



Weatherford®

Weatherford
2000 Oil Drive
Casper, WY 82604

Survey Certification

Operating Company:	Anadarko Petroleum Corp.
Well Name:	NICHOLS 3C-5HZ
State:	Colorado
County:	Weld
API Number:	05-123-35869
Datum:	NAD 83
Survey Calculation Method:	Minimum Curvature
North Reference:	True North

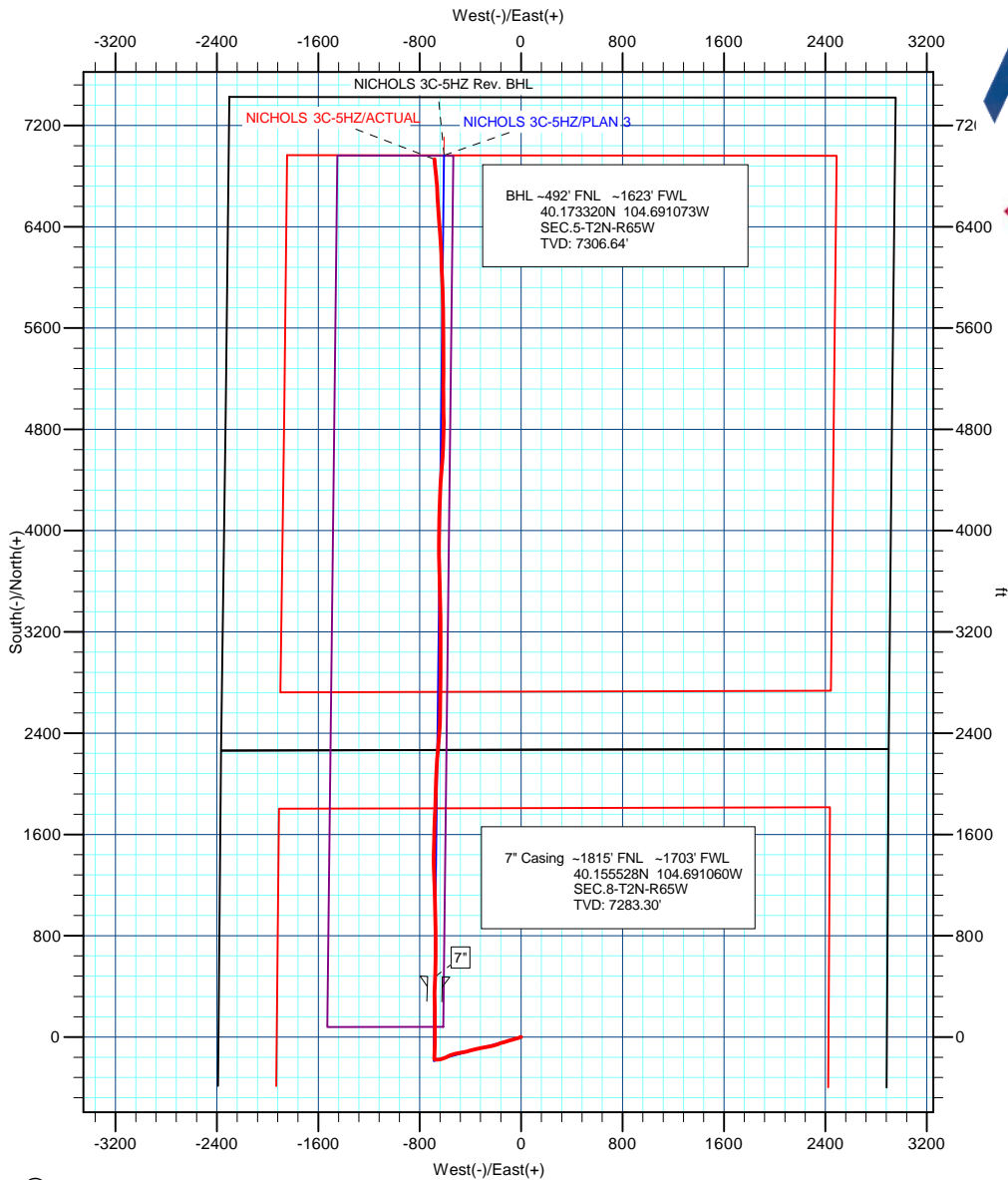
I, John R. Morgan, hereby certify the attached
directional survey run from the measure depth of 952.00 feet
to the measured depth of 14,192.00 feet as accurate and true
to the best of my knowledge.

Signature

24-Jan-13

Date

John Morgan
Directional Planning
Weatherford - Rockies District



Weatherford®

Project: COLORADO NORTHERN ZONE - 83
 Site: WELD_NICHOLS 6-8HZ PAD
 Well: NICHOLS 3C-5HZ
 Wellbore: Wellbore #1
 Section: Sec. 8-T2N-R65W
 SHL: 2268' FNL 2387' FWL
 Design: ACTUAL
 Latitude: 40.154290
 Longitude: -104.688627
 GL: 4912.00
 KB: 25' RKB + 4912' GL @ 4937.00ft (H&P 307)



Azimuths to True North
 Magnetic North: 8.61°
 Magnetic Field
 Strength: 52856.0nT
 Dip Angle: 66.81°
 Date: 11/29/2012
 Model: IGRF2010

WELL DETAILS: NICHOLS 3C-5HZ

+N/-S	+E/-W	Northing	Ground Level: Easting	4912.00 Latitude	Longitude	Slot
0.00	0.00	1300088.70	3226791.63	40.154290	-104.688627	

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Departure	Annotation
794.99	795.00	0.10	114.13	0.22	-0.22	0.24	2.86	TIE ON TO SURFACE GYRO
951.99	952.00	0.30	297.88	0.36	-0.46	0.39	3.41	FIRST WFT MWD SURVEY
7302.22	14144.00	84.94	354.15	6884.63	-678.57	6917.56	7784.79	LAST WFT MWD SURVEY
7306.64	14192.00	84.51	353.79	6932.16	-683.59	6965.35	7832.58	PROJECTION TO TD

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

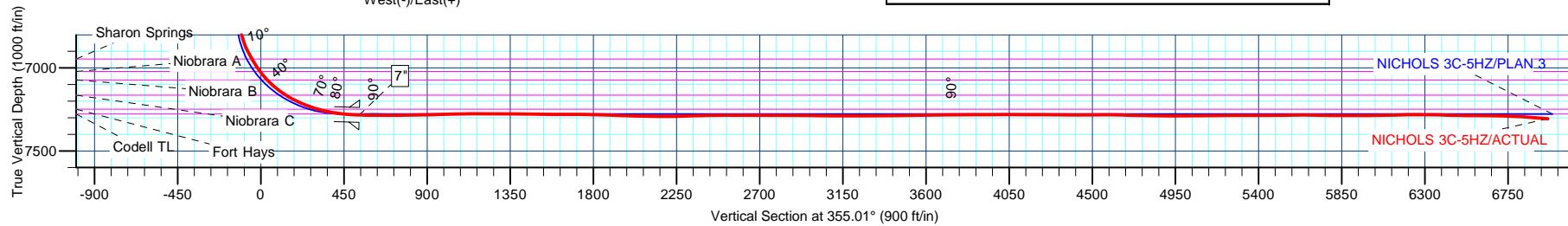
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
NICHOLS 3C-5HZ Rev. BHL	7279.00	6964.00	-608.49	40.173407	-104.690805	Point

