

NICKEL ROAD OPERATING

Well Name: Noble 5X-HNB-05-03-68

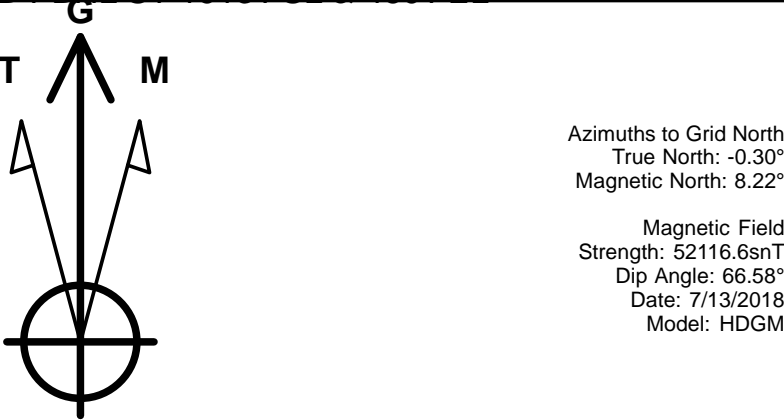
Surface Location: SEC 5 Noble Pad 5-3N-68W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 5100.8

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1335719.02	3130163.52	40.254008	-105.033646	

Original Well Elev. RKB @ 5116.8ft (Original Well Elev)

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
HNL 2340'FSL & 810'FWL	0.0	-0.1	50.0	40.254007	-105.033467
HNB Sidetrack LP	7142.5	-436.6	-190.0	40.252812	-105.034335
HNB PBHL ST 1913'FSL & 460'FEL	7156.0	-389.0	3992.5	40.252882	-105.019350

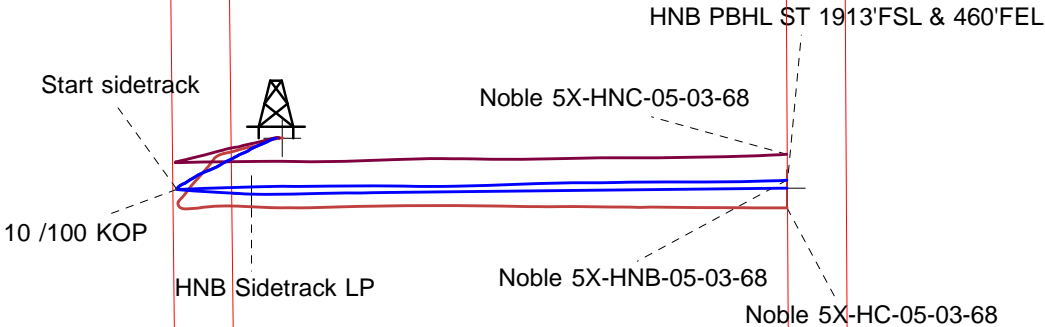


SEC 5 Noble Pad 5-3N-68W
Noble 5X-HNB-05-03-68
Sidetrack plan 2 July 28 2018
21:52, July 28 2018

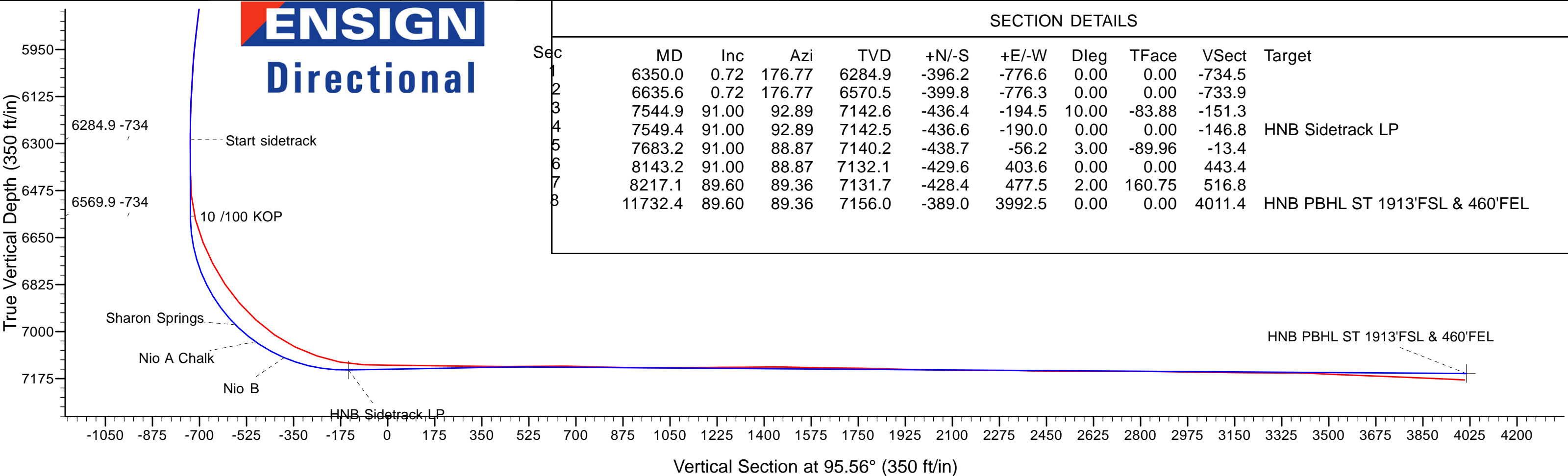
ANNOTATIONS

TVD	MD	Annotation
6284.9	6350.0	Start sidetrack
6569.9	6635.0	10 /100 KOP

South(-)/North(+) (1500 ft/in)



West(-)/East(+) (1500 ft/in)





Directional

NICKEL ROAD OPERATING

SEC.5-T3N-R68W

SEC 5 Noble Pad 5-3N-68W

Noble 5X-HNB-05-03-68

Wellbore #1

Plan: Sidetrack plan 2 July 28 2018

Standard Planning Report

28 July, 2018



Directional

Database:	US_EDM	Local Co-ordinate Reference:	Well Noble 5X-HNB-05-03-68
Company:	NICKEL ROAD OPERATING	TVD Reference:	RKB @ 5116.8ft (Original Well Elev)
Project:	SEC.5-T3N-R68W	MD Reference:	RKB @ 5116.8ft (Original Well Elev)
Site:	SEC 5 Noble Pad 5-3N-68W	North Reference:	Grid
Well:	Noble 5X-HNB-05-03-68	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Sidetrack plan 2 July 28 2018		

Project	SEC.5-T3N-R68W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	SEC 5 Noble Pad 5-3N-68W		
Site Position:		Northing:	1,335,718.93 usft
From:	Lat/Long	Easting:	3,130,213.48 usft
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "
		Latitude:	40.254007
		Longitude:	-105.033467
		Grid Convergence:	0.30 °

Well	Noble 5X-HNB-05-03-68		
Well Position	+N/-S	0.1 ft	Northing: 1,335,719.02 usft
	+E/-W	-50.0 ft	Easting: 3,130,163.52 usft
Position Uncertainty	0.0 ft	Wellhead Elevation:	16.2 ft
		Latitude:	40.254008
		Longitude:	-105.033646
		Ground Level:	5,100.8 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	7/13/2018	8.52	66.58	52,117

Design	Sidetrack plan 2 July 28 2018			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	6,350.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	95.56

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
6,350.0	0.72	176.77	6,284.9	-396.2	-776.6	0.00	0.00	0.00	0.00	
6,635.6	0.72	176.77	6,570.5	-399.8	-776.3	0.00	0.00	0.00	0.00	
7,544.9	91.00	92.89	7,142.6	-436.4	-194.5	10.00	9.93	-9.23	-83.88	
7,549.4	91.00	92.89	7,142.5	-436.6	-190.0	0.00	0.00	0.00	0.00	HNB Sidetrack LP
7,683.2	91.00	88.87	7,140.2	-438.7	-56.2	3.00	0.00	-3.00	-89.96	
8,143.2	91.00	88.87	7,132.1	-429.6	403.6	0.00	0.00	0.00	0.00	
8,217.1	89.60	89.36	7,131.7	-428.4	477.5	2.00	-1.89	0.66	160.75	
11,732.4	89.60	89.36	7,156.0	-389.0	3,992.5	0.00	0.00	0.00	0.00	HNB PBHL ST 1913°F

