446.87	49.07	0.00	0.00	0.00
4,091.72	9.55	83.51	4,054.00	52.52	461.98	50.73	0.00	0.00	0.00
PARKMAN									
4,100.00	9.55	83.51	4,062.17	52.67	463.35	50.88	0.00	0.00	0.00
4,200.00	9.55	83.51	4,160.78	54.55	479.82	52.69	0.00	0.00	0.00
4,300.00	9.55	83.51	4,259.40	56.42	496.30	54.50	0.00	0.00	0.00
4,400.00	9.55	83.51	4,358.02	58.29	512.78	56.31	0.00	0.00	0.00
4,444.60	9.55	83.51	4,402.00	59.13	520.13	57.12	0.00	0.00	0.00
SUSSEX									

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Site:	WELD_ROBERTSON PAD	North Reference:	True
Well:	ROBERTSON 16C-19HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	ROBERTSON 16C-19HZ		
Design:	ROBERTSON 16C-19HZ (wp01)		

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)
4,500.00	9.55	83.51	4,456.63	60.17	529.26	58.12	0.00	0.00	0.00
4,600.00	9.55	83.51	4,555.25	62.04	545.74	59.93	0.00	0.00	0.00
4,700.00	9.55	83.51	4,653.86	63.91	562.21	61.74	0.00	0.00	0.00
4,800.00	9.55	83.51	4,752.48	65.79	578.69	63.55	0.00	0.00	0.00
4,900.00	9.55	83.51	4,851.09	67.66	595.17	65.36	0.00	0.00	0.00
5,000.00	9.55	83.51	4,949.71	69.53	611.65	67.17	0.00	0.00	0.00
5,100.00	9.55	83.51	5,048.32	71.40	628.13	68.98	0.00	0.00	0.00
5,200.00	9.55	83.51	5,146.94	73.28	644.60	70.79	0.00	0.00	0.00
5,300.00	9.55	83.51	5,245.55	75.15	661.08	72.59	0.00	0.00	0.00
5,400.00	9.55	83.51	5,344.17	77.02	677.56	74.40	0.00	0.00	0.00
5,500.00	9.55	83.51	5,442.78	78.90	694.04	76.21	0.00	0.00	0.00
5,600.00	9.55	83.51	5,541.40	80.77	710.52	78.02	0.00	0.00	0.00
5,700.00	9.55	83.51	5,640.01	82.64	726.99	79.83	0.00	0.00	0.00
5,800.00	9.55	83.51	5,738.63	84.52	743.47	81.64	0.00	0.00	0.00
5,900.00	9.55	83.51	5,837.24	86.39	759.95	83.45	0.00	0.00	0.00
6,000.00	9.55	83.51	5,935.86	88.26	776.43	85.26	0.00	0.00	0.00
6,100.00	9.55	83.51	6,034.47	90.14	792.91	87.07	0.00	0.00	0.00
6,200.00	9.55	83.51	6,133.09	92.01	809.38	88.88	0.00	0.00	0.00
6,300.00	9.55	83.51	6,231.70	93.88	825.86	90.69	0.00	0.00	0.00