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3934.00	3975.90	Parkman
4475.00	4525.10	Sussex
6947.00	7017.85	Sharon Springs
7022.00	7105.05	Niobrara A
7073.00	7168.96	Niobrara B
7164.00	7305.12	Niobrara C
7249.00	7499.19	Fort Hays
7278.00	7642.13	Codell TL

CASING DETAILS

TVD	MD	Name	Size
7283.52	7704.30	7"	7





Weatherford®

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_NICHOLS 6-8HZ PAD

NICHOLS 3C-5HZ

Wellbore #1

Design: ACTUAL

Standard Survey Report

24 January, 2013

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well NICHOLS 3C-5HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	25' RKB + 4912' GL @ 4937.00ft (H&P 307)
Site:	WELD_NICHOLS 6-8HZ PAD	MD Reference:	25' RKB + 4912' GL @ 4937.00ft (H&P 307)
Well:	NICHOLS 3C-5HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

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_NICHOLS 6-8HZ PAD, Sec. 8-T2N-R65W			
Site Position:		Northing:	1,300,112.19 usft	Latitude:	40.154354
From:	Lat/Long	Easting:	3,226,810.42 usft	Longitude:	-104.688559
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.52 °

Well	NICHOLS 3C-5HZ					
Well Position	+N/-S	0.00 ft	Northing:	1,300,088.70 usft	Latitude:	40.154290
	+E/-W	0.00 ft	Easting:	3,226,791.63 usft	Longitude:	-104.688627
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,912.00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/29/2012	8.61	66.81	52,856

Design	ACTUAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	25.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	25.00	0.00	0.00	355.01	

Survey Program	Date	1/18/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
125.00	795.00	Survey #1 (Wellbore #1)	NS-GYRO-MS	NORTH SENSING GYROCOMPASSING M/S	
952.00	14,192.00	Survey #2 (Wellbore #1)	MWD	MWD - STANDARD	

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)	
25.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	
125.00	0.34	215.88	125.00	-0.24	-0.17	-0.22	0.34	0.34	0.00	
225.00	0.22	232.66	225.00	-0.60	-0.50	-0.55	0.14	-0.12	16.78	
325.00	0.13	261.67	325.00	-0.73	-0.77	-0.66	0.12	-0.09	29.01	
425.00	0.15	350.36	425.00	-0.62	-0.90	-0.54	0.20	0.02	88.69	
525.00	0.35	27.41	525.00	-0.22	-0.78	-0.15	0.25	0.20	37.05	
625.00	0.31	47.49	624.99	0.24	-0.44	0.27	0.12	-0.04	20.08	
725.00	0.12	191.47	724.99	0.32	-0.26	0.34	0.41	-0.19	143.98	
795.00	0.10	114.13	794.99	0.22	-0.22	0.24	0.20	-0.03	-110.49	
TIE ON TO SURFACE GYRO										

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well NICHOLS 3C-5HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	25' RKB + 4912' GL @ 4937.00ft (H&P 307)
Site:	WELD_NICHOLS 6-8HZ PAD	MD Reference:	25' RKB + 4912' GL @ 4937.00ft (H&P 307)
Well:	NICHOLS 3C-5HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

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)
952.00	0.30	297.88	951.99	0.36	-0.46	0.39	0.25	0.13	-112.26
FIRST WFT MWD SURVEY									
1,044.00	3.28	253.10	1,043.94	-0.30	-3.19	-0.02	3.34	3.24	-48.67
1,136.00	5.47	249.91	1,135.67	-2.57	-9.83	-1.70	2.39	2.38	-3.47
1,227.00	6.80	249.11	1,226.14	-5.98	-18.94	-4.31	1.46	1.46	-0.88
1,319.00	8.34	253.62	1,317.34	-9.80	-30.43	-7.12	1.79	1.67	4.90
1,411.00	8.00	253.56	1,408.41	-13.50	-42.97	-9.71	0.37	-0.37	-0.07
1,503.00	9.43	254.51	1,499.34	-17.32	-56.37	-12.35	1.56	1.55	1.03
1,595.00	10.08	253.43	1,590.01	-21.63	-71.35	-15.34	0.73	0.71	-1.17
1,687.00	10.30	254.41	1,680.56	-26.14	-86.99	-18.47	0.30	0.24	1.07
1,778.00	10.08	250.67	1,770.12	-30.96	-102.34	-21.94	0.77	-0.24	-4.11
1,870.00	9.83	251.66	1,860.74	-36.10	-117.39	-25.75	0.33	-0.27	1.08
1,965.00	10.00	258.19	1,954.32	-40.34	-133.16	-28.60	1.20	0.18	6.87
2,060.00	9.57	253.11	2,047.94	-44.32	-148.80	-31.21	1.01	-0.45	-5.35
2,155.00	8.73	249.03	2,141.73	-49.19	-163.08	-34.82	1.12	-0.88	-4.29
2,251.00	9.08	247.53	2,236.58	-54.70	-176.89	-39.10	0.44	0.36	-1.56
2,345.00	9.27	253.00	2,329.38	-59.74	-190.98	-42.91	0.95	0.20	5.82
2,440.00	10.19	254.21	2,423.01	-64.27	-206.39	-46.07	0.99	0.97	1.27
2,535.00	8.74	253.09	2,516.71	-68.65	-221.38	-49.14	1.54	-1.53	-1.18
2,630.00	9.41	258.79	2,610.53	-72.26	-235.90	-51.47	1.18	0.71	6.00
2,725.00	10.14	260.99	2,704.15	-75.08	-251.78	-52.90	0.86	0.77	2.32
2,821.00	9.26	258.56	2,798.77	-77.94	-267.70	-54.36	1.01	-0.92	-2.53
2,916.00	12.40	259.63	2,892.07	-81.29	-285.23	-56.17	3.31	3.31	1.13
3,012.00	11.72	259.27	2,985.95	-84.96	-304.95	-58.11	0.71	-0.71	-0.38
3,106.00	10.94	259.03	3,078.12	-88.44	-323.08	-60.00	0.83	-0.83	-0.26
3,202.00	10.05	257.60	3,172.51	-91.97	-340.21	-62.03	0.97	-0.93	-1.49
3,296.00	10.46	256.66	3,265.01	-95.70	-356.52	-64.33	0.47	0.44	-1.00
3,392.00	9.21	255.55	3,359.60	-99.63	-372.44	-66.85	1.32	-1.30	-1.16
3,487.00	10.29	255.17	3,453.22	-103.70	-388.00	-69.55	1.14	1.14	-0.40
3,582.00	11.49	255.71	3,546.51	-108.20	-405.38	-72.53	1.27	1.26	0.57
3,676.00	9.70	254.91	3,638.90	-112.58	-422.10	-75.43	1.91	-1.90	-0.85
3,772.00	11.47	257.88	3,733.27	-116.69	-439.24	-78.04	1.93	1.84	3.09
3,867.00	9.28	258.46	3,826.71	-120.20	-455.98	-80.08	2.31	-2.31	0.61
3,962.00	10.32	258.71	3,920.32	-123.40	-471.83	-81.89	1.10	1.09	0.26
4,056.00	9.69	260.29	4,012.89	-126.38	-487.89	-83.47	0.73	-0.67	1.68
4,151.00	9.52	261.28	4,106.56	-128.92	-503.53	-84.64	0.25	-0.18	1.04
4,246.00	10.82	254.51	4,200.07	-132.50	-519.89	-86.77	1.86	1.37	-7.13
4,341.00	8.97	256.37	4,293.65	-136.62	-535.68	-89.51	1.98	-1.95	1.96
4,436.00	9.78	251.22	4,387.38	-140.97	-550.52	-92.55	1.23	0.85	-5.42
4,530.00	11.26	243.60	4,479.81	-147.62	-566.30	-97.80	2.16	1.57	-8.11
4,625.00	9.38	242.12	4,573.26	-155.36	-581.45	-104.20	2.00	-1.98	-1.56
4,721.00	11.67	246.74	4,667.64	-162.85	-597.29	-110.28	2.54	2.39	4.81
4,816.00	11.26	252.03	4,760.75	-169.51	-614.94	-115.38	1.19	-0.43	5.57