Database:	US_EDM	Local Co-ordinate Reference:	Well Noble 5X-HNB-05-03-68
Company:	NICKEL ROAD OPERATING	TVD Reference:	RKB @ 5116.8ft (Original Well Elev)
Project:	SEC.5-T3N-R68W	MD Reference:	RKB @ 5116.8ft (Original Well Elev)
Site:	SEC 5 Noble Pad 5-3N-68W	North Reference:	Grid
Well:	Noble 5X-HNB-05-03-68	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Sidetrack plan 2 July 28 2018		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,350.0	0.72	176.77	6,284.9	-396.2	-776.6	-734.5	0.00	0.00	0.00
Start sidetrack									
6,400.0	0.72	176.77	6,334.9	-396.8	-776.5	-734.4	0.00	0.00	0.00
6,450.0	0.72	176.77	6,384.9	-397.4	-776.5	-734.3	0.00	0.00	0.00
6,500.0	0.72	176.77	6,434.9	-398.1	-776.4	-734.2	0.00	0.00	0.00
6,550.0	0.72	176.77	6,484.9	-398.7	-776.4	-734.1	0.00	0.00	0.00
6,600.0	0.72	176.77	6,534.9	-399.3	-776.4	-734.0	0.00	0.00	0.00
6,635.0	0.72	176.77	6,569.9	-399.7	-776.3	-733.9	0.00	0.00	0.00
10 /100 KOP									
6,635.6	0.72	176.77	6,570.5	-399.8	-776.3	-733.9	0.00	0.00	0.00
6,650.0	1.67	118.20	6,584.9	-399.9	-776.2	-733.7	10.00	6.64	-407.84
6,700.0	6.55	99.14	6,634.7	-400.7	-772.7	-730.2	10.00	9.76	-38.12
6,750.0	11.53	96.41	6,684.1	-401.8	-764.9	-722.3	10.00	9.97	-5.47
6,800.0	16.53	95.31	6,732.6	-403.0	-752.8	-710.2	10.00	9.99	-2.19
6,850.0	21.52	94.71	6,779.8	-404.4	-736.6	-693.9	10.00	9.99	-1.19
6,900.0	26.52	94.33	6,825.5	-406.0	-716.3	-673.6	10.00	10.00	-0.76
6,950.0	31.52	94.07	6,869.2	-407.8	-692.1	-649.3	10.00	10.00	-0.53
7,000.0	36.52	93.87	6,910.6	-409.7	-664.2	-621.4	10.00	10.00	-0.40
7,050.0	41.52	93.71	6,949.5	-411.8	-632.8	-589.9	10.00	10.00	-0.32
7,083.7	44.88	93.62	6,974.0	-413.2	-609.9	-566.9	10.00	10.00	-0.27
Sharon Springs									
7,100.0	46.52	93.58	6,985.4	-414.0	-598.2	-555.2	10.00	10.00	-0.24
7,150.0	51.52	93.47	7,018.2	-416.3	-560.5	-517.5	10.00	10.00	-0.22
7,182.2	54.73	93.40	7,037.5	-417.8	-534.8	-491.8	10.00	10.00	-0.20
Nio A Chalk									
7,200.0	56.52	93.37	7,047.6	-418.7	-520.1	-477.1	10.00	10.00	-0.18
7,250.0	61.52	93.29	7,073.3	-421.2	-477.4	-434.3	10.00	10.00	-0.17
7,300.0	66.51	93.21	7,095.2	-423.7	-432.5	-389.4	10.00	10.00	-0.15
7,304.6	66.97	93.20	7,097.0	-424.0	-428.3	-385.2	10.00	10.00	-0.15
Nio B									
7,350.0	71.51	93.14	7,113.1	-426.3	-385.9	-342.8	10.00	10.00	-0.14
7,400.0	76.51	93.07	7,126.9	-428.9	-337.9	-294.8	10.00	10.00	-0.14
7,450.0	81.51	93.01	7,136.4	-431.5	-288.9	-245.7	10.00	10.00	-0.13
7,500.0	86.51	92.94	7,141.6	-434.1	-239.3	-196.1	10.00	10.00	-0.13
7,544.9	91.00	92.89	7,142.6	-436.4	-194.5	-151.3	10.00	10.00	-0.12
7,549.4	91.00	92.89	7,142.5	-436.6	-190.0	-146.8	0.00	0.00	0.00
7,550.0	91.00	92.87	7,142.5	-436.6	-189.4	-146.1	3.00	0.00	-3.00
7,600.0	91.00	91.37	7,141.6	-438.5	-139.4	-96.2	3.00	0.00	-3.00
7,650.0	91.00	89.87	7,140.7	-439.0	-89.4	-46.4	3.00	0.00	-3.00
7,683.2	91.00	88.87	7,140.2	-438.7	-56.2	-13.4	3.00	0.00	-3.00
7,700.0	91.00	88.87	7,139.9	-438.3	-39.4	3.2	0.00	0.00	0.00
7,750.0	91.00	88.87	7,139.0	-437.3	10.5	52.9	0.00	0.00	0.00
7,800.0	91.00	88.87	7,138.1	-436.3	60.5	102.5	0.00	0.00	0.00
7,850.0	91.00	88.87	7,137.3	-435.4	110.5	152.2	0.00	0.00	0.00
7,900.0	91.00	88.87	7,136.4	-434.4	160.5	201.8	0.00	0.00	0.00
7,950.0	91.00	88.87	7,135.5	-433.4	210.5	251.5	0.00	0.00	0.00
8,000.0	91.00	88.87	7,134.6	-432.4	260.5	301.1	0.00	0.00	0.00
8,050.0	91.00	88.87	7,133.8	-431.4	310.4	350.8	0.00	0.00	0.00
8,100.0	91.00	88.87	7,132.9	-430.4	360.4	400.5	0.00	0.00	0.00
8,143.2	91.00	88.87	7,132.1	-429.6	403.6	443.4	0.00	0.00	0.00
8,150.0	90.87	88.91	7,132.0	-429.4	410.4	450.1	2.00	-1.89	0.66
8,200.0	89.93	89.24	7,131.7	-428.6	460.4	499.8	2.00	-1.89	0.66
8,217.1	89.60	89.36	7,131.7	-428.4	477.5	516.8	2.00	-1.89	0.66
8,250.0	89.60	89.36	7,132.0	-428.1	510.4	549.5	0.00	0.00	0.00

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Site:	SEC 5 Noble Pad 5-3N-68W	North Reference:	Grid
Well:	Noble 5X-HNB-05-03-68	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Sidetrack plan 2 July 28 2018		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,300.0	89.60	89.36	7,132.3	-427.5	560.4	599.2	0.00	0.00	0.00
8,350.0	89.60	89.36	7,132.7	-426.9	610.4	648.9	0.00	0.00	0.00
8,400.0	89.60	89.36	7,133.0	-426.4	660.4	698.6	0.00	0.00	0.00
8,450.0	89.60	89.36	7,133.4	-425.8	710.4	748.3	0.00	0.00	0.00
8,500.0	89.60	89.36	7,133.7	-425.3	760.4	798.0	0.00	0.00	0.00
8,550.0	89.60	89.36	7,134.0	-424.7	810.4	847.7	0.00	0.00	0.00
8,600.0	89.60	89.36	7,134.4	-424.1	860.4	897.4	0.00	0.00	0.00
8,650.0	89.60	89.36	7,134.7	-423.6	910.4	947.1	0.00	0.00	0.00
8,700.0	89.60	89.36	7,135.1	-423.0	960.3	996.8	0.00	0.00	0.00
8,750.0	89.60	89.36	7,135.4	-422.5	1,010.3	1,046.5	0.00	0.00	0.00
8,800.0	89.60	89.36	7,135.8	-421.9	1,060.3	1,096.3	0.00	0.00	0.00
8,850.0	89.60	89.36	7,136.1	-421.3	1,110.3	1,146.0	0.00	0.00	0.00
8,900.0	89.60	89.36	7,136.5	-420.8	1,160.3	1,195.7	0.00	0.00	0.00
8,950.0	89.60	89.36	7,136.8	-420.2	1,210.3	1,245.4	0.00	0.00	0.00
9,000.0	89.60	89.36	7,137.1	-419.7	1,260.3	1,295.1	0.00	0.00	0.00
9,050.0	89.60	89.36	7,137.5	-419.1	1,310.3	1,344.8	0.00	0.00	0.00
9,100.0	89.60	89.36	7,137.8	-418.5	1,360.3	1,394.5	0.00	0.00	0.00
9,150.0	89.60	89.36	7,138.2	-418.0	1,410.3	1,444.2	0.00	0.00	0.00
9,200.0	89.60	89.36	7,138.5	-417.4	1,460.3	1,493.9	0.00	0.00	0.00
9,250.0	89.60	89.36	7,138.9	-416.8	1,510.3	1,543.6	0.00	0.00	0.00
9,300.0	89.60	89.36	7,139.2	-416.3	1,560.3	1,593.3	0.00	0.00	0.00
9,350.0	89.60	89.36	7,139.6	-415.7	1,610.3	1,643.0	0.00	0.00	0.00
9,400.0	89.60	89.36	7,139.9	-415.2	1,660.3	1,692.7	0.00	0.00	0.00
9,450.0	89.60	89.36	7,140.3	-414.6	1,710.3	1,742.4	0.00	0.00	0.00
9,500.0	89.60	89.36	7,140.6	-414.0	1,760.3	1,792.1	0.00	0.00	0.00
9,550.0	89.60	89.36	7,140.9	-413.5	1,810.3	1,841.8	0.00	0.00	0.00
9,600.0	89.60	89.36	7,141.3	-412.9	1,860.3	1,891.5	0.00	0.00	0.00
9,650.0	89.60	89.36	7,141.6	-412.4	1,910.3	1,941.2	0.00	0.00	0.00
9,700.0	89.60	89.36	7,142.0	-411.8	1,960.3	1,991.0	0.00	0.00	0.00
9,750.0	89.60	89.36	7,142.3	-411.2	2,010.3	2,040.7	0.00	0.00	0.00
9,800.0	89.60	89.36	7,142.7	-410.7	2,060.3	2,090.4	0.00	0.00	0.00
9,850.0	89.60	89.36	7,143.0	-410.1	2,110.2	2,140.1	0.00	0.00	0.00
9,900.0	89.60	89.36	7,143.4	-409.6	2,160.2	2,189.8	0.00	0.00	0.00
9,950.0	89.60	89.36	7,143.7	-409.0	2,210.2	2,239.5	0.00	0.00	0.00
10,000.0	89.60	89.36	7,144.0	-408.4	2,260.2	2,289.2	0.00	0.00	0.00
10,050.0	89.60	89.36	7,144.4	-407.9	2,310.2	2,338.9	0.00	0.00	0.00
10,100.0	89.60	89.36	7,144.7	-407.3	2,360.2	2,388.6	0.00	0.00	0.00
10,150.0	89.60	89.36	7,145.1	-406.8	2,410.2	2,438.3	0.00	0.00	0.00
10,200.0	89.60	89.36	7,145.4	-406.2	2,460.2	2,488.0	0.00	0.00	0.00
10,250.0	89.60	89.36	7,145.8	-405.6	2,510.2	2,537.7	0.00	0.00	0.00
10,300.0	89.60	89.36	7,146.1	-405.1	2,560.2	2,587.4	0.00	0.00	0.00
10,350.0	89.60	89.36	7,146.5	-404.5	2,610.2	2,637.1	0.00	0.00	0.00
10,400.0	89.60	89.36	7,146.8	-403.9	2,660.2	2,686.8	0.00	0.00	0.00
10,450.0	89.60	89.36	7,147.2	-403.4	2,710.2	2,736.5	0.00	0.00	0.00
10,500.0	89.60	89.36	7,147.5	-402.8	2,760.2	2,786.2	0.00	0.00	0.00
10,550.0	89.60	89.36	7,147.8	-402.3	2,810.2	2,835.9	0.00	0.00	0.00
10,600.0	89.60	89.36	7,148.2	-401.7	2,860.2	2,885.7	0.00	0.00	0.00
10,650.0	89.60	89.36	7,148.5	-401.1	2,910.2	2,935.4	0.00	0.00	0.00
10,700.0	89.60	89.36	7,148.9	-400.6	2,960.2	2,985.1	0.00	0.00	0.00
10,750.0	89.60	89.36	7,149.2	-400.0	3,010.2	3,034.8	0.00	0.00	0.00
10,800.0	89.60	89.36	7,149.6	-399.5	3,060.2	3,084.5	0.00	0.00	0.00
10,850.0	89.60	89.36	7,149.9	-398.9	3,110.2	3,134.2	0.00	0.00	0.00
10,900.0	89.60	89.36	7,150.3	-398.3	3,160.2	3,183.9	0.00	0.00	0.00
10,950.0	89.60	89.36	7,150.6	-397.8	3,210.2	3,233.6	0.00	0.00	0.00