6,400.00	9.55	83.51	6,330.32	95.76	842.34	92.50	0.00	0.00	0.00
6,500.00	9.55	83.51	6,428.94	97.63	858.82	94.31	0.00	0.00	0.00
6,588.42	9.55	83.51	6,516.14	99.29	873.39	95.91	0.00	0.00	0.00
Start DLS 8.00 TFO 95.58									
6,600.00	9.50	89.11	6,527.55	99.41	875.30	96.21	8.00	-0.39	48.31
6,700.00	12.39	129.55	6,625.86	92.70	891.85	106.41	8.00	2.89	40.44
6,800.00	18.54	149.23	6,722.26	72.18	908.28	130.05	8.00	6.15	19.68
6,900.00	25.70	158.82	6,814.87	38.25	924.27	166.67	8.00	7.16	9.59
7,000.00	33.23	164.37	6,901.89	-8.43	939.51	215.56	8.00	7.53	5.55
7,007.33	33.79	164.69	6,908.00	-12.33	940.59	219.60	8.00	7.63	4.33
NIOBRARA A									
7,086.05	39.84	167.60	6,971.00	-58.11	951.80	266.73	8.00	7.69	3.70
NIOBRARA B									
7,100.00	40.92	168.04	6,981.63	-66.95	953.70	275.77	8.00	7.74	3.15
7,200.00	48.69	170.71	7,052.53	-136.16	966.57	346.12	8.00	7.78	2.68
7,212.96	49.71	171.01	7,061.00	-145.85	968.13	355.91	8.00	7.81	2.30
NIOBRARA C									
7,300.00	56.52	172.82	7,113.22	-214.73	977.86	425.24	8.00	7.83	2.07
7,400.00	64.37	174.57	7,162.51	-301.13	987.36	511.61	8.00	7.85	1.75
7,420.22	65.96	174.89	7,171.00	-319.40	989.05	529.80	8.00	7.87	1.60
FORT HAYS									
7,500.00	72.24	176.10	7,199.44	-393.67	994.88	603.52	8.00	7.87	1.52
7,572.14	77.93	177.12	7,218.00	-463.23	999.00	672.27	8.00	7.88	1.42
CODELL									
7,600.00	80.13	177.50	7,223.30	-490.55	1,000.28	699.20	8.00	7.89	1.37
7,700.00	88.02	178.84	7,233.62	-589.88	1,003.44	796.78	8.00	7.89	1.34
7,734.13	90.71	179.29	7,234.00	-624.00	1,004.00	830.19	8.00	7.89	1.32
Start DLS 1.00 TFO -21.08 - 7"									
7,738.60	90.75	179.27	7,233.94	-628.47	1,004.06	834.55	1.00	0.93	-0.36
Start 4035.67 hold at 7738.60 MD									
7,800.00	90.75	179.27	7,233.14	-689.86	1,004.83	894.61	0.00	0.00	0.00
7,900.00	90.75	179.27	7,231.83	-789.84	1,006.10	992.40	0.00	0.00	0.00
8,000.00	90.75	179.27	7,230.51	-889.83	1,007.37	1,090.20	0.00	0.00	0.00
8,100.00	90.75	179.27	7,229.20	-989.81	1,008.64	1,188.00	0.00	0.00	0.00