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well NICHOLS 3C-5HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	25' RKB + 4912' GL @ 4937.00ft (H&P 307)
Site:	WELD_NICHOLS 6-8HZ PAD	MD Reference:	25' RKB + 4912' GL @ 4937.00ft (H&P 307)
Well:	NICHOLS 3C-5HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

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)
4,911.00	8.51	250.35	4,854.33	-174.74	-630.39	-119.24	2.91	-2.89	-1.77
5,006.00	7.29	264.15	4,948.44	-177.72	-643.00	-121.11	2.36	-1.28	14.53
5,100.00	5.03	262.80	5,041.89	-178.84	-653.03	-121.36	2.41	-2.40	-1.44
5,195.00	3.77	266.83	5,136.61	-179.53	-660.28	-121.42	1.36	-1.33	4.24
5,290.00	3.56	274.05	5,231.41	-179.50	-666.34	-120.86	0.53	-0.22	7.60
5,385.00	2.03	274.22	5,326.30	-179.17	-670.96	-120.13	1.61	-1.61	0.18
5,479.00	1.95	291.86	5,420.24	-178.45	-674.10	-119.14	0.65	-0.09	18.77
5,574.00	1.93	291.91	5,515.19	-177.25	-677.09	-117.68	0.02	-0.02	0.05
5,669.00	0.28	351.65	5,610.17	-176.42	-678.60	-116.73	1.90	-1.74	62.88
5,764.00	0.29	343.97	5,705.17	-175.96	-678.70	-116.26	0.04	0.01	-8.08
5,859.00	0.20	298.52	5,800.17	-175.65	-678.92	-115.93	0.22	-0.09	-47.84
5,954.00	0.51	117.79	5,895.16	-175.77	-678.69	-116.07	0.75	0.33	188.71
6,050.00	0.16	56.80	5,991.16	-175.90	-678.20	-116.24	0.47	-0.36	-63.53
6,145.00	0.25	14.13	6,086.16	-175.62	-678.04	-115.98	0.18	0.09	-44.92
6,239.00	0.20	26.04	6,180.16	-175.28	-677.91	-115.65	0.07	-0.05	12.67
6,334.00	0.53	342.83	6,275.16	-174.71	-677.97	-115.07	0.43	0.35	-45.48
6,429.00	0.47	291.77	6,370.16	-174.14	-678.46	-114.47	0.46	-0.06	-53.75
6,524.00	0.85	258.06	6,465.15	-174.14	-679.51	-114.38	0.56	0.40	-35.48
6,618.00	1.68	262.86	6,559.13	-174.46	-681.56	-114.52	0.89	0.88	5.11
6,713.00	1.03	243.99	6,654.10	-175.01	-683.71	-114.87	0.82	-0.68	-19.86
6,744.00	1.13	236.98	6,685.09	-175.30	-684.22	-115.12	0.53	0.32	-22.61
6,776.00	1.92	331.26	6,717.09	-175.00	-684.74	-114.78	7.19	2.47	294.63
6,808.00	6.16	354.66	6,749.00	-172.82	-685.16	-112.57	13.95	13.25	73.13
6,839.00	10.31	0.42	6,779.68	-168.39	-685.29	-108.14	13.63	13.39	18.58
6,871.00	13.92	1.72	6,810.96	-161.67	-685.16	-101.46	11.31	11.28	4.06
6,902.00	16.42	3.25	6,840.88	-153.57	-684.80	-93.42	8.17	8.06	4.94
6,934.00	21.30	3.62	6,871.15	-143.25	-684.17	-83.19	15.25	15.25	1.16
6,966.00	24.15	3.87	6,900.66	-130.91	-683.36	-70.98	8.91	8.91	0.78
6,997.00	27.30	3.47	6,928.59	-117.49	-682.51	-57.68	10.18	10.16	-1.29
7,029.00	29.32	2.05	6,956.76	-102.33	-681.78	-42.64	6.65	6.31	-4.44
7,061.00	30.37	2.87	6,984.51	-86.42	-681.10	-26.85	3.52	3.28	2.56
7,093.00	32.12	2.25	7,011.87	-69.84	-680.36	-10.40	5.56	5.47	-1.94
7,125.00	35.55	0.23	7,038.45	-52.03	-679.98	7.31	11.28	10.72	-6.31
7,156.00	39.24	358.76	7,063.07	-33.21	-680.16	26.08	12.25	11.90	-4.74
7,188.00	42.93	358.62	7,087.19	-12.19	-680.64	47.06	11.53	11.53	-0.44
7,220.00	46.29	0.19	7,109.97	10.28	-680.87	69.46	11.05	10.50	4.91
7,251.00	49.23	1.85	7,130.80	33.22	-680.45	92.28	10.28	9.48	5.35
7,283.00	52.66	0.46	7,150.96	58.06	-679.96	116.98	11.24	10.72	-4.34
7,315.00	56.19	1.83	7,169.58	84.08	-679.43	142.86	11.57	11.03	4.28
7,346.00	59.34	0.77	7,186.11	110.29	-678.84	168.92	10.56	10.16	-3.42
7,378.00	61.97	359.00	7,201.79	138.18	-678.90	196.71	9.53	8.22	-5.53
7,410.00	64.65	358.55	7,216.16	166.76	-679.51	225.23	8.47	8.38	-1.41
7,442.00	67.10	358.08	7,229.24	195.95	-680.37	254.39	7.77	7.66	-1.47
7,473.00	69.95	358.55	7,240.59	224.78	-681.22	283.18	9.30	9.19	1.52

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well NICHOLS 3C-5HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	25' RKB + 4912' GL @ 4937.00ft (H&P 307)
Site:	WELD_NICHOLS 6-8HZ PAD	MD Reference:	25' RKB + 4912' GL @ 4937.00ft (H&P 307)
Well:	NICHOLS 3C-5HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

