

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_NORTHGLENN STATE PAD

Northglenn State 16-36

Northglenn State 16-36

Plan: Northglenn State 16-36 (wp02)

Standard Planning Report

26 April, 2011



Project: COLORADO NORTHERN ZONE - 83
 Site: WELD_NORTHGLENN STATE PAD
 Well: Northglenn State 16-36
 Wellbore: Northglenn State 16-36
 Section:
 SHL:
 Design: Northglenn State 16-36 (wp02)
 Latitude: 40.003847
 Longitude: -104.951437
 GL: 5120.00
 KB: WELL @ 5120.00ft (Original Well Elev)

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
4097.00	4663.43	PK Depth
4847.00	5421.78	SX Depth
7457.00	8031.78	NIO Depth
7903.00	8477.78	CD Depth
7973.00	8547.78	CD Depth
8324.00	8898.78	J Depth



Azimuths to True North
 Magnetic North: 8.95°

Magnetic Field
 Strength: 52916.5nT
 Dip Angle: 66.70°
 Date: 4/18/2011
 Model: IGRF2010

WELL DETAILS: Northglenn State 16-36

+N/-S	+E/-W	Northing	Ground Level: Easting	5120.00 Latitude	Longitude	Slot
0.00	0.00	1244723.53	3153672.13	40.003847	-104.951437	

CASING DETAILS