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Well:	ROBERTSON 16C-19HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	ROBERTSON 16C-19HZ		
Design:	ROBERTSON 16C-19HZ (wp01)		

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)
8,200.00	90.75	179.27	7,227.89	-1,089.79	1,009.90	1,285.80	0.00	0.00	0.00
8,300.00	90.75	179.27	7,226.58	-1,189.78	1,011.17	1,383.59	0.00	0.00	0.00
8,400.00	90.75	179.27	7,225.27	-1,289.76	1,012.44	1,481.39	0.00	0.00	0.00
8,500.00	90.75	179.27	7,223.95	-1,389.74	1,013.70	1,579.19	0.00	0.00	0.00
8,600.00	90.75	179.27	7,222.64	-1,489.73	1,014.97	1,676.99	0.00	0.00	0.00
8,700.00	90.75	179.27	7,221.33	-1,589.71	1,016.24	1,774.79	0.00	0.00	0.00
8,800.00	90.75	179.27	7,220.02	-1,689.69	1,017.50	1,872.58	0.00	0.00	0.00
8,900.00	90.75	179.27	7,218.71	-1,789.68	1,018.77	1,970.38	0.00	0.00	0.00
9,000.00	90.75	179.27	7,217.40	-1,889.66	1,020.04	2,068.18	0.00	0.00	0.00
9,100.00	90.75	179.27	7,216.08	-1,989.64	1,021.31	2,165.98	0.00	0.00	0.00
9,200.00	90.75	179.27	7,214.77	-2,089.63	1,022.57	2,263.77	0.00	0.00	0.00
9,300.00	90.75	179.27	7,213.46	-2,189.61	1,023.84	2,361.57	0.00	0.00	0.00
9,400.00	90.75	179.27	7,212.15	-2,289.59	1,025.11	2,459.37	0.00	0.00	0.00
9,500.00	90.75	179.27	7,210.84	-2,389.58	1,026.37	2,557.17	0.00	0.00	0.00
9,600.00	90.75	179.27	7,209.52	-2,489.56	1,027.64	2,654.97	0.00	0.00	0.00
9,700.00	90.75	179.27	7,208.21	-2,589.54	1,028.91	2,752.76	0.00	0.00	0.00
9,800.00	90.75	179.27	7,206.90	-2,689.53	1,030.18	2,850.56	0.00	0.00	0.00
9,900.00	90.75	179.27	7,205.59	-2,789.51	1,031.44	2,948.36	0.00	0.00	0.00
10,000.00	90.75	179.27	7,204.28	-2,889.49	1,032.71	3,046.16	0.00	0.00	0.00
10,100.00	90.75	179.27	7,202.96	-2,989.48	1,033.98	3,143.96	0.00	0.00	0.00
10,200.00	90.75	179.27	7,201.65	-3,089.46	1,035.24	3,241.75	0.00	0.00	0.00
10,300.00	90.75	179.27	7,200.34	-3,189.44	1,036.51	3,339.55	0.00	0.00	0.00
10,400.00	90.75	179.27	7,199.03	-3,289.43	1,037.78	3,437.35	0.00	0.00	0.00
10,500.00	90.75	179.27	7,197.72	-3,389.41	1,039.05	3,535.15	0.00	0.00	0.00
10,600.00	90.75	179.27	7,196.41	-3,489.39	1,040.31	3,632.94	0.00	0.00	0.00
10,700.00	90.75	179.27	7,195.09	-3,589.38	1,041.58	3,730.74	0.00	0.00	0.00
10,800.00	90.75	179.27	7,193.78	-3,689.36	1,042.85	3,828.54	0.00	0.00	0.00
10,900.00	90.75	179.27	7,192.47	-3,789.34	1,044.11	3,926.34	0.00	0.00	0.00
11,000.00	90.75	179.27	7,191.16	-3,889.33	1,045.38	4,024.14	0.00	0.00	0.00
11,100.00	90.75	179.27	7,189.85	-3,989.31	1,046.65	4,121.93	0.00	0.00	0.00
11,200.00	90.75	179.27	7,188.53	-4,089.29	1,047.91	4,219.73	0.00	0.00	0.00
11,300.00	90.75	179.27	7,187.22	-4,189.28	1,049.18	4,317.53	0.00	0.00	0.00
11,400.00	90.75	179.27	7,185.91	-4,289.26	1,050.45	4,415.33	0.00	0.00	0.00
11,500.00	90.75	179.27	7,184.60	-4,389.24	1,051.72	4,513.12	0.00	0.00	0.00
11,600.00	90.75	179.27	7,183.29	-4,489.23	1,052.98	4,610.92	0.00	0.00	0.00
11,700.00	90.75	179.27	7,181.97	-4,589.21	1,054.25	4,708.72	0.00	0.00	0.00
11,774.27	90.75	179.27	7,181.00	-4,663.47	1,055.19	4,781.35	0.00	0.00	0.00
TD at 11774.27 - ROBERTSON 16C-19HZ BHL									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
ROBERTSON 16C-19HZ - hit/miss target - Shape - plan hits target center - Point	0.00	0.00	7,181.00	-4,663.47	1,055.19	1,287,132.48	3,255,516.20	40.117958	-104.586346

Database:	edm5000p	Local Co-ordinate Reference:	Well ROBERTSON 16C-19HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	17' RKB + 4936' GL @ 4953.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	17' RKB + 4936' GL @ 4953.00ft
Site:	WELD_ROBERTSON PAD	North Reference:	True
Well:	ROBERTSON 16C-19HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	ROBERTSON 16C-19HZ		
Design:	ROBERTSON 16C-19HZ (wp01)		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
900.00	900.00	9 5/8"	9-5/8	12-1/4
7,734.13	7,234.00	7"	7	8-3/4