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)
7,505.00	73.18	358.75	7,250.71	255.13	-681.94	313.48	10.11	10.09	0.63
7,537.00	75.45	358.95	7,259.36	285.93	-682.55	344.21	7.12	7.09	0.63
7,569.00	78.09	359.49	7,266.68	317.07	-682.98	375.28	8.41	8.25	1.69
7,600.00	81.15	0.52	7,272.27	347.56	-682.97	405.65	10.40	9.87	3.32
7,632.00	82.71	1.99	7,276.76	379.23	-682.28	437.14	6.67	4.88	4.59
7,664.00	84.33	1.86	7,280.37	411.01	-681.21	468.71	5.08	5.06	-0.41
7,761.00	90.06	1.58	7,285.12	507.81	-678.30	564.89	5.91	5.91	-0.29
7,853.00	89.38	1.25	7,285.57	599.78	-676.03	656.31	0.82	-0.74	-0.36
7,944.00	90.86	1.09	7,285.38	690.76	-674.17	746.78	1.64	1.63	-0.18
8,036.00	90.80	359.37	7,284.04	782.75	-673.80	838.39	1.87	-0.07	-1.87
8,128.00	91.23	358.47	7,282.41	874.71	-675.54	930.16	1.08	0.47	-0.98
8,220.00	92.03	359.15	7,279.80	966.66	-677.45	1,021.92	1.14	0.87	0.74
8,312.00	90.26	358.42	7,277.96	1,058.61	-679.40	1,113.69	2.08	-1.92	-0.79
8,404.00	91.60	358.33	7,276.46	1,150.56	-682.01	1,205.52	1.46	1.46	-0.10
8,496.00	88.58	357.76	7,276.32	1,242.50	-685.15	1,297.38	3.34	-3.28	-0.62
8,590.00	88.83	358.38	7,278.44	1,336.42	-688.31	1,391.22	0.71	0.27	0.66
8,685.00	89.32	0.69	7,279.98	1,431.40	-689.08	1,485.91	2.49	0.52	2.43
8,781.00	89.88	1.49	7,280.65	1,527.37	-687.25	1,581.36	1.02	0.58	0.83
8,876.00	89.88	0.72	7,280.85	1,622.36	-685.42	1,675.83	0.81	0.00	-0.81
8,971.00	89.01	3.10	7,281.77	1,717.29	-682.26	1,770.13	2.67	-0.92	2.51
9,066.00	87.90	1.68	7,284.33	1,812.17	-678.30	1,864.30	1.90	-1.17	-1.49
9,160.00	87.97	2.61	7,287.72	1,906.04	-674.78	1,957.51	0.99	0.07	0.99
9,255.00	88.52	1.84	7,290.63	2,000.93	-671.09	2,051.71	1.00	0.58	-0.81
9,350.00	89.08	0.80	7,292.62	2,095.88	-668.91	2,146.12	1.24	0.59	-1.09
9,445.00	91.66	5.71	7,292.00	2,190.69	-663.52	2,240.10	5.84	2.72	5.17
9,540.00	91.79	4.97	7,289.14	2,285.23	-654.68	2,333.51	0.79	0.14	-0.78
9,635.00	91.11	4.07	7,286.74	2,379.90	-647.19	2,427.18	1.19	-0.72	-0.95
9,731.00	90.25	2.37	7,285.60	2,475.74	-641.80	2,522.18	1.98	-0.90	-1.77
9,826.00	89.69	0.57	7,285.65	2,570.70	-639.37	2,616.57	1.98	-0.59	-1.89
9,921.00	89.94	0.67	7,285.95	2,665.70	-638.34	2,711.12	0.28	0.26	0.11
10,016.00	90.00	1.23	7,286.00	2,760.68	-636.76	2,805.61	0.59	0.06	0.59
10,111.00	89.45	0.36	7,286.46	2,855.67	-635.44	2,900.12	1.08	-0.58	-0.92
10,206.00	88.77	359.99	7,287.94	2,950.66	-635.15	2,994.72	0.81	-0.72	-0.39
10,301.00	89.74	0.01	7,289.17	3,045.65	-635.15	3,089.35	1.02	1.02	0.02
10,396.00	89.32	0.47	7,289.95	3,140.65	-634.76	3,183.96	0.66	-0.44	0.48
10,491.00	91.05	359.05	7,289.64	3,235.64	-635.15	3,278.62	2.36	1.82	-1.49
10,586.00	90.12	358.85	7,288.67	3,330.62	-636.89	3,373.39	1.00	-0.98	-0.21
10,680.00	91.05	358.81	7,287.71	3,424.59	-638.81	3,467.18	0.99	0.99	-0.04
10,775.00	91.05	358.98	7,285.97	3,519.56	-640.65	3,561.94	0.18	0.00	0.18
10,870.00	90.62	358.45	7,284.59	3,614.52	-642.78	3,656.73	0.72	-0.45	-0.56
10,966.00	90.43	357.89	7,283.71	3,710.47	-645.84	3,752.58	0.62	-0.20	-0.58
11,062.00	90.43	359.00	7,282.99	3,806.43	-648.45	3,848.41	1.16	0.00	1.16
11,157.00	90.55	0.13	7,282.18	3,901.42	-649.17	3,943.10	1.20	0.13	1.19

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well NICHOLS 3C-5HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	25' RKB + 4912' GL @ 4937.00ft (H&P 307)
Site:	WELD_NICHOLS 6-8HZ PAD	MD Reference:	25' RKB + 4912' GL @ 4937.00ft (H&P 307)
Well:	NICHOLS 3C-5HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

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)
11,251.00	89.88	1.42	7,281.82	3,995.41	-647.90	4,036.62	1.55	-0.71	1.37
11,348.00	89.63	1.36	7,282.24	4,092.38	-645.54	4,133.02	0.27	-0.26	-0.06
11,442.00	89.69	1.66	7,282.80	4,186.35	-643.07	4,226.42	0.33	0.06	0.32
11,537.00	89.32	1.56	7,283.62	4,281.31	-640.40	4,320.78	0.40	-0.39	-0.11
11,632.00	89.94	3.96	7,284.23	4,376.19	-635.82	4,414.91	2.61	0.65	2.53
11,727.00	90.80	5.05	7,283.62	4,470.89	-628.36	4,508.60	1.46	0.91	1.15
11,821.00	89.63	4.42	7,283.26	4,564.56	-620.60	4,601.25	1.41	-1.24	-0.67
11,916.00	88.27	1.95	7,285.01	4,659.39	-615.33	4,695.26	2.97	-1.43	-2.60
12,010.00	88.21	1.29	7,287.89	4,753.31	-612.67	4,788.59	0.70	-0.06	-0.70
12,105.00	90.19	0.02	7,289.22	4,848.29	-611.58	4,883.11	2.48	2.08	-1.34
12,200.00	89.63	359.24	7,289.37	4,943.28	-612.20	4,977.80	1.01	-0.59	-0.82
12,295.00	90.74	359.44	7,289.06	5,038.28	-613.29	5,072.53	1.19	1.17	0.21
12,391.00	90.68	0.32	7,287.87	5,134.27	-613.49	5,168.17	0.92	-0.06	0.92
12,486.00	90.43	0.46	7,286.95	5,229.26	-612.85	5,262.75	0.30	-0.26	0.15
12,581.00	89.94	0.38	7,286.64	5,324.26	-612.15	5,357.32	0.52	-0.52	-0.08
12,676.00	90.74	358.86	7,286.08	5,419.25	-612.78	5,452.01	1.81	0.84	-1.60
12,771.00	90.35	359.38	7,285.18	5,514.23	-614.24	5,546.76	0.68	-0.41	0.55
12,866.00	90.06	0.23	7,284.84	5,609.23	-614.56	5,641.43	0.95	-0.31	0.89
12,961.00	89.20	359.07	7,285.45	5,704.23	-615.14	5,736.11	1.52	-0.91	-1.22
13,056.00	89.26	359.18	7,286.73	5,799.21	-616.59	5,830.86	0.13	0.06	0.12
13,152.00	88.95	357.48	7,288.23	5,895.15	-619.39	5,926.68	1.80	-0.32	-1.77
13,246.00	92.10	357.19	7,287.37	5,989.03	-623.76	6,020.59	3.37	3.35	-0.31
13,341.00	91.29	358.61	7,284.56	6,083.92	-627.24	6,115.42	1.72	-0.85	1.49
13,435.00	91.06	358.42	7,282.63	6,177.87	-629.67	6,209.23	0.32	-0.24	-0.20
13,505.00	89.57	355.92	7,282.24	6,247.78	-633.13	6,279.17	4.16	-2.13	-3.57
13,601.00	88.64	355.68	7,283.74	6,343.51	-640.16	6,375.15	1.00	-0.97	-0.25
13,695.00	88.52	355.86	7,286.07	6,437.22	-647.09	6,469.11	0.23	-0.13	0.19
13,790.00	89.63	356.68	7,287.61	6,532.01	-653.27	6,564.07	1.45	1.17	0.86
13,884.00	88.89	356.51	7,288.82	6,625.83	-658.85	6,658.03	0.81	-0.79	-0.18
13,980.00	88.15	356.58	7,291.30	6,721.63	-664.64	6,753.96	0.77	-0.77	0.07
14,075.00	85.56	354.67	7,296.51	6,816.19	-671.87	6,848.80	3.39	-2.73	-2.01
14,144.00	84.94	354.15	7,302.23	6,884.63	-678.57	6,917.56	1.17	-0.90	-0.75
LAST WFT MWD SURVEY									
14,192.00	84.51	353.79	7,306.64	6,932.16	-683.59	6,965.35	1.17	-0.90	-0.75
PROJECTION TO TD									