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Well:	Noble 5X-HNB-05-03-68	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Sidetrack plan 2 July 28 2018		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
11,000.0	89.60	89.36	7,150.9	-397.2	3,260.1	3,283.3	0.00	0.00	0.00	
11,050.0	89.60	89.36	7,151.3	-396.7	3,310.1	3,333.0	0.00	0.00	0.00	
11,100.0	89.60	89.36	7,151.6	-396.1	3,360.1	3,382.7	0.00	0.00	0.00	
11,150.0	89.60	89.36	7,152.0	-395.5	3,410.1	3,432.4	0.00	0.00	0.00	
11,200.0	89.60	89.36	7,152.3	-395.0	3,460.1	3,482.1	0.00	0.00	0.00	
11,250.0	89.60	89.36	7,152.7	-394.4	3,510.1	3,531.8	0.00	0.00	0.00	
11,300.0	89.60	89.36	7,153.0	-393.9	3,560.1	3,581.5	0.00	0.00	0.00	
11,350.0	89.60	89.36	7,153.4	-393.3	3,610.1	3,631.2	0.00	0.00	0.00	
11,400.0	89.60	89.36	7,153.7	-392.7	3,660.1	3,680.9	0.00	0.00	0.00	
11,450.0	89.60	89.36	7,154.1	-392.2	3,710.1	3,730.7	0.00	0.00	0.00	
11,500.0	89.60	89.36	7,154.4	-391.6	3,760.1	3,780.4	0.00	0.00	0.00	
11,550.0	89.60	89.36	7,154.7	-391.0	3,810.1	3,830.1	0.00	0.00	0.00	
11,600.0	89.60	89.36	7,155.1	-390.5	3,860.1	3,879.8	0.00	0.00	0.00	
11,650.0	89.60	89.36	7,155.4	-389.9	3,910.1	3,929.5	0.00	0.00	0.00	
11,700.0	89.60	89.36	7,155.8	-389.4	3,960.1	3,979.2	0.00	0.00	0.00	
11,732.4	89.60	89.36	7,156.0	-389.0	3,992.5	4,011.4	0.00	0.00	0.00	

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
SHL 2340'FSL & 810'FW - hit/miss target - Shape - Point	0.00	0.00	0.0	-0.1	50.0	1,335,718.93	3,130,213.48	40.254007	-105.033467	
HNB Sidetrack LP - plan misses target center - Point	0.00	0.00	7,142.5	-436.6	-190.0	1,335,282.44	3,129,973.53	40.252812	-105.034335	
HNB PBHL ST 1913'FSL - plan hits target center - Point	0.00	0.00	7,156.0	-389.0	3,992.5	1,335,330.03	3,134,155.85	40.252882	-105.019350	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
7,083.7	6,974.0	Sharon Springs		0.00		
7,182.2	7,037.5	Nio A Chalk		0.00		
7,304.6	7,097.0	Nio B		0.00		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
6,350.0	6,284.9	-396.2	-776.6	Start sidetrack	
6,635.0	6,569.9	-399.7	-776.3	10 /100 KOP	



Directional

NICKEL ROAD OPERATING

SEC.5-T3N-R68W

SEC 5 Noble Pad 5-3N-68W

Noble 5X-HNB-05-03-68

Wellbore #1

Sidetrack plan 2 July 28 2018

Anticollision Report

28 July, 2018



Directional

Company:	NICKEL ROAD OPERATING	Local Co-ordinate Reference:	Well Noble 5X-HNB-05-03-68
Project:	SEC.5-T3N-R68W	TVD Reference:	RKB @ 5116.8ft (Original Well Elev)
Reference Site:	SEC 5 Noble Pad 5-3N-68W	MD Reference:	RKB @ 5116.8ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Noble 5X-HNB-05-03-68	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Sidetrack plan 2 July 28 2018	Offset TVD Reference:	Offset Datum

Reference	Sidetrack plan 2 July 28 2018		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 500.0 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	7/28/2018			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
210.0	6,350.0	Survey #1 SURFACE (Wellbore #1)	MWD	MWD - Standard	
6,350.0	11,732.4	Sidetrack plan 2 July 28 2018 (Wellbore #	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						
SEC 5 Noble Pad 5-3N-68W						
Noble 5X-HC-05-03-68 - Wellbore #1 - Wellbore #1	0.0	0.0	50.0			
Noble 5X-HC-05-03-68 - Wellbore #1 - Wellbore #1	6,400.0	6,411.9	76.9	36.1	1.882	ES
Noble 5X-HC-05-03-68 - Wellbore #1 - Wellbore #1	11,732.9	11,974.0	275.1	122.7	1.805	SF
Noble 5X-HNB-05-03-68 - Wellbore #1 - Wellbore #1	6,350.0	6,350.0	0.3			
Noble 5X-HNB-05-03-68 - Wellbore #1 - Wellbore #1	11,300.0	11,225.8	54.6	-132.9	0.291	Level 1, SF
Noble 5X-HNB-05-03-68 - Wellbore #1 - Wellbore #1	11,600.0	11,524.2	59.9	-136.9	0.304	Level 1, ES
Noble 5X-HNC-05-03-68 - Wellbore #1 - Wellbore #1	0.0	0.0	24.8			
Noble 5X-HNC-05-03-68 - Wellbore #1 - Wellbore #1	11,732.9	11,688.7	274.5	32.4	1.134	Level 2, SF

Offset Design	SEC 5 Noble Pad 5-3N-68W - Noble 5X-HC-05-03-68 - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program:	210-MWD												Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Separation Factor	Warning					
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	90.13	-0.1	50.0	50.0					
100.0	100.0	99.7	99.7	0.1	0.1	-174.62	0.1	50.3	50.7	50.5	0.23	223.049		
200.0	200.0	199.4	199.4	0.2	0.2	-175.44	0.7	51.1	52.9	52.4	0.46	114.267		
300.0	299.9	300.4	300.3	0.5	0.4	-173.59	1.9	51.5	56.4	55.5	0.91	62.206		
400.0	399.7	401.9	401.9	0.7	0.6	-171.88	2.8	49.3	60.8	59.4	1.37	44.296		
500.0	499.2	504.3	504.1	1.0	0.9	-167.39	2.5	43.6	65.0	63.1	1.83	35.425		
600.0	598.4	606.4	605.8	1.3	1.1	-164.83	1.7	34.2	68.0	65.7	2.30	29.539		
700.0	697.3	708.6	707.1	1.6	1.4	-168.43	0.7	21.6	70.3	67.5	2.76	25.442		
800.0	796.1	809.9	807.2	1.9	1.7	-171.00	-1.9	6.4	70.2	67.0	3.20	21.947		
900.0	894.9	910.3	906.4	2.2	2.1	-171.78	-6.0	-9.5	69.0	65.4	3.65	18.928		
1,000.0	993.8	1,010.4	1,005.0	2.6	2.4	-179.55	-9.6	-26.0	67.4	63.3	4.11	16.392		
1,100.0	1,092.6	1,110.7	1,103.8	2.9	2.8	174.64	-13.9	-42.6	65.7	61.1	4.58	14.346		
1,200.0	1,191.5	1,210.3	1,201.9	3.2	3.1	175.94	-18.7	-58.9	63.9	58.8	5.06	12.619		
1,223.0	1,214.2	1,233.0	1,224.3	3.3	3.2	175.94	-20.0	-62.4	63.8	58.6	5.17	12.333		
1,300.0	1,290.1	1,309.2	1,299.6	3.6	3.4	176.70	-24.7	-72.9	64.8	59.3	5.52	11.737		
1,400.0	1,388.8	1,409.1	1,398.5	3.9	3.7	177.06	-31.2	-85.8	66.4	60.4	5.96	11.139		
1,500.0	1,487.7	1,508.8	1,497.2	4.3	4.1	178.36	-38.3	-98.6	67.0	60.6	6.40	10.463		
1,600.0	1,586.3	1,607.9	1,595.3	4.6	4.4	179.62	-44.2	-110.6	69.8	62.9	6.85	10.177		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	NICKEL ROAD OPERATING	Local Co-ordinate Reference:	Well Noble 5X-HNB-05-03-68
Project:	SEC.5-T3N-R68W	TVD Reference:	RKB @ 5116.8ft (Original Well Elev)
Reference Site:	SEC 5 Noble Pad 5-3N-68W	MD Reference:	RKB @ 5116.8ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Noble 5X-HNB-05-03-68	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Sidetrack plan 2 July 28 2018	Offset TVD Reference:	Offset Datum