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,091.72	4,054.00	PARKMAN		0.00	
4,444.60	4,402.00	SUSSEX		0.00	
7,007.33	6,908.00	NIOBRARA A		0.00	
7,086.05	6,971.00	NIOBRARA B		0.00	
7,212.96	7,061.00	NIOBRARA C		0.00	
7,420.22	7,171.00	FORT HAYS		0.00	
7,572.14	7,218.00	CODELL		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,050.00	1,050.00	0.00	0.00	Start Build 2.00
1,527.31	1,525.10	4.48	39.42	Start 5061.12 hold at 1527.31 MD
6,588.42	6,516.14	99.29	873.39	Start DLS 8.00 TFO 95.58
7,734.13	7,234.00	-624.00	1,004.00	Start DLS 1.00 TFO -21.08
7,738.60	7,233.94	-628.47	1,004.06	Start 4035.67 hold at 7738.60 MD
11,774.27	7,181.00	-4,663.47	1,055.19	TD at 11774.27

US ROCKIES REGION PLANNING

**COLORADO NORTHERN ZONE - 83
WELD_ROBERTSON PAD
ROBERTSON 16C-19HZ**

**ROBERTSON 16C-19HZ
ROBERTSON 16C-19HZ (wp01)**

Anticollision Summary Report

08 March, 2011



APC

Anticollision Summary Report



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well ROBERTSON 16C-19HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	17' RKB + 4936' GL @ 4953.00ft
Reference Site:	WELD_ROBERTSON PAD	MD Reference:	17' RKB + 4936' GL @ 4953.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	ROBERTSON 16C-19HZ	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	ROBERTSON 16C-19HZ	Database:	edm5000p
Reference Design:	ROBERTSON 16C-19HZ (wp01)	Offset TVD Reference:	Offset Datum

Reference	ROBERTSON 16C-19HZ (wp01)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD + Stations Interval 25.00ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.00 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 3/8/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	11,774.23	ROBERTSON 16C-19HZ (wp01) (ROBER	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
WELD_ROBERTSON PAD						
ROBERTSON 15C-19HZ - ROBERTSON 15C-19HZ - R	1,050.00	1,050.00	59.84	55.38	13.426	CC, ES
ROBERTSON 15C-19HZ - ROBERTSON 15C-19HZ - R	1,125.00	1,123.43	61.77	57.00	12.961	SF
ROBERTSON 15N-19HZ - ROBERTSON 15N-19HZ - R	1,050.00	1,050.00	29.92	25.46	6.713	CC, ES
ROBERTSON 15N-19HZ - ROBERTSON 15N-19HZ - R	1,100.00	1,099.51	30.75	26.08	6.586	SF
ROBERTSON 16N-19HZ - ROBERTSON 16N-19HZ - R	1,532.47	1,527.48	29.77	23.37	4.653	CC
ROBERTSON 16N-19HZ - ROBERTSON 16N-19HZ - R	6,475.00	6,469.48	47.91	16.55	1.528	ES
ROBERTSON 16N-19HZ - ROBERTSON 16N-19HZ - R	6,500.00	6,493.72	48.85	16.72	1.520	SF

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well ROBERTSON 16C-19HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	17' RKB + 4936' GL @ 4953.00ft
Reference Site:	WELD_ROBERTSON PAD	MD Reference:	17' RKB + 4936' GL @ 4953.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	ROBERTSON 16C-19HZ	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	ROBERTSON 16C-19HZ	Database:	edm5000p
Reference Design:	ROBERTSON 16C-19HZ (wp01)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to 17' RKB + 4936' GL @ 4953.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: ROBERTSON 16C-19HZ
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.59°