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well NICHOLS 3C-5HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	25' RKB + 4912' GL @ 4937.00ft (H&P 307)
Site:	WELD_NICHOLS 6-8HZ PAD	MD Reference:	25' RKB + 4912' GL @ 4937.00ft (H&P 307)
Well:	NICHOLS 3C-5HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
795.00	794.99	0.22	-0.22	TIE ON TO SURFACE GYRO
952.00	951.99	0.36	-0.46	FIRST WFT MWD SURVEY
14,144.00	7,302.23	6,884.63	-678.57	LAST WFT MWD SURVEY
14,192.00	7,306.64	6,932.16	-683.59	PROJECTION TO TD

Checked By: _____	Approved By: _____	Date: _____
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Weatherford®

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_NICHOLS 6-8HZ PAD

NICHOLS 3C-5HZ

Wellbore #1

Design: ACTUAL

Survey Report - Geographic

24 January, 2013

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well NICHOLS 3C-5HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	25' RKB + 4912' GL @ 4937.00ft (H&P 307)
Site:	WELD_NICHOLS 6-8HZ PAD	MD Reference:	25' RKB + 4912' GL @ 4937.00ft (H&P 307)
Well:	NICHOLS 3C-5HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

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_NICHOLS 6-8HZ PAD, Sec. 8-T2N-R65W			
Site Position:		Northing:	1,300,112.19 usft	Latitude:	40.154354
From:	Lat/Long	Easting:	3,226,810.42 usft	Longitude:	-104.688559
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.52 °

Well		NICHOLS 3C-5HZ				
Well Position	+N/-S	0.00 ft	Northing:	1,300,088.70 usft	Latitude:	40.154290
	+E/-W	0.00 ft	Easting:	3,226,791.63 usft	Longitude:	-104.688627
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,912.00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/29/2012	8.61	66.81	52,856

Design	ACTUAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	25.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	25.00	0.00	0.00	355.01	

Survey Program	Date	1/18/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
125.00	795.00	Survey #1 (Wellbore #1)	NS-GYRO-MS	NORTH SENSING GYROCOMPASSING M/S	
952.00	14,192.00	Survey #2 (Wellbore #1)	MWD	MWD - STANDARD	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
25.00	0.00	0.00	25.00	0.00	0.00	1,300,088.70	3,226,791.63	40.154290	-104.688627	
125.00	0.34	215.88	125.00	-0.24	-0.17	1,300,088.46	3,226,791.46	40.154289	-104.688628	
225.00	0.22	232.66	225.00	-0.60	-0.50	1,300,088.10	3,226,791.13	40.154288	-104.688629	
325.00	0.13	261.67	325.00	-0.73	-0.77	1,300,087.96	3,226,790.87	40.154288	-104.688630	
425.00	0.15	350.36	425.00	-0.62	-0.90	1,300,088.07	3,226,790.74	40.154288	-104.688630	
525.00	0.35	27.41	525.00	-0.22	-0.78	1,300,088.47	3,226,790.85	40.154289	-104.688630	
625.00	0.31	47.49	624.99	0.24	-0.44	1,300,088.93	3,226,791.19	40.154291	-104.688629	
725.00	0.12	191.47	724.99	0.32	-0.26	1,300,089.01	3,226,791.36	40.154291	-104.688628	
795.00	0.10	114.13	794.99	0.22	-0.22	1,300,088.92	3,226,791.41	40.154291	-104.688628	
TIE ON TO SURFACE GYRO										