Offset Design SEC 5 Noble Pad 5-3N-68W - Noble 5X-HC-05-03-68 - Wellbore #1 - Wellbore #1													Offset Site Error: 0.0 ft	
Survey Program: 210-MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
1,700.0	1,685.1	1,709.7	1,696.1	4.9	4.7	-178.22	-49.6	-123.9	71.5	64.2	7.32	9.762		
1,800.0	1,783.9	1,809.1	1,794.3	5.3	5.0	-173.21	-55.0	-137.8	71.6	63.8	7.80	9.181		
1,900.0	1,882.9	1,908.5	1,892.7	5.6	5.3	178.11	-58.5	-151.7	72.3	64.0	8.32	8.690		
2,000.0	1,981.8	2,008.6	1,991.8	5.9	5.7	177.77	-61.8	-165.9	73.1	64.3	8.86	8.250		
2,100.0	2,080.6	2,107.3	2,089.5	6.3	6.0	165.95	-65.0	-179.4	75.0	65.6	9.41	7.970		
2,200.0	2,179.3	2,206.4	2,187.8	6.6	6.3	164.49	-66.7	-191.5	79.8	69.9	9.94	8.030		
2,300.0	2,278.0	2,306.4	2,287.0	7.0	6.6	165.39	-68.6	-203.6	84.6	74.2	10.48	8.076		
2,400.0	2,376.8	2,406.3	2,386.2	7.3	6.9	165.44	-70.8	-215.5	89.0	78.0	11.02	8.073		
2,500.0	2,475.7	2,505.8	2,485.0	7.7	7.2	166.93	-73.2	-226.9	93.2	81.7	11.57	8.061		
2,600.0	2,574.7	2,606.8	2,585.3	8.0	7.5	166.39	-76.1	-238.8	96.6	84.5	12.14	7.963		
2,700.0	2,673.6	2,706.6	2,684.3	8.3	7.8	162.52	-79.4	-250.7	99.7	87.0	12.69	7.860		
2,800.0	2,772.3	2,806.0	2,783.0	8.7	8.1	164.09	-82.6	-262.0	105.0	91.8	13.20	7.951		
2,900.0	2,871.1	2,905.9	2,882.2	9.0	8.4	163.17	-85.3	-273.7	109.4	95.6	13.77	7.941		
3,000.0	2,969.7	3,007.5	2,983.1	9.4	8.7	156.64	-88.3	-286.1	114.3	100.0	14.31	7.986		
3,100.0	3,068.2	3,108.0	3,082.5	9.8	9.0	158.72	-92.2	-299.7	118.1	103.3	14.85	7.953		
3,200.0	3,166.8	3,208.6	3,182.1	10.1	9.4	159.40	-96.3	-313.4	121.6	106.1	15.41	7.886		
3,300.0	3,265.6	3,308.3	3,280.7	10.5	9.7	160.68	-100.3	-327.3	124.0	108.0	16.01	7.744		
3,400.0	3,364.4	3,408.0	3,379.4	10.8	10.0	163.60	-104.5	-341.0	126.4	109.8	16.63	7.600		
3,500.0	3,463.2	3,506.8	3,477.3	11.2	10.3	157.46	-108.0	-353.8	129.7	112.5	17.26	7.517		
3,600.0	3,561.9	3,607.8	3,577.2	11.5	10.6	156.95	-111.3	-368.0	133.2	115.3	17.89	7.445		
3,700.0	3,660.7	3,707.4	3,675.7	11.9	11.0	155.72	-114.1	-382.8	136.2	117.6	18.59	7.329		
3,800.0	3,759.5	3,806.3	3,773.5	12.2	11.3	153.99	-116.7	-397.2	139.6	120.3	19.30	7.233		
3,900.0	3,858.3	3,906.0	3,872.3	12.6	11.6	144.69	-119.5	-410.2	142.7	122.8	19.89	7.176		
4,000.0	3,957.2	4,006.6	3,972.1	12.9	11.9	147.64	-123.6	-421.9	145.4	125.1	20.36	7.142		
4,100.0	4,056.1	4,106.1	4,070.8	13.2	12.2	149.47	-127.7	-433.7	147.5	126.6	20.88	7.064		
4,200.0	4,155.1	4,210.1	4,173.9	13.6	12.6	146.66	-132.7	-446.8	148.4	127.0	21.42	6.930		
4,300.0	4,253.7	4,313.3	4,275.8	13.9	12.9	147.47	-140.7	-461.1	147.8	125.9	21.85	6.764		
4,400.0	4,352.5	4,412.1	4,373.4	14.3	13.2	148.51	-149.3	-473.4	146.4	124.2	22.21	6.594		
4,500.0	4,451.5	4,515.3	4,475.5	14.6	13.6	151.53	-160.2	-484.5	143.6	121.2	22.43	6.402		
4,600.0	4,550.3	4,620.9	4,579.2	15.0	13.9	159.56	-176.1	-496.6	138.9	116.4	22.51	6.169		
4,700.0	4,649.0	4,721.6	4,677.5	15.3	14.3	164.11	-194.3	-508.6	132.7	110.2	22.53	5.891		
4,800.0	4,747.9	4,820.9	4,774.4	15.7	14.7	169.06	-211.7	-521.4	126.0	103.4	22.63	5.568		
4,900.0	4,846.9	4,917.2	4,868.8	16.0	15.0	174.99	-226.1	-533.8	120.0	97.1	22.86	5.249		
5,000.0	4,946.0	5,017.1	4,966.9	16.3	15.4	178.72	-240.3	-546.0	115.6	92.5	23.13	4.998		
5,100.0	5,045.0	5,117.7	5,065.8	16.6	15.7	176.43	-254.4	-558.2	111.5	88.1	23.42	4.760		
5,200.0	5,143.9	5,218.1	5,164.0	17.0	16.1	-178.01	-269.7	-571.8	106.4	82.7	23.75	4.481		
5,300.0	5,242.9	5,318.0	5,261.9	17.3	16.5	-174.01	-285.1	-584.3	102.8	78.6	24.17	4.254		
5,400.0	5,341.7	5,417.9	5,359.8	17.6	16.9	-168.04	-300.2	-598.1	99.1	74.3	24.71	4.009		
5,500.0	5,440.9	5,518.1	5,457.8	18.0	17.3	-162.72	-315.4	-611.9	93.3	68.0	25.35	3.680		
5,600.0	5,540.2	5,616.0	5,553.6	18.2	17.6	-165.29	-330.7	-624.7	87.4	61.2	26.26	3.330		
5,700.0	5,639.4	5,717.0	5,652.6	18.5	18.0	-162.86	-346.4	-637.9	83.7	56.1	27.60	3.033		
5,800.0	5,738.4	5,817.5	5,750.5	18.9	18.4	-152.80	-362.7	-653.1	81.0	51.7	29.31	2.763		
5,879.0	5,816.6	5,894.6	5,826.0	19.1	18.8	-140.60	-374.6	-664.1	80.1	49.5	30.59	2.618		
5,900.0	5,837.4	5,915.1	5,846.0	19.2	18.8	-137.62	-377.6	-666.8	80.0	49.1	30.93	2.587		
6,000.0	5,936.1	6,013.9	5,943.0	19.5	19.2	-130.38	-392.4	-678.2	81.4	49.2	32.29	2.523		
6,100.0	6,035.4	6,113.6	6,040.8	19.8	19.6	-118.37	-408.0	-689.8	80.5	46.5	34.04	2.366		
6,200.0	6,135.1	6,213.1	6,138.2	20.1	20.0	-108.97	-424.6	-701.7	78.7	42.4	36.36	2.165		
6,300.0	6,234.9	6,313.2	6,235.9	20.3	20.4	-82.44	-441.6	-714.9	76.9	38.0	38.89	1.977		
6,350.8	6,285.7	6,363.4	6,285.0	20.3	20.6	-66.38	-449.7	-722.0	76.4	36.4	40.02	1.909		
6,400.0	6,334.9	6,411.9	6,332.5	20.4	20.8	-35.16	-457.1	-728.8	76.9	36.1	40.87	1.882 ES		
6,500.0	6,434.9	6,509.8	6,428.3	20.4	21.1	-21.79	-471.7	-742.1	81.5	40.0	41.48	1.965		
6,600.0	6,534.9	6,608.8	6,525.5	20.4	21.5	-10.83	-485.9	-754.7	89.7	48.5	41.17	2.179		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	NICKEL ROAD OPERATING	Local Co-ordinate Reference:	Well Noble 5X-HNB-05-03-68
Project:	SEC.5-T3N-R68W	TVD Reference:	RKB @ 5116.8ft (Original Well Elev)
Reference Site:	SEC 5 Noble Pad 5-3N-68W	MD Reference:	RKB @ 5116.8ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Noble 5X-HNB-05-03-68	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Sidetrack plan 2 July 28 2018	Offset TVD Reference:	Offset Datum