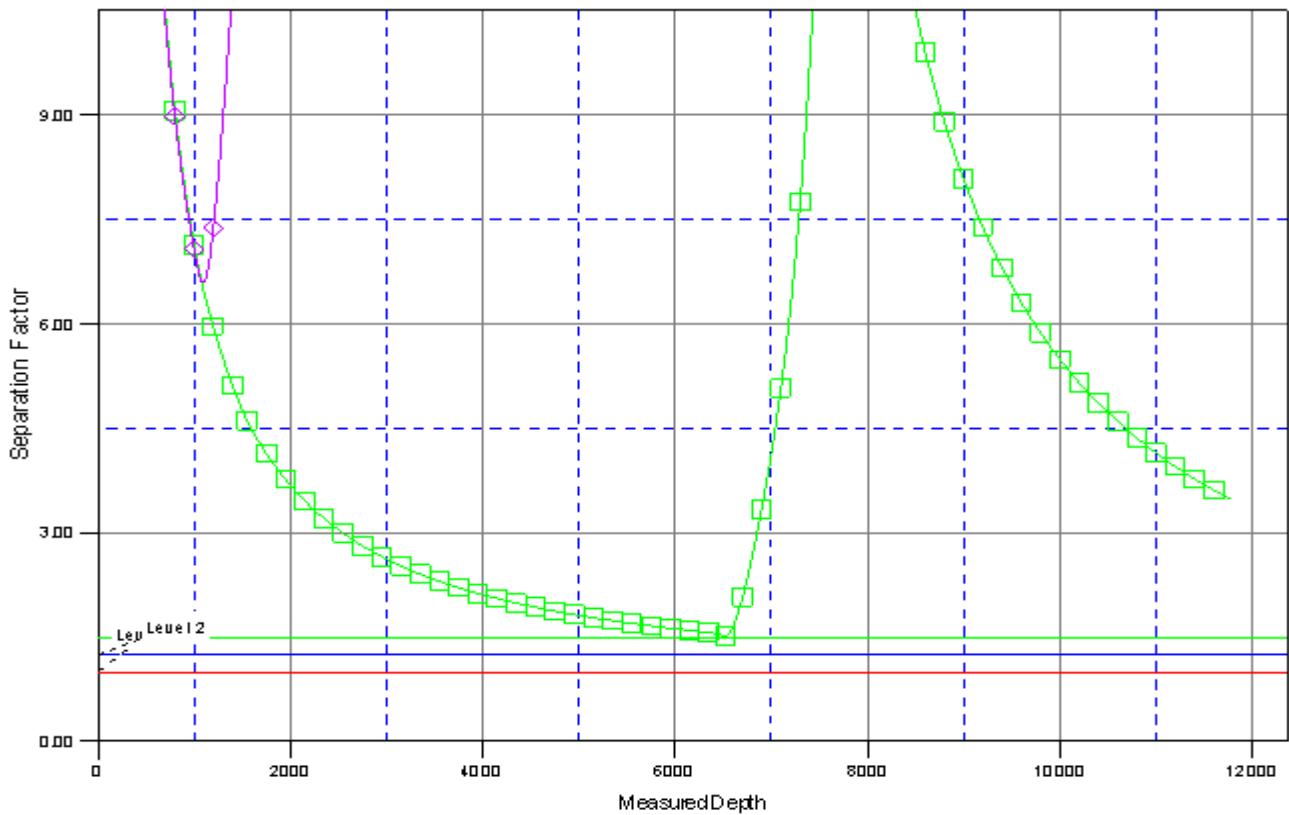


Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well ROBERTSON 16C-19HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	17' RKB + 4936' GL @ 4953.00ft
Reference Site:	WELD_ROBERTSON PAD	MD Reference:	17' RKB + 4936' GL @ 4953.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	ROBERTSON 16C-19HZ	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	ROBERTSON 16C-19HZ	Database:	edm5000p
Reference Design:	ROBERTSON 16C-19HZ (wp01)	Offset TVD Reference:	Offset Datum



Reference Depths are relative to 17' RKB + 4936' GL @ 4953.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: ROBERTSON 16C-19HZ
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.59°

Separation Factor Plot



LEGEND

ROBERTSON 15C-19HZ(wp01)\V0  ROBERTSON 16N-19HZ,ROBERTSON 16N-19HZ,ROBERTSON 16N-19HZ(wp01)\V0  ROBERTSON 15N-19HZ,I