Weatherford®

Andarko Petroleum Corporation

Survey Report - Geographic



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well NICHOLS 3C-5HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	25' RKB + 4912' GL @ 4937.00ft (H&P 307)
Site:	WELD_NICHOLS 6-8HZ PAD	MD Reference:	25' RKB + 4912' GL @ 4937.00ft (H&P 307)
Well:	NICHOLS 3C-5HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
952.00	0.30	297.88	951.99	0.36	-0.46	1,300,089.05	3,226,791.17	40.154291	-104.688629
FIRST WFT MWD SURVEY									
1,044.00	3.28	253.10	1,043.94	-0.30	-3.19	1,300,088.37	3,226,788.44	40.154289	-104.688639
1,136.00	5.47	249.91	1,135.67	-2.57	-9.83	1,300,086.04	3,226,781.82	40.154283	-104.688662
1,227.00	6.80	249.11	1,226.14	-5.98	-18.94	1,300,082.55	3,226,772.75	40.154274	-104.688695
1,319.00	8.34	253.62	1,317.34	-9.80	-30.43	1,300,078.62	3,226,761.29	40.154263	-104.688736
1,411.00	8.00	253.56	1,408.41	-13.50	-42.97	1,300,074.81	3,226,748.79	40.154253	-104.688781
1,503.00	9.43	254.51	1,499.34	-17.32	-56.37	1,300,070.86	3,226,735.42	40.154243	-104.688829
1,595.00	10.08	253.43	1,590.01	-21.63	-71.35	1,300,066.42	3,226,720.48	40.154231	-104.688883
1,687.00	10.30	254.41	1,680.56	-26.14	-86.99	1,300,061.77	3,226,704.88	40.154218	-104.688938
1,778.00	10.08	250.67	1,770.12	-30.96	-102.34	1,300,056.80	3,226,689.58	40.154205	-104.688993
1,870.00	9.83	251.66	1,860.74	-36.10	-117.39	1,300,051.53	3,226,674.57	40.154191	-104.689047
1,965.00	10.00	258.19	1,954.32	-40.34	-133.16	1,300,047.15	3,226,658.84	40.154179	-104.689104
2,060.00	9.57	253.11	2,047.94	-44.32	-148.80	1,300,043.02	3,226,643.25	40.154168	-104.689160
2,155.00	8.73	249.03	2,141.73	-49.19	-163.08	1,300,038.02	3,226,629.00	40.154155	-104.689211
2,251.00	9.08	247.53	2,236.58	-54.70	-176.89	1,300,032.39	3,226,615.25	40.154140	-104.689260
2,345.00	9.27	253.00	2,329.38	-59.74	-190.98	1,300,027.21	3,226,601.20	40.154126	-104.689311
2,440.00	10.19	254.21	2,423.01	-64.27	-206.39	1,300,022.55	3,226,585.84	40.154114	-104.689366
2,535.00	8.74	253.09	2,516.71	-68.65	-221.38	1,300,018.02	3,226,570.89	40.154102	-104.689419
2,630.00	9.41	258.79	2,610.53	-72.26	-235.90	1,300,014.28	3,226,556.40	40.154092	-104.689471
2,725.00	10.14	260.99	2,704.15	-75.08	-251.78	1,300,011.32	3,226,540.55	40.154084	-104.689528
2,821.00	9.26	258.56	2,798.77	-77.94	-267.70	1,300,008.31	3,226,524.66	40.154076	-104.689585
2,916.00	12.40	259.63	2,892.07	-81.29	-285.23	1,300,004.80	3,226,507.16	40.154067	-104.689648
3,012.00	11.72	259.27	2,985.95	-84.96	-304.95	1,300,000.95	3,226,487.47	40.154057	-104.689718
3,106.00	10.94	259.03	3,078.12	-88.44	-323.08	1,299,997.31	3,226,469.37	40.154047	-104.689783
3,202.00	10.05	257.60	3,172.51	-91.97	-340.21	1,299,993.62	3,226,452.28	40.154038	-104.689844
3,296.00	10.46	256.66	3,265.01	-95.70	-356.52	1,299,989.74	3,226,436.00	40.154027	-104.689903
3,392.00	9.21	255.55	3,359.60	-99.63	-372.44	1,299,985.67	3,226,420.12	40.154017	-104.689960
3,487.00	10.29	255.17	3,453.22	-103.70	-388.00	1,299,981.46	3,226,404.59	40.154005	-104.690015
3,582.00	11.49	255.71	3,546.51	-108.20	-405.38	1,299,976.79	3,226,387.26	40.153993	-104.690078
3,676.00	9.70	254.91	3,638.90	-112.58	-422.10	1,299,972.27	3,226,370.58	40.153981	-104.690137
3,772.00	11.47	257.88	3,733.27	-116.69	-439.24	1,299,968.00	3,226,353.48	40.153970	-104.690199
3,867.00	9.28	258.46	3,826.71	-120.20	-455.98	1,299,964.33	3,226,336.77	40.153960	-104.690259
3,962.00	10.32	258.71	3,920.32	-123.40	-471.83	1,299,960.99	3,226,320.95	40.153951	-104.690315
4,056.00	9.69	260.29	4,012.89	-126.38	-487.89	1,299,957.86	3,226,304.92	40.153943	-104.690373
4,151.00	9.52	261.28	4,106.56	-128.92	-503.53	1,299,955.18	3,226,289.30	40.153936	-104.690429
4,246.00	10.82	254.51	4,200.07	-132.50	-519.89	1,299,951.45	3,226,272.97	40.153926	-104.690487
4,341.00	8.97	256.37	4,293.65	-136.62	-535.68	1,299,947.18	3,226,257.22	40.153915	-104.690544
4,436.00	9.78	251.22	4,387.38	-140.97	-550.52	1,299,942.70	3,226,242.42	40.153903	-104.690597
4,530.00	11.26	243.60	4,479.81	-147.62	-566.30	1,299,935.91	3,226,226.70	40.153885	-104.690653
4,625.00	9.38	242.12	4,573.26	-155.36	-581.45	1,299,928.02	3,226,211.62	40.153864	-104.690707
4,721.00	11.67	246.74	4,667.64	-162.85	-597.29	1,299,920.39	3,226,195.86	40.153843	-104.690764
4,816.00	11.26	252.03	4,760.75	-169.51	-614.94	1,299,913.57	3,226,178.27	40.153825	-104.690827
4,911.00	8.51	250.35	4,854.33	-174.74	-630.39	1,299,908.20	3,226,162.87	40.153810	-104.690882
5,006.00	7.29	264.15	4,948.44	-177.72	-643.00	1,299,905.11	3,226,150.28	40.153802	-104.690928
5,100.00	5.03	262.80	5,041.89	-178.84	-653.03	1,299,903.89	3,226,140.27	40.153799	-104.690963
5,195.00	3.77	266.83	5,136.61	-179.53	-660.28	1,299,903.13	3,226,133.03	40.153797	-104.690989
5,290.00	3.56	274.05	5,231.41	-179.50	-666.34	1,299,903.11	3,226,126.96	40.153797	-104.691011
5,385.00	2.03	274.22	5,326.30	-179.17	-670.96	1,299,903.40	3,226,122.34	40.153798	-104.691028
5,479.00	1.95	291.86	5,420.24	-178.45	-674.10	1,299,904.09	3,226,119.19	40.153800	-104.691039
5,574.00	1.93	291.91	5,515.19	-177.25	-677.09	1,299,905.26	3,226,116.19	40.153803	-104.691050
5,669.00	0.28	351.65	5,610.17	-176.42	-678.60	1,299,906.07	3,226,114.67	40.153806	-104.691055
5,764.00	0.29	343.97	5,705.17	-175.96	-678.70	1,299,906.53	3,226,114.57	40.153807	-104.691055
5,859.00	0.20	298.52	5,800.17	-175.65	-678.92	1,299,906.84	3,226,114.35	40.153808	-104.691056
5,954.00	0.51	117.79	5,895.16	-175.77	-678.69	1,299,906.73	3,226,114.58	40.153808	-104.691055