Offset Design												SEC 5 Noble Pad 5-3N-68W - Noble 5X-HC-05-03-68 - Wellbore #1 - Wellbore #1		Offset Site Error: 0.0 ft	
Survey Program: 210-MWD												Offset Well Error: 0.0 ft			
Reference		Offset		Semi Major Axis			Distance					Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)		Separation Factor		
6,700.0	6,634.7	6,708.6	6,624.1	20.4	21.8	75.01	-498.0	-763.8	98.2	57.8	40.44	2.430			
6,800.0	6,732.6	6,799.1	6,713.6	20.2	22.1	88.42	-511.5	-765.4	110.9	72.1	38.83	2.857			
6,900.0	6,825.5	6,893.3	6,805.7	20.0	22.3	99.34	-529.8	-759.0	132.4	95.9	36.56	3.622			
7,000.0	6,910.6	7,007.9	6,916.4	19.6	22.3	110.59	-547.4	-735.9	155.4	121.9	33.46	4.644			
7,100.0	6,985.4	7,122.4	7,025.1	19.3	22.1	122.90	-551.9	-700.6	176.3	147.0	29.32	6.012			
7,200.0	7,047.6	7,232.9	7,125.7	19.0	21.8	134.37	-549.3	-655.2	203.4	178.8	24.61	8.268			
7,300.0	7,095.2	7,375.8	7,242.1	18.8	21.3	146.20	-542.0	-573.4	235.5	216.6	18.88	12.471			
7,400.0	7,126.9	7,617.2	7,344.9	18.9	20.5	154.84	-529.4	-361.8	241.2	226.6	14.61	16.511			
7,500.0	7,141.6	7,735.7	7,348.3	19.4	20.6	153.96	-534.8	-243.5	230.0	213.5	16.50	13.938			
7,549.5	7,143.7	7,785.7	7,348.5	19.8	20.7	153.94	-536.4	-193.5	228.0	210.5	17.50	13.031			
7,600.0	7,141.6	7,836.8	7,348.7	20.3	21.1	154.38	-537.7	-142.4	229.6	211.3	18.33	12.526			
7,700.0	7,139.9	7,937.5	7,348.8	21.7	22.1	154.02	-540.1	-41.8	232.4	212.2	20.23	11.485			
7,800.0	7,138.1	8,034.7	7,349.3	23.4	23.4	153.47	-541.8	55.4	236.1	213.8	22.33	10.573			
7,900.0	7,136.4	8,132.5	7,351.8	25.3	25.1	153.24	-543.1	153.1	241.4	217.0	24.47	9.868			
8,000.0	7,134.6	8,237.9	7,354.5	27.4	27.1	153.33	-542.9	258.5	246.1	219.5	26.64	9.239			
8,100.0	7,132.9	8,344.3	7,355.3	29.6	29.3	153.76	-540.0	364.9	248.0	219.3	28.69	8.641			
8,200.0	7,131.7	8,444.6	7,354.5	31.9	31.5	154.02	-537.2	465.2	247.9	217.1	30.84	8.037			
8,300.0	7,132.3	8,544.6	7,353.8	34.2	33.8	154.19	-534.6	565.1	246.1	212.9	33.13	7.427			
8,400.0	7,133.0	8,641.1	7,353.4	36.7	36.0	154.59	-531.1	661.5	244.0	208.8	35.21	6.929			
8,412.7	7,133.1	8,652.3	7,353.5	37.0	36.3	154.62	-530.8	672.7	244.0	208.5	35.48	6.876			
8,500.0	7,133.7	8,735.4	7,355.5	39.1	38.3	154.74	-530.0	755.9	245.3	207.8	37.49	6.543			
8,600.0	7,134.4	8,837.7	7,358.0	41.7	40.8	155.14	-527.8	858.1	246.4	206.8	39.65	6.216			
8,700.0	7,135.1	8,934.1	7,360.2	44.2	43.2	155.44	-526.0	954.4	247.6	205.8	41.80	5.924			
8,800.0	7,135.8	9,038.8	7,362.2	46.8	45.9	155.18	-526.6	1,059.1	249.5	204.8	44.68	5.584			
8,900.0	7,136.5	9,139.1	7,362.2	49.4	48.4	154.74	-527.3	1,159.4	249.7	201.9	47.78	5.225			
9,000.0	7,137.1	9,239.9	7,362.2	52.0	51.1	154.34	-527.8	1,260.2	249.7	198.8	50.90	4.906			
9,100.0	7,137.8	9,340.9	7,362.2	54.7	53.7	154.08	-527.6	1,361.2	249.5	195.6	53.91	4.628			
9,200.0	7,138.5	9,440.7	7,362.0	57.3	56.3	153.96	-526.6	1,461.0	248.7	192.0	56.76	4.382			
9,229.1	7,138.7	9,468.8	7,362.1	58.1	57.1	153.90	-526.5	1,489.1	248.7	191.1	57.61	4.317			
9,300.0	7,139.2	9,537.6	7,362.5	60.0	58.9	153.75	-526.4	1,557.9	249.0	189.3	59.72	4.169			
9,400.0	7,139.9	9,634.7	7,363.8	62.7	61.5	153.47	-527.0	1,655.0	250.4	187.5	62.83	3.985			
9,500.0	7,140.6	9,738.4	7,364.3	65.4	64.2	152.52	-530.4	1,758.6	252.2	185.0	67.15	3.755			
9,600.0	7,141.3	9,842.0	7,362.9	68.1	67.0	151.61	-532.7	1,862.2	251.9	180.3	71.56	3.520			
9,700.0	7,142.0	9,943.8	7,361.0	70.8	69.8	150.95	-533.4	1,963.9	250.5	174.9	75.64	3.312			
9,732.2	7,142.2	9,972.1	7,360.6	71.6	70.5	150.79	-533.6	1,992.3	250.2	173.4	76.82	3.258			
9,800.0	7,142.7	10,033.2	7,361.4	73.5	72.2	150.57	-534.2	2,053.4	251.3	172.2	79.12	3.176			
9,900.0	7,143.4	10,136.4	7,363.6	76.2	75.0	150.46	-534.4	2,156.6	253.2	170.8	82.34	3.074			
10,000.0	7,144.0	10,237.0	7,365.8	78.9	77.7	150.58	-533.6	2,257.1	254.7	169.6	85.10	2.993			
10,100.0	7,144.7	10,341.0	7,366.5	81.7	80.5	150.37	-533.4	2,361.1	255.1	166.5	88.58	2.880			
10,200.0	7,145.4	10,441.6	7,364.7	84.4	83.3	149.54	-535.1	2,461.7	254.4	161.0	93.34	2.725			
10,246.7	7,145.7	10,486.8	7,364.1	85.7	84.5	149.22	-535.7	2,506.9	254.2	158.8	95.41	2.664			
10,300.0	7,146.1	10,536.9	7,364.1	87.2	85.9	148.95	-536.4	2,557.0	254.5	156.9	97.61	2.607			
10,400.0	7,146.8	10,638.3	7,364.8	89.9	88.7	148.47	-537.7	2,658.3	255.8	154.0	101.79	2.513			
10,500.0	7,147.5	10,735.7	7,365.6	92.7	91.3	148.11	-538.6	2,755.7	257.0	151.2	105.72	2.431			
10,600.0	7,148.2	10,837.8	7,367.1	95.4	94.1	147.95	-538.8	2,857.8	258.3	149.0	109.33	2.363			
10,700.0	7,148.9	10,937.7	7,368.0	98.2	96.9	147.79	-538.7	2,957.7	259.0	146.1	112.89	2.294			
10,800.0	7,149.6	11,035.1	7,369.6	100.9	99.6	147.54	-539.5	3,055.1	260.9	144.2	116.68	2.236			
10,900.0	7,150.3	11,133.5	7,371.6	103.7	102.3	147.47	-539.6	3,153.4	262.6	142.6	120.07	2.187			
11,000.0	7,150.9	11,231.4	7,375.0	106.4	105.0	147.42	-540.5	3,251.3	266.1	142.7	123.39	2.156			
11,100.0	7,151.6	11,334.3	7,378.1	109.2	107.8	147.42	-540.9	3,354.1	268.9	142.2	126.65	2.123			
11,200.0	7,152.3	11,434.8	7,380.6	112.0	110.6	147.43	-540.9	3,454.6	271.0	141.1	129.89	2.086			
11,300.0	7,153.0	11,535.8	7,382.1	114.8	113.4	147.13	-542.0	3,555.6	272.9	138.9	133.98	2.036			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	NICKEL ROAD OPERATING	Local Co-ordinate Reference:	Well Noble 5X-HNB-05-03-68
Project:	SEC.5-T3N-R68W	TVD Reference:	RKB @ 5116.8ft (Original Well Elev)
Reference Site:	SEC 5 Noble Pad 5-3N-68W	MD Reference:	RKB @ 5116.8ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Noble 5X-HNB-05-03-68	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Sidetrack plan 2 July 28 2018	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
SEC 5 Noble Pad 5-3N-68W - Noble 5X-HC-05-03-68 - Wellbore #1 - Wellbore #1												Offset Well Error:	0.0 ft
Survey Program: 210-MWD													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)		
11,400.0	7,153.7	11,638.3	7,382.7	117.5	116.2	146.70	-543.2	3,658.1	274.0	135.5	138.56	1.978	
11,500.0	7,154.4	11,738.9	7,383.2	120.3	119.0	146.41	-543.6	3,758.7	274.7	132.0	142.71	1.925	
11,600.0	7,155.1	11,839.1	7,383.7	123.1	121.8	146.17	-543.7	3,858.8	275.2	128.4	146.75	1.875	
11,700.0	7,155.8	11,942.2	7,383.6	125.8	124.7	145.85	-543.9	3,962.0	275.3	124.2	151.13	1.822	
11,732.9	7,156.0	11,974.0	7,383.5	126.8	125.5	145.79	-543.7	3,993.8	275.1	122.7	152.41	1.805 SF	

Company:	NICKEL ROAD OPERATING	Local Co-ordinate Reference:	Well Noble 5X-HNB-05-03-68
Project:	SEC.5-T3N-R68W	TVD Reference:	RKB @ 5116.8ft (Original Well Elev)
Reference Site:	SEC 5 Noble Pad 5-3N-68W	MD Reference:	RKB @ 5116.8ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Noble 5X-HNB-05-03-68	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Sidetrack plan 2 July 28 2018	Offset TVD Reference:	Offset Datum

Offset Design SEC 5 Noble Pad 5-3N-68W - Noble 5X-HNB-05-03-68 - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 210-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
6,350.0	6,284.9	6,350.0	6,284.9	0.0	0.0	-154.78	-396.2	-776.6	0.3					
6,400.0	6,334.9	6,400.0	6,334.9	0.1	0.1	-131.22	-396.4	-776.1	0.5	0.4	0.15	3.470		
6,500.0	6,434.9	6,500.0	6,434.9	0.1	0.3	-127.62	-397.0	-775.2	1.6	1.3	0.31	5.275		
6,600.0	6,534.9	6,599.0	6,533.6	0.1	0.4	-87.96	-399.1	-767.7	8.7	8.2	0.53	16.605		
6,700.0	6,634.7	6,693.9	6,625.5	0.1	0.6	-8.74	-400.8	-744.8	29.4	28.7	0.66	44.598		
6,800.0	6,732.6	6,787.5	6,712.2	0.2	0.7	-8.99	-399.6	-709.7	47.9	47.2	0.71	67.850		
6,900.0	6,825.5	6,880.5	6,794.0	0.3	0.8	-13.47	-395.8	-665.7	60.5	59.7	0.77	78.321		
7,000.0	6,910.6	6,972.0	6,868.9	0.5	1.1	-18.20	-391.8	-613.4	68.2	67.1	1.05	64.780		
7,100.0	6,985.4	7,064.5	6,937.0	0.8	1.4	-22.20	-389.7	-551.0	71.8	70.4	1.47	48.706		
7,200.0	7,047.6	7,155.8	6,996.7	1.3	1.7	-26.58	-389.7	-482.1	69.8	67.9	1.96	35.610		
7,300.0	7,095.2	7,245.2	7,045.2	1.9	2.2	-34.09	-387.7	-407.0	66.7	64.2	2.46	27.058		
7,400.0	7,126.9	7,337.4	7,083.0	2.7	2.7	-45.00	-384.1	-323.1	64.5	61.7	2.75	23.425		
7,500.0	7,141.6	7,430.9	7,109.9	3.7	3.2	-59.17	-381.0	-233.7	62.0	59.7	2.33	26.614		
7,531.3	7,143.1	7,460.4	7,115.6	4.1	3.4	-63.49	-380.4	-204.7	61.8	59.6	2.18	28.360		
7,600.0	7,141.6	7,525.7	7,122.6	5.0	3.9	-72.28	-378.8	-139.9	62.6	60.4	2.18	28.703		
7,700.0	7,139.9	7,623.7	7,124.9	6.9	4.9	-76.55	-375.6	-41.9	64.5	60.8	3.66	17.627		
7,800.0	7,138.1	7,727.4	7,126.1	11.7	6.3	-79.07	-374.5	61.7	63.0	56.2	6.79	9.278		
7,900.0	7,136.4	7,826.9	7,127.4	13.8	8.7	-81.29	-376.0	161.2	59.1	48.5	10.57	5.587		
8,000.0	7,134.6	7,925.9	7,128.5	15.5	12.3	-83.84	-376.0	260.2	56.7	42.1	14.62	3.879		
8,100.0	7,132.9	8,025.4	7,129.5	17.0	14.5	-86.49	-375.1	359.7	55.5	36.4	19.04	2.914		
8,200.0	7,131.7	8,125.4	7,129.6	18.6	16.3	-87.88	-373.6	459.7	55.1	31.1	23.91	2.303		
8,224.2	7,131.7	8,149.7	7,129.6	19.0	16.7	-87.74	-373.3	484.0	55.0	30.0	25.06	2.196		
8,300.0	7,132.3	8,225.2	7,129.0	20.3	18.1	-86.55	-372.3	559.4	55.3	26.6	28.64	1.930		
8,400.0	7,133.0	8,326.3	7,129.1	22.0	20.0	-85.94	-371.3	660.6	55.3	21.8	33.46	1.651		
8,500.0	7,133.7	8,426.7	7,131.5	23.9	22.0	-87.68	-371.9	760.9	53.4	14.9	38.45	1.388 Level 3		
8,600.0	7,134.4	8,526.7	7,133.4	25.9	24.1	-88.90	-373.0	860.9	51.2	7.7	43.51	1.176 Level 2		
8,700.0	7,135.1	8,626.6	7,134.8	28.0	26.3	-89.65	-373.6	960.7	49.4	0.8	48.61	1.017 Level 2		
8,800.0	7,135.8	8,726.9	7,134.2	30.2	28.7	-88.12	-375.3	1,061.0	46.6	-7.1	53.74	0.867 Level 1		
8,900.0	7,136.5	8,826.6	7,133.6	32.4	31.0	-86.38	-376.0	1,160.8	44.9	-14.0	58.85	0.763 Level 1		
9,000.0	7,137.1	8,925.8	7,132.6	34.8	33.4	-83.92	-377.0	1,260.0	42.9	-21.0	63.86	0.671 Level 1		
9,004.3	7,137.2	8,930.0	7,132.6	34.9	33.5	-83.85	-377.0	1,264.1	42.9	-21.2	64.07	0.669 Level 1		
9,100.0	7,137.8	9,025.1	7,132.1	37.2	35.8	-82.49	-374.9	1,359.2	44.0	-24.9	68.91	0.639 Level 1		
9,200.0	7,138.5	9,125.5	7,131.9	39.6	38.2	-81.55	-372.7	1,459.6	45.2	-28.9	74.03	0.610 Level 1		
9,300.0	7,139.2	9,225.3	7,134.3	42.1	40.7	-83.88	-370.6	1,559.3	46.0	-33.7	79.67	0.577 Level 1		
9,400.0	7,139.9	9,325.2	7,135.5	44.6	43.2	-84.65	-368.2	1,659.1	47.2	-38.0	85.11	0.554 Level 1		
9,500.0	7,140.6	9,424.5	7,137.0	47.2	45.7	-85.85	-364.9	1,758.4	49.3	-41.3	90.59	0.544 Level 1		
9,600.0	7,141.3	9,523.9	7,139.5	49.8	48.3	-88.02	-360.6	1,857.7	52.4	-43.7	96.13	0.545 Level 1		
9,700.0	7,142.0	9,624.5	7,141.6	52.4	50.9	-89.67	-355.4	1,958.2	56.4	-45.2	101.61	0.555 Level 1		
9,800.0	7,142.7	9,725.7	7,143.5	55.0	53.6	-90.84	-353.4	2,059.3	57.3	-49.7	107.07	0.536 Level 1		
9,900.0	7,143.4	9,825.1	7,144.6	57.7	56.2	-91.20	-351.4	2,158.6	58.2	-54.3	112.48	0.517 Level 1		
10,000.0	7,144.0	9,925.0	7,144.6	60.3	58.8	-90.54	-348.4	2,258.5	60.1	-57.9	117.95	0.509 Level 1		
10,100.0	7,144.7	10,026.7	7,146.2	63.0	61.6	-91.35	-346.9	2,360.2	60.4	-63.0	123.43	0.490 Level 1		
10,200.0	7,145.4	10,126.7	7,148.0	65.7	64.3	-92.43	-346.9	2,460.2	59.4	-69.5	128.84	0.461 Level 1		
10,300.0	7,146.1	10,226.4	7,147.9	68.4	67.0	-91.79	-346.6	2,559.9	58.5	-75.9	134.36	0.435 Level 1		
10,357.0	7,146.5	10,283.0	7,147.8	70.0	68.5	-91.27	-346.1	2,616.5	58.3	-79.2	137.51	0.424 Level 1		
10,400.0	7,146.8	10,326.0	7,147.8	71.1	69.7	-90.93	-345.6	2,659.5	58.4	-81.5	139.89	0.417 Level 1		
10,500.0	7,147.5	10,425.8	7,147.9	73.8	72.4	-90.43	-344.3	2,759.3	58.5	-86.9	145.39	0.403 Level 1		
10,600.0	7,148.2	10,525.5	7,148.8	76.6	75.1	-90.60	-342.4	2,858.9	59.3	-91.6	150.88	0.393 Level 1		
10,700.0	7,148.9	10,626.7	7,150.5	79.3	77.9	-91.54	-340.9	2,960.1	59.7	-96.7	156.38	0.382 Level 1		
10,800.0	7,149.6	10,727.5	7,151.7	82.0	80.7	-92.14	-341.7	3,060.9	57.8	-104.1	161.87	0.357 Level 1		
10,900.0	7,150.3	10,826.6	7,152.9	84.8	83.4	-92.74	-342.2	3,159.9	56.2	-111.1	167.29	0.336 Level 1		
11,000.0	7,150.9	10,926.8	7,153.7	87.5	86.2	-92.91	-342.2	3,260.2	55.1	-117.7	172.80	0.319 Level 1		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	NICKEL ROAD OPERATING	Local Co-ordinate Reference:	Well Noble 5X-HNB-05-03-68
Project:	SEC.5-T3N-R68W	TVD Reference:	RKB @ 5116.8ft (Original Well Elev)
Reference Site:	SEC 5 Noble Pad 5-3N-68W	MD Reference:	RKB @ 5116.8ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Noble 5X-HNB-05-03-68	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Sidetrack plan 2 July 28 2018	Offset TVD Reference:	Offset Datum

Offset Design		SEC 5 Noble Pad 5-3N-68W - Noble 5X-HNB-05-03-68 - Wellbore #1 - Wellbore #1										Offset Site Error:		0.0 ft	
Survey Program:		210-MWD										Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
11,100.0	7,151.6	11,026.3	7,154.1	90.2	88.9	-92.55	-341.8	3,359.7	54.4	-124.0	178.36	0.305	Level 1		
11,144.1	7,151.9	11,070.2	7,155.0	91.5	90.1	-93.28	-341.4	3,403.6	54.3	-126.4	180.68	0.301	Level 1		
11,200.0	7,152.3	11,126.1	7,157.3	93.0	91.6	-95.25	-340.8	3,459.4	54.4	-128.9	183.34	0.297	Level 1		
11,300.0	7,153.0	11,225.8	7,161.4	95.7	94.4	-98.87	-339.9	3,559.1	54.6	-132.9	187.48	0.291	Level 1, SF		
11,400.0	7,153.7	11,325.5	7,165.3	98.5	97.1	-102.02	-338.1	3,658.6	55.9	-135.3	191.16	0.292	Level 1		
11,500.0	7,154.4	11,425.4	7,169.4	101.3	99.9	-105.13	-336.2	3,758.4	57.4	-136.8	194.24	0.296	Level 1		
11,600.0	7,155.1	11,524.2	7,173.6	104.0	102.6	-107.99	-333.5	3,857.1	59.9	-136.9	196.88	0.304	Level 1, ES		
11,700.0	7,155.8	11,623.9	7,178.2	106.8	105.3	-110.57	-329.6	3,956.6	64.0	-135.3	199.29	0.321	Level 1		
11,732.9	7,156.0	11,656.7	7,179.8	107.7	106.2	-111.41	-328.2	3,989.4	65.4	-134.6	199.98	0.327	Level 1		

Company:	NICKEL ROAD OPERATING	Local Co-ordinate Reference:	Well Noble 5X-HNB-05-03-68
Project:	SEC.5-T3N-R68W	TVD Reference:	RKB @ 5116.8ft (Original Well Elev)
Reference Site:	SEC 5 Noble Pad 5-3N-68W	MD Reference:	RKB @ 5116.8ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Noble 5X-HNB-05-03-68	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Sidetrack plan 2 July 28 2018	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 210-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	90.58	-0.3	24.8	24.8					
100.0	100.0	99.9	99.9	0.1	0.1	-175.05	0.2	25.1	25.5	25.3	0.23	111.951		
200.0	200.0	199.7	199.7	0.2	0.2	-178.21	1.6	25.8	27.6	27.1	0.46	59.449		
300.0	299.9	300.4	300.3	0.5	0.4	-179.04	3.7	25.6	30.8	29.9	0.91	33.772		
400.0	399.7	401.4	401.3	0.7	0.7	179.76	5.8	22.2	34.4	33.0	1.38	24.812		
500.0	499.2	502.6	502.3	1.0	0.9	-178.80	7.0	15.3	38.0	36.2	1.86	20.489		
600.0	598.4	604.1	603.2	1.3	1.2	-178.16	6.4	4.9	40.8	38.5	2.33	17.511		
700.0	697.3	705.5	703.6	1.6	1.5	178.04	3.6	-8.6	42.5	39.7	2.80	15.199		
800.0	796.1	805.8	802.6	1.9	1.8	174.61	-0.4	-24.3	42.4	39.1	3.26	13.002		
836.0	831.7	841.8	838.1	2.0	1.9	173.76	-1.8	-29.9	42.3	38.9	3.43	12.346		
900.0	894.9	905.5	901.1	2.2	2.1	172.09	-4.4	-39.6	42.4	38.7	3.73	11.374		
1,000.0	993.8	1,005.3	999.7	2.6	2.4	163.82	-8.5	-54.3	43.2	38.9	4.23	10.199		
1,100.0	1,092.6	1,105.1	1,098.4	2.9	2.7	158.34	-12.6	-68.5	44.1	39.4	4.73	9.331		
1,200.0	1,191.5	1,205.0	1,197.2	3.2	3.0	159.59	-16.4	-82.4	45.4	40.1	5.25	8.642		
1,300.0	1,290.1	1,304.9	1,296.1	3.6	3.3	158.53	-20.0	-96.5	48.0	42.2	5.80	8.275		
1,400.0	1,388.8	1,404.6	1,394.8	3.9	3.7	156.18	-23.3	-110.5	50.8	44.4	6.35	7.993		
1,500.0	1,487.7	1,504.6	1,493.8	4.3	4.0	154.53	-26.4	-124.0	53.2	46.3	6.91	7.692		
1,600.0	1,586.3	1,604.5	1,592.7	4.6	4.3	154.40	-30.1	-137.5	56.2	48.8	7.46	7.541		
1,700.0	1,685.1	1,704.0	1,691.4	4.9	4.6	156.74	-33.7	-149.8	59.8	51.9	7.98	7.496		
1,800.0	1,783.9	1,804.5	1,790.9	5.3	4.9	160.80	-36.6	-163.1	63.4	54.8	8.61	7.367		
1,900.0	1,882.9	1,904.7	1,889.9	5.6	5.3	150.81	-39.2	-178.6	66.1	56.8	9.38	7.053		
2,000.0	1,981.8	2,004.8	1,988.8	5.9	5.6	150.15	-42.4	-193.8	68.3	58.2	10.10	6.768		
2,100.0	2,080.6	2,105.8	2,088.3	6.3	6.0	136.84	-45.9	-210.8	69.8	58.9	10.89	6.408		
2,200.0	2,179.3	2,206.1	2,186.8	6.6	6.4	133.79	-50.0	-228.8	70.4	58.7	11.69	6.025		
2,300.0	2,278.0	2,305.8	2,284.9	7.0	6.7	133.13	-54.2	-246.5	71.3	58.8	12.49	5.709		
2,400.0	2,376.8	2,405.9	2,383.4	7.3	7.1	131.38	-58.5	-263.8	72.5	59.1	13.31	5.443		
2,500.0	2,475.7	2,506.2	2,482.1	7.7	7.5	131.18	-63.4	-280.6	73.3	59.1	14.13	5.187		
2,600.0	2,574.7	2,604.6	2,579.1	8.0	7.9	128.91	-68.0	-296.7	74.9	60.0	14.95	5.009		
2,700.0	2,673.6	2,703.8	2,676.8	8.3	8.2	122.57	-70.4	-313.6	78.7	62.9	15.81	4.981		
2,800.0	2,772.3	2,803.9	2,775.6	8.7	8.6	122.98	-72.8	-330.0	83.6	67.0	16.57	5.041		
2,900.0	2,871.1	2,904.0	2,874.4	9.0	8.9	121.64	-75.7	-345.4	87.9	70.6	17.33	5.074		
3,000.0	2,969.7	3,004.1	2,973.1	9.4	9.3	114.58	-78.7	-361.6	91.8	73.8	18.06	5.084		
3,100.0	3,068.2	3,104.7	3,072.3	9.8	9.7	116.64	-82.2	-377.9	95.4	76.6	18.79	5.079		
3,200.0	3,166.8	3,204.9	3,171.3	10.1	10.0	117.94	-86.2	-392.8	98.7	79.2	19.47	5.067		
3,300.0	3,265.6	3,305.0	3,270.3	10.5	10.4	120.10	-90.5	-407.0	101.8	81.6	20.15	5.052		
3,400.0	3,364.4	3,404.1	3,368.4	10.8	10.7	123.81	-94.5	-420.9	105.4	84.6	20.82	5.064		
3,500.0	3,463.2	3,504.0	3,467.0	11.2	11.0	117.65	-97.9	-436.2	110.1	88.5	21.56	5.106		
3,600.0	3,561.9	3,604.3	3,566.1	11.5	11.4	117.75	-101.6	-451.5	113.8	91.6	22.27	5.112		
3,700.0	3,660.7	3,704.1	3,664.6	11.9	11.7	117.44	-105.4	-466.7	117.7	94.7	22.99	5.120		
3,800.0	3,759.5	3,804.1	3,763.4	12.2	12.1	116.61	-109.2	-481.6	121.6	97.9	23.70	5.131		
3,900.0	3,858.3	3,904.3	3,862.6	12.6	12.4	107.68	-113.1	-495.9	123.7	99.3	24.38	5.074		
4,000.0	3,957.2	4,004.8	3,961.8	12.9	12.8	109.78	-117.4	-510.9	125.0	100.0	25.07	4.987		
4,100.0	4,056.1	4,104.3	4,060.2	13.2	13.1	110.83	-121.7	-525.7	126.4	100.6	25.78	4.902		
4,200.0	4,155.1	4,204.4	4,159.2	13.6	13.5	107.56	-125.7	-539.9	128.3	101.8	26.48	4.843		
4,300.0	4,253.7	4,304.8	4,258.5	13.9	13.8	108.21	-130.0	-553.8	129.7	102.6	27.11	4.784		
4,400.0	4,352.5	4,403.3	4,355.9	14.3	14.1	108.06	-133.9	-567.8	131.3	103.6	27.77	4.729		
4,500.0	4,451.5	4,502.9	4,454.2	14.6	14.5	107.99	-137.1	-583.2	133.4	104.9	28.50	4.682		
4,600.0	4,550.3	4,602.7	4,552.8	15.0	14.8	112.32	-140.1	-598.5	137.0	107.8	29.20	4.693		
4,700.0	4,649.0	4,703.0	4,652.0	15.3	15.2	113.09	-143.2	-613.0	141.4	111.5	29.88	4.730		
4,800.0	4,747.9	4,803.3	4,751.3	15.7	15.5	114.37	-146.5	-627.1	145.2	114.7	30.56	4.752		
4,900.0	4,846.9	4,904.0	4,850.9	16.0	15.9	116.82	-150.3	-641.9	148.7	117.4	31.28	4.752		
5,000.0	4,946.0	5,004.3	4,950.1	16.3	16.2	117.53	-154.5	-655.8	152.4	120.5	31.96	4.769		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	NICKEL ROAD OPERATING	Local Co-ordinate Reference:	Well Noble 5X-HNB-05-03-68
Project:	SEC.5-T3N-R68W	TVD Reference:	RKB @ 5116.8ft (Original Well Elev)
Reference Site:	SEC 5 Noble Pad 5-3N-68W	MD Reference:	RKB @ 5116.8ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Noble 5X-HNB-05-03-68	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Sidetrack plan 2 July 28 2018	Offset TVD Reference:	Offset Datum