Weatherford®

Andarko Petroleum Corporation

Survey Report - Geographic



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well NICHOLS 3C-5HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	25' RKB + 4912' GL @ 4937.00ft (H&P 307)
Site:	WELD_NICHOLS 6-8HZ PAD	MD Reference:	25' RKB + 4912' GL @ 4937.00ft (H&P 307)
Well:	NICHOLS 3C-5HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
6,050.00	0.16	56.80	5,991.16	-175.90	-678.20	1,299,906.60	3,226,115.07	40.153807	-104.691054
6,145.00	0.25	14.13	6,086.16	-175.62	-678.04	1,299,906.88	3,226,115.23	40.153808	-104.691053
6,239.00	0.20	26.04	6,180.16	-175.28	-677.91	1,299,907.23	3,226,115.35	40.153809	-104.691053
6,334.00	0.53	342.83	6,275.16	-174.71	-677.97	1,299,907.80	3,226,115.29	40.153810	-104.691053
6,429.00	0.47	291.77	6,370.16	-174.14	-678.46	1,299,908.36	3,226,114.79	40.153812	-104.691054
6,524.00	0.85	258.06	6,465.15	-174.14	-679.51	1,299,908.34	3,226,113.74	40.153812	-104.691058
6,618.00	1.68	262.86	6,559.13	-174.46	-681.56	1,299,908.01	3,226,111.69	40.153811	-104.691066
6,713.00	1.03	243.99	6,654.10	-175.01	-683.71	1,299,907.44	3,226,109.55	40.153810	-104.691073
6,744.00	1.13	236.98	6,685.09	-175.30	-684.22	1,299,907.15	3,226,109.04	40.153809	-104.691075
6,776.00	1.92	331.26	6,717.09	-175.00	-684.74	1,299,907.44	3,226,108.52	40.153810	-104.691077
6,808.00	6.16	354.66	6,749.00	-172.82	-685.16	1,299,909.62	3,226,108.08	40.153816	-104.691078
6,839.00	10.31	0.42	6,779.68	-168.39	-685.29	1,299,914.05	3,226,107.91	40.153828	-104.691079
6,871.00	13.92	1.72	6,810.96	-161.67	-685.16	1,299,920.76	3,226,107.98	40.153846	-104.691078
6,902.00	16.42	3.25	6,840.88	-153.57	-684.80	1,299,928.87	3,226,108.27	40.153868	-104.691077
6,934.00	21.30	3.62	6,871.15	-143.25	-684.17	1,299,939.20	3,226,108.80	40.153897	-104.691075
6,966.00	24.15	3.87	6,900.66	-130.91	-683.36	1,299,951.54	3,226,109.49	40.153931	-104.691072
6,997.00	27.30	3.47	6,928.59	-117.49	-682.51	1,299,964.97	3,226,110.23	40.153968	-104.691069
7,029.00	29.32	2.05	6,956.76	-102.33	-681.78	1,299,980.13	3,226,110.81	40.154009	-104.691066
7,061.00	30.37	2.87	6,984.51	-86.42	-681.10	1,299,996.05	3,226,111.35	40.154053	-104.691064
7,093.00	32.12	2.25	7,011.87	-69.84	-680.36	1,300,012.64	3,226,111.94	40.154098	-104.691061
7,125.00	35.55	0.23	7,038.45	-52.03	-679.98	1,300,030.45	3,226,112.15	40.154147	-104.691060
7,156.00	39.24	358.76	7,063.07	-33.21	-680.16	1,300,049.27	3,226,111.80	40.154199	-104.691061
7,188.00	42.93	358.62	7,087.19	-12.19	-680.64	1,300,070.28	3,226,111.13	40.154257	-104.691062
7,220.00	46.29	0.19	7,109.97	10.28	-680.87	1,300,092.75	3,226,110.70	40.154318	-104.691063
7,251.00	49.23	1.85	7,130.80	33.22	-680.45	1,300,115.69	3,226,110.90	40.154381	-104.691062
7,283.00	52.66	0.46	7,150.96	58.06	-679.96	1,300,140.54	3,226,111.17	40.154449	-104.691060
7,315.00	56.19	1.83	7,169.58	84.08	-679.43	1,300,166.56	3,226,111.46	40.154521	-104.691058
7,346.00	59.34	0.77	7,186.11	110.29	-678.84	1,300,192.77	3,226,111.81	40.154593	-104.691056
7,378.00	61.97	359.00	7,201.79	138.18	-678.90	1,300,220.66	3,226,111.49	40.154669	-104.691056
7,410.00	64.65	358.55	7,216.16	166.76	-679.51	1,300,249.23	3,226,110.62	40.154748	-104.691058
7,442.00	67.10	358.08	7,229.24	195.95	-680.37	1,300,278.41	3,226,109.49	40.154828	-104.691061
7,473.00	69.95	358.55	7,240.59	224.78	-681.22	1,300,307.24	3,226,108.38	40.154907	-104.691064
7,505.00	73.18	358.75	7,250.71	255.13	-681.94	1,300,337.58	3,226,107.39	40.154990	-104.691067
7,537.00	75.45	358.95	7,259.36	285.93	-682.55	1,300,368.37	3,226,106.49	40.155075	-104.691069
7,569.00	78.09	359.49	7,266.68	317.07	-682.98	1,300,399.51	3,226,105.78	40.155160	-104.691071
7,600.00	81.15	0.52	7,272.27	347.56	-682.97	1,300,430.00	3,226,105.51	40.155244	-104.691071
7,632.00	82.71	1.99	7,276.76	379.23	-682.28	1,300,461.67	3,226,105.91	40.155331	-104.691068
7,664.00	84.33	1.86	7,280.37	411.01	-681.21	1,300,493.46	3,226,106.69	40.155418	-104.691064
7,761.00	90.06	1.58	7,285.12	507.81	-678.30	1,300,590.28	3,226,108.71	40.155684	-104.691054
7,853.00	89.38	1.25	7,285.57	599.78	-676.03	1,300,682.27	3,226,110.14	40.155937	-104.691046
7,944.00	90.86	1.09	7,285.38	690.76	-674.17	1,300,773.26	3,226,111.16	40.156186	-104.691039
8,036.00	90.80	359.37	7,284.04	782.75	-673.80	1,300,865.24	3,226,110.69	40.156439	-104.691038
8,128.00	91.23	358.47	7,282.41	874.71	-675.54	1,300,957.19	3,226,108.12	40.156691	-104.691044
8,220.00	92.03	359.15	7,279.80	966.66	-677.45	1,301,049.11	3,226,105.37	40.156944	-104.691051
8,312.00	90.26	358.42	7,277.96	1,058.61	-679.40	1,301,141.05	3,226,102.57	40.157196	-104.691058
8,404.00	91.60	358.33	7,276.46	1,150.56	-682.01	1,301,232.97	3,226,099.12	40.157448	-104.691067
8,496.00	88.58	357.76	7,276.32	1,242.50	-685.15	1,301,324.87	3,226,095.15	40.157701	-104.691079
8,590.00	88.83	358.38	7,278.44	1,336.42	-688.31	1,301,418.76	3,226,091.12	40.157959	-104.691090
8,685.00	89.32	0.69	7,279.98	1,431.40	-689.08	1,301,513.73	3,226,089.48	40.158219	-104.691093
8,781.00	89.88	1.49	7,280.65	1,527.37	-687.25	1,301,609.72	3,226,090.43	40.158483	-104.691086
8,876.00	89.88	0.72	7,280.85	1,622.36	-685.42	1,301,704.71	3,226,091.39	40.158744	-104.691080
8,971.00	89.01	3.10	7,281.77	1,717.29	-682.26	1,301,799.67	3,226,093.69	40.159004	-104.691068
9,066.00	87.90	1.68	7,284.33	1,812.17	-678.30	1,301,894.58	3,226,096.78	40.159265	-104.691054
9,160.00	87.97	2.61	7,287.72	1,906.04	-674.78	1,301,988.48	3,226,099.44	40.159522	-104.691042
9,255.00	88.52	1.84	7,290.63	2,000.93	-671.09	1,302,083.40	3,226,102.26	40.159783	-104.691028