Offset Design SEC 5 Noble Pad 5-3N-68W - Noble 5X-HNC-05-03-68 - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 210-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,100.0	5,045.0	5,103.3	5,048.0	16.6	16.5	111.84	-158.4	-669.5	156.0	123.3	32.65	4.777		
5,200.0	5,143.9	5,202.8	5,146.3	17.0	16.9	113.11	-162.1	-684.9	159.7	126.3	33.36	4.787		
5,300.0	5,242.9	5,303.2	5,245.7	17.3	17.2	112.95	-165.7	-698.8	163.9	129.8	34.02	4.816		
5,400.0	5,341.7	5,401.4	5,342.6	17.6	17.5	114.95	-168.9	-713.9	169.0	134.3	34.72	4.867		
5,500.0	5,440.9	5,501.9	5,441.7	18.0	17.9	115.09	-172.0	-729.9	174.2	138.7	35.48	4.911		
5,600.0	5,540.2	5,603.0	5,541.8	18.2	18.3	106.04	-175.4	-744.4	177.8	141.6	36.19	4.913		
5,700.0	5,639.4	5,702.1	5,640.0	18.5	18.6	101.26	-178.7	-756.7	179.6	142.8	36.81	4.879		
5,800.0	5,738.4	5,802.0	5,739.3	18.9	18.9	104.98	-181.2	-767.2	182.4	145.0	37.36	4.882		
5,900.0	5,837.4	5,899.5	5,836.4	19.2	19.1	115.80	-182.7	-776.2	187.5	149.6	37.84	4.954		
6,000.0	5,936.1	6,002.0	5,938.7	19.5	19.3	121.64	-184.1	-782.3	194.5	156.3	38.23	5.089		
6,100.0	6,035.4	6,102.4	6,039.0	19.8	19.5	129.92	-186.0	-784.7	199.7	161.2	38.54	5.182		
6,200.0	6,135.1	6,201.4	6,138.0	20.1	19.7	132.04	-187.9	-785.7	203.4	164.6	38.79	5.244		
6,300.0	6,234.9	6,300.1	6,236.7	20.3	19.8	147.91	-188.9	-785.1	206.4	167.4	39.01	5.292		
6,400.0	6,334.9	6,400.2	6,336.8	20.4	19.9	-178.98	-189.7	-784.5	207.2	168.0	39.22	5.284		
6,500.0	6,434.9	6,499.5	6,436.1	20.4	20.1	-178.85	-190.5	-784.0	207.7	168.3	39.34	5.280		
6,600.0	6,534.9	6,597.1	6,533.2	20.4	20.1	-176.54	-190.6	-775.5	208.7	169.6	39.12	5.336		
6,700.0	6,634.7	6,690.0	6,621.8	20.4	19.9	-92.03	-189.9	-748.0	212.7	174.7	38.00	5.598		
6,800.0	6,732.6	6,784.7	6,708.0	20.2	19.6	-82.11	-189.0	-708.8	219.8	183.2	36.59	6.008		
6,900.0	6,825.5	6,881.1	6,793.2	20.0	19.3	-78.11	-188.0	-663.8	226.6	191.1	35.50	6.383		
7,000.0	6,910.6	6,974.8	6,873.6	19.6	19.0	-77.81	-186.6	-615.8	231.3	196.3	34.96	6.617		
7,100.0	6,985.4	7,067.3	6,947.8	19.3	18.8	-79.46	-183.9	-560.7	236.1	201.3	34.82	6.782		
7,200.0	7,047.6	7,169.3	7,022.2	19.0	18.6	-82.82	-185.0	-491.1	236.9	201.8	35.11	6.747		
7,300.0	7,095.2	7,257.9	7,078.5	18.8	18.6	-86.66	-185.2	-422.7	239.4	203.6	35.73	6.698		
7,400.0	7,126.9	7,351.1	7,126.6	18.9	18.7	-90.93	-184.0	-343.0	245.0	208.3	36.71	6.674		
7,500.0	7,141.6	7,449.9	7,167.4	19.4	19.2	-96.22	-181.9	-253.1	253.9	215.8	38.05	6.673		
7,600.0	7,141.6	7,550.6	7,196.4	20.3	20.1	-101.92	-180.7	-156.8	264.1	224.4	39.71	6.651		
7,700.0	7,139.9	7,667.3	7,211.3	21.7	21.5	-105.42	-179.0	-41.2	269.0	226.9	42.07	6.394		
7,800.0	7,138.1	7,773.3	7,211.6	23.4	23.2	-106.02	-179.9	64.7	266.8	221.6	45.19	5.905		
7,900.0	7,136.4	7,872.1	7,210.4	25.3	24.9	-106.32	-180.9	163.6	264.1	215.5	48.63	5.430		
8,000.0	7,134.6	7,971.2	7,210.3	27.4	26.8	-106.84	-182.0	262.7	261.6	209.3	52.33	4.999		
8,100.0	7,132.9	8,067.4	7,210.4	29.6	28.8	-107.36	-182.3	358.9	259.9	203.7	56.20	4.625		
8,132.4	7,132.4	8,097.8	7,210.5	30.3	29.5	-107.49	-182.1	389.3	259.8	202.3	57.49	4.519		
8,200.0	7,131.7	8,165.5	7,210.7	31.9	31.0	-107.71	-181.1	457.0	259.9	199.6	60.32	4.309		
8,240.4	7,131.8	8,206.2	7,210.7	32.8	31.9	-107.68	-180.5	497.7	259.9	197.8	62.11	4.184		
8,300.0	7,132.3	8,263.3	7,210.8	34.2	33.2	-107.57	-179.6	554.7	260.1	195.4	64.74	4.018		
8,400.0	7,133.0	8,361.4	7,211.7	36.7	35.5	-107.52	-177.1	652.8	261.5	192.2	69.27	3.775		
8,500.0	7,133.7	8,459.0	7,213.0	39.1	37.9	-107.53	-174.1	750.4	263.5	189.7	73.88	3.567		
8,600.0	7,134.4	8,556.5	7,214.2	41.7	40.3	-107.45	-170.2	847.8	266.5	187.9	78.59	3.391		
8,700.0	7,135.1	8,656.8	7,215.5	44.2	42.8	-107.34	-165.5	947.9	270.1	186.6	83.46	3.236		
8,800.0	7,135.8	8,763.2	7,215.4	46.8	45.5	-107.04	-162.1	1,054.3	271.8	183.2	88.64	3.066		
8,900.0	7,136.5	8,865.8	7,213.9	49.4	48.1	-106.50	-159.3	1,156.8	272.7	178.8	93.89	2.905		
9,000.0	7,137.1	8,969.7	7,212.8	52.0	50.8	-106.17	-158.7	1,260.7	271.7	172.5	99.15	2.740		
9,100.0	7,137.8	9,072.0	7,213.2	54.7	53.5	-106.21	-159.4	1,363.1	269.9	165.6	104.26	2.589		
9,200.0	7,138.5	9,168.6	7,214.9	57.3	56.1	-106.55	-160.5	1,459.6	268.1	159.0	109.10	2.457		
9,300.0	7,139.2	9,268.9	7,217.1	60.0	58.7	-106.95	-160.8	1,559.9	267.1	153.1	114.01	2.343		
9,400.0	7,139.9	9,372.7	7,218.0	62.7	61.5	-107.12	-161.8	1,663.7	265.2	146.0	119.14	2.226		
9,500.0	7,140.6	9,472.8	7,217.3	65.4	64.2	-106.98	-163.0	1,763.8	262.5	138.1	124.37	2.111		
9,600.0	7,141.3	9,571.0	7,217.9	68.1	66.8	-107.12	-164.3	1,862.0	260.2	130.8	129.41	2.010		
9,700.0	7,142.0	9,667.1	7,219.1	70.8	69.4	-107.33	-164.7	1,958.1	258.8	124.5	134.36	1.927		
9,720.4	7,142.1	9,686.4	7,219.5	71.3	69.9	-107.39	-164.6	1,977.4	258.8	123.5	135.34	1.912		
9,800.0	7,142.7	9,764.1	7,220.7	73.5	72.0	-107.53	-163.6	2,055.0	259.2	119.9	139.32	1.861		
9,900.0	7,143.4	9,862.7	7,219.3	76.2	74.7	-106.98	-160.8	2,153.5	260.2	115.4	144.87	1.796		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	NICKEL ROAD OPERATING	Local Co-ordinate Reference:	Well Noble 5X-HNB-05-03-68
Project:	SEC.5-T3N-R68W	TVD Reference:	RKB @ 5116.8ft (Original Well Elev)
Reference Site:	SEC 5 Noble Pad 5-3N-68W	MD Reference:	RKB @ 5116.8ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Noble 5X-HNB-05-03-68	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Sidetrack plan 2 July 28 2018	Offset TVD Reference:	Offset Datum