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well NICHOLS 3C-5HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	25' RKB + 4912' GL @ 4937.00ft (H&P 307)
Site:	WELD_NICHOLS 6-8HZ PAD	MD Reference:	25' RKB + 4912' GL @ 4937.00ft (H&P 307)
Well:	NICHOLS 3C-5HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,350.00	89.08	0.80	7,292.62	2,095.88	-668.91	1,302,178.36	3,226,103.58	40.160043	-104.691021
9,445.00	91.66	5.71	7,292.00	2,190.69	-663.52	1,302,273.22	3,226,108.10	40.160304	-104.691001
9,540.00	91.79	4.97	7,289.14	2,285.23	-654.68	1,302,367.84	3,226,116.07	40.160563	-104.690970
9,635.00	91.11	4.07	7,286.74	2,379.90	-647.19	1,302,462.57	3,226,122.69	40.160823	-104.690943
9,731.00	90.25	2.37	7,285.60	2,475.74	-641.80	1,302,558.46	3,226,127.20	40.161086	-104.690924
9,826.00	89.69	0.57	7,285.65	2,570.70	-639.37	1,302,653.44	3,226,128.77	40.161347	-104.690915
9,921.00	89.94	0.67	7,285.95	2,665.70	-638.34	1,302,748.44	3,226,128.93	40.161608	-104.690911
10,016.00	90.00	1.23	7,286.00	2,760.68	-636.76	1,302,843.44	3,226,129.64	40.161868	-104.690906
10,111.00	89.45	0.36	7,286.46	2,855.67	-635.44	1,302,938.43	3,226,130.08	40.162129	-104.690901
10,206.00	88.77	359.99	7,287.94	2,950.66	-635.15	1,303,033.42	3,226,129.50	40.162390	-104.690900
10,301.00	89.74	0.01	7,289.17	3,045.65	-635.15	1,303,128.40	3,226,128.64	40.162651	-104.690900
10,396.00	89.32	0.47	7,289.95	3,140.65	-634.76	1,303,223.40	3,226,128.16	40.162912	-104.690898
10,491.00	91.05	359.05	7,289.64	3,235.64	-635.15	1,303,318.38	3,226,126.90	40.163172	-104.690900
10,586.00	90.12	358.85	7,288.67	3,330.62	-636.89	1,303,413.34	3,226,124.29	40.163433	-104.690906
10,680.00	91.05	358.81	7,287.71	3,424.59	-638.81	1,303,507.30	3,226,121.51	40.163691	-104.690913
10,775.00	91.05	358.98	7,285.97	3,519.56	-640.65	1,303,602.24	3,226,118.81	40.163952	-104.690920
10,870.00	90.62	358.45	7,284.59	3,614.52	-642.78	1,303,697.18	3,226,115.81	40.164212	-104.690927
10,966.00	90.43	357.89	7,283.71	3,710.47	-645.84	1,303,793.10	3,226,111.87	40.164476	-104.690938
11,062.00	90.43	359.00	7,282.99	3,806.43	-648.45	1,303,889.03	3,226,108.38	40.164739	-104.690947
11,157.00	90.55	0.13	7,282.18	3,901.42	-649.17	1,303,984.01	3,226,106.79	40.165000	-104.690950
11,251.00	89.88	1.42	7,281.82	3,995.41	-647.90	1,304,078.01	3,226,107.20	40.165258	-104.690946
11,348.00	89.63	1.36	7,282.24	4,092.38	-645.54	1,304,174.99	3,226,108.67	40.165524	-104.690937
11,442.00	89.69	1.66	7,282.80	4,186.35	-643.07	1,304,268.98	3,226,110.29	40.165782	-104.690928
11,537.00	89.32	1.56	7,283.62	4,281.31	-640.40	1,304,363.96	3,226,112.09	40.166043	-104.690919
11,632.00	89.94	3.96	7,284.23	4,376.19	-635.82	1,304,458.88	3,226,115.79	40.166303	-104.690902
11,727.00	90.80	5.05	7,283.62	4,470.89	-628.36	1,304,553.64	3,226,122.39	40.166563	-104.690876
11,821.00	89.63	4.42	7,283.26	4,564.56	-620.60	1,304,647.39	3,226,129.29	40.166820	-104.690848
11,916.00	88.27	1.95	7,285.01	4,659.39	-615.33	1,304,742.26	3,226,133.70	40.167081	-104.690829
12,010.00	88.21	1.29	7,287.89	4,753.31	-612.67	1,304,836.19	3,226,135.49	40.167338	-104.690820
12,105.00	90.19	0.02	7,289.22	4,848.29	-611.58	1,304,931.18	3,226,135.71	40.167599	-104.690816
12,200.00	89.63	359.24	7,289.37	4,943.28	-612.20	1,305,026.17	3,226,134.23	40.167860	-104.690818
12,295.00	90.74	359.44	7,289.06	5,038.28	-613.29	1,305,121.14	3,226,132.27	40.168121	-104.690822
12,391.00	90.68	0.32	7,287.87	5,134.27	-613.49	1,305,217.13	3,226,131.19	40.168384	-104.690823
12,486.00	90.43	0.46	7,286.95	5,229.26	-612.85	1,305,312.12	3,226,130.96	40.168645	-104.690820
12,581.00	89.94	0.38	7,286.64	5,324.26	-612.15	1,305,407.12	3,226,130.79	40.168906	-104.690818
12,676.00	90.74	358.86	7,286.08	5,419.25	-612.78	1,305,502.10	3,226,129.29	40.169167	-104.690820
12,771.00	90.35	359.38	7,285.18	5,514.23	-614.24	1,305,597.07	3,226,126.96	40.169427	-104.690825
12,866.00	90.06	0.23	7,284.84	5,609.23	-614.56	1,305,692.06	3,226,125.77	40.169688	-104.690826
12,961.00	89.20	359.07	7,285.45	5,704.23	-615.14	1,305,787.05	3,226,124.32	40.169949	-104.690828
13,056.00	89.26	359.18	7,286.73	5,799.21	-616.59	1,305,882.01	3,226,122.00	40.170210	-104.690834
13,152.00	88.95	357.48	7,288.23	5,895.15	-619.39	1,305,977.92	3,226,118.33	40.170473	-104.690844
13,246.00	92.10	357.19	7,287.37	5,989.03	-623.76	1,306,071.76	3,226,113.10	40.170731	-104.690859
13,341.00	91.29	358.61	7,284.56	6,083.92	-627.24	1,306,166.62	3,226,108.75	40.170991	-104.690872
13,435.00	91.06	358.42	7,282.63	6,177.87	-629.67	1,306,260.54	3,226,105.46	40.171249	-104.690881
13,505.00	89.57	355.92	7,282.24	6,247.78	-633.13	1,306,330.41	3,226,101.36	40.171441	-104.690893
13,601.00	88.64	355.68	7,283.74	6,343.51	-640.16	1,306,426.07	3,226,093.46	40.171704	-104.690918
13,695.00	88.52	355.86	7,286.07	6,437.22	-647.09	1,306,519.72	3,226,085.67	40.171961	-104.690943
13,790.00	89.63	356.68	7,287.61	6,532.01	-653.27	1,306,614.44	3,226,078.62	40.172221	-104.690965
13,884.00	88.89	356.51	7,288.82	6,625.83	-658.85	1,306,708.21	3,226,072.18	40.172479	-104.690985
13,980.00	88.15	356.58	7,291.30	6,721.63	-664.64	1,306,803.95	3,226,065.52	40.172742	-104.691006
14,075.00	85.56	354.67	7,296.51	6,816.19	-671.87	1,306,898.45	3,226,057.42	40.173001	-104.691032
14,144.00	84.94	354.15	7,302.23	6,884.63	-678.57	1,306,966.82	3,226,050.10	40.173189	-104.691056
LAST WFT MWD SURVEY									
14,192.00	84.51	353.79	7,306.64	6,932.16	-683.59	1,307,014.30	3,226,044.64	40.173320	-104.691074
PROJECTION TO TD									

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well NICHOLS 3C-5HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	25' RKB + 4912' GL @ 4937.00ft (H&P 307)
Site:	WELD_NICHOLS 6-8HZ PAD	MD Reference:	25' RKB + 4912' GL @ 4937.00ft (H&P 307)
Well:	NICHOLS 3C-5HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
795.00	794.99	0.22	-0.22	TIE ON TO SURFACE GYRO
952.00	951.99	0.36	-0.46	FIRST WFT MWD SURVEY
14,144.00	7,302.23	6,884.63	-678.57	LAST WFT MWD SURVEY
14,192.00	7,306.64	6,932.16	-683.59	PROJECTION TO TD

Checked By: _____	Approved By: _____	Date: _____
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