Offset Design SEC 5 Noble Pad 5-3N-68W - Noble 5X-HNC-05-03-68 - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 210-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
10,000.0	7,144.0	9,964.3	7,217.9	78.9	77.5	-106.42	-157.8	2,255.1	261.4	110.9	150.53	1.736	
10,100.0	7,144.7	10,063.3	7,217.9	81.7	80.2	-106.21	-155.6	2,354.1	262.2	106.3	155.90	1.682	
10,200.0	7,145.4	10,165.7	7,218.6	84.4	82.9	-106.17	-153.8	2,456.4	262.8	101.5	161.25	1.630	
10,300.0	7,146.1	10,266.5	7,219.8	87.2	85.7	-106.29	-152.9	2,557.2	262.7	96.3	166.45	1.578	
10,319.1	7,146.2	10,285.3	7,220.0	87.7	86.2	-106.32	-152.8	2,576.1	262.7	95.3	167.43	1.569	
10,400.0	7,146.8	10,366.8	7,221.1	89.9	88.5	-106.43	-152.0	2,657.6	262.7	91.1	171.62	1.531	
10,500.0	7,147.5	10,468.4	7,224.4	92.7	91.2	-107.08	-152.4	2,759.0	262.0	85.6	176.40	1.485 Level 3	
10,600.0	7,148.2	10,567.2	7,226.5	95.4	94.0	-107.44	-152.4	2,857.9	261.3	80.0	181.32	1.441 Level 3	
10,650.4	7,148.5	10,616.6	7,227.7	96.8	95.3	-107.64	-152.2	2,907.3	261.2	77.4	183.76	1.421 Level 3	
10,700.0	7,148.9	10,664.9	7,229.1	98.2	96.6	-107.88	-151.9	2,955.5	261.3	75.2	186.11	1.404 Level 3	
10,800.0	7,149.6	10,767.3	7,231.7	100.9	99.5	-108.31	-151.1	3,057.9	261.6	70.6	191.01	1.370 Level 3	
10,857.1	7,150.0	10,823.4	7,232.6	102.5	101.0	-108.42	-150.8	3,114.0	261.4	67.6	193.87	1.349 Level 3	
10,900.0	7,150.3	10,865.1	7,233.3	103.7	102.2	-108.51	-150.4	3,155.7	261.5	65.5	196.00	1.334 Level 3	
11,000.0	7,150.9	10,965.1	7,234.5	106.4	104.9	-108.60	-149.0	3,255.6	262.0	60.8	201.15	1.302 Level 3	
11,100.0	7,151.6	11,065.3	7,235.3	109.2	107.7	-108.61	-147.6	3,355.8	262.3	55.9	206.40	1.271 Level 3	
11,200.0	7,152.3	11,162.4	7,234.4	112.0	110.4	-108.19	-145.1	3,452.9	263.1	51.0	212.05	1.241 Level 2	
11,300.0	7,153.0	11,264.5	7,232.0	114.8	113.2	-107.36	-141.1	3,554.9	264.9	46.6	218.30	1.213 Level 2	
11,377.3	7,153.5	11,343.4	7,230.4	116.9	115.4	-106.88	-139.7	3,633.8	264.7	41.7	222.96	1.187 Level 2	
11,400.0	7,153.7	11,364.5	7,230.2	117.5	115.9	-106.81	-139.3	3,654.9	264.8	40.6	224.20	1.181 Level 2	
11,500.0	7,154.4	11,459.9	7,230.9	120.3	118.6	-106.69	-136.5	3,750.2	266.5	37.0	229.52	1.161 Level 2	
11,600.0	7,155.1	11,557.2	7,232.0	123.1	121.3	-106.62	-132.6	3,847.4	269.4	34.6	234.85	1.147 Level 2	
11,700.0	7,155.8	11,655.8	7,233.2	125.8	124.0	-106.50	-127.8	3,945.9	273.2	32.9	240.26	1.137 Level 2	
11,732.9	7,156.0	11,688.7	7,233.6	126.8	124.9	-106.46	-126.1	3,978.7	274.5	32.4	242.06	1.134 Level 2, SF	

Company: NICKEL ROAD OPERATING
Project: SEC.5-T3N-R68W
Reference Site: SEC 5 Noble Pad 5-3N-68W
Site Error: 0.0 ft
Reference Well: Noble 5X-HNB-05-03-68
Well Error: 0.0 ft
Reference Wellbore Wellbore #1
Reference Design: Sidetrack plan 2 July 28 2018

Local Co-ordinate Reference: Well Noble 5X-HNB-05-03-68
TVD Reference: RKB @ 5116.8ft (Original Well Elev)
MD Reference: RKB @ 5116.8ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: US_EDM
Offset TVD Reference: Offset Datum

Reference Depths are relative to RKB @ 5116.8ft (Original Well Elev)

Offset Depths are relative to Offset Datum

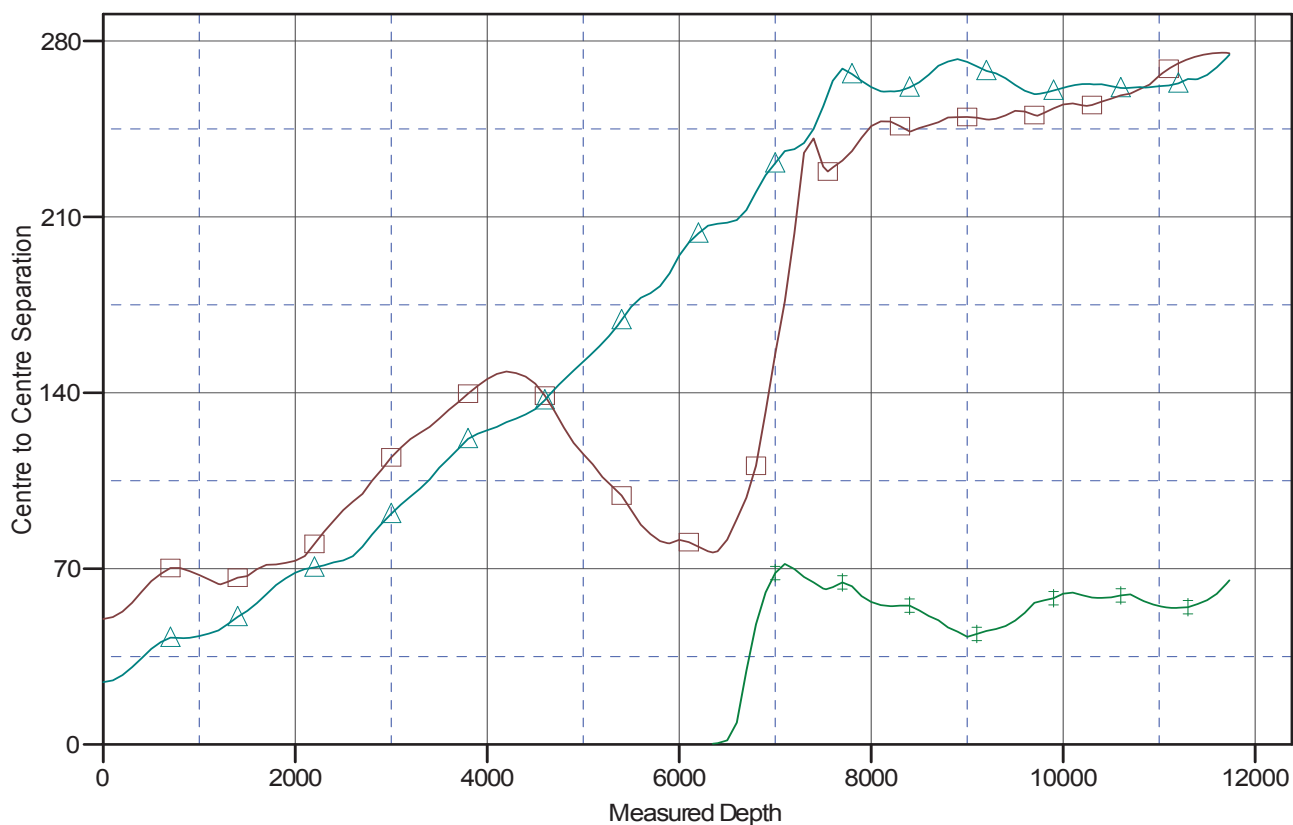
Central Meridian is -105.500000

Coordinates are relative to: Noble 5X-HNB-05-03-68

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.30°

Ladder Plot



LEGEND

Noble 5X-HC-05-03-68, Wellbore #1, Wellbore #1 V0 Noble 5X-HNB-05-03-68, Wellbore #1, Wellbore #1 V0 Noble 5X-HNC-05-03-68, Wellbore #1, Wellbo

Company:	NICKEL ROAD OPERATING	Local Co-ordinate Reference:	Well Noble 5X-HNB-05-03-68
Project:	SEC.5-T3N-R68W	TVD Reference:	RKB @ 5116.8ft (Original Well Elev)
Reference Site:	SEC 5 Noble Pad 5-3N-68W	MD Reference:	RKB @ 5116.8ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Noble 5X-HNB-05-03-68	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Sidetrack plan 2 July 28 2018	Offset TVD Reference:	Offset Datum

Reference Depths are relative to RKB @ 5116.8ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: Noble 5X-HNB-05-03-68
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.30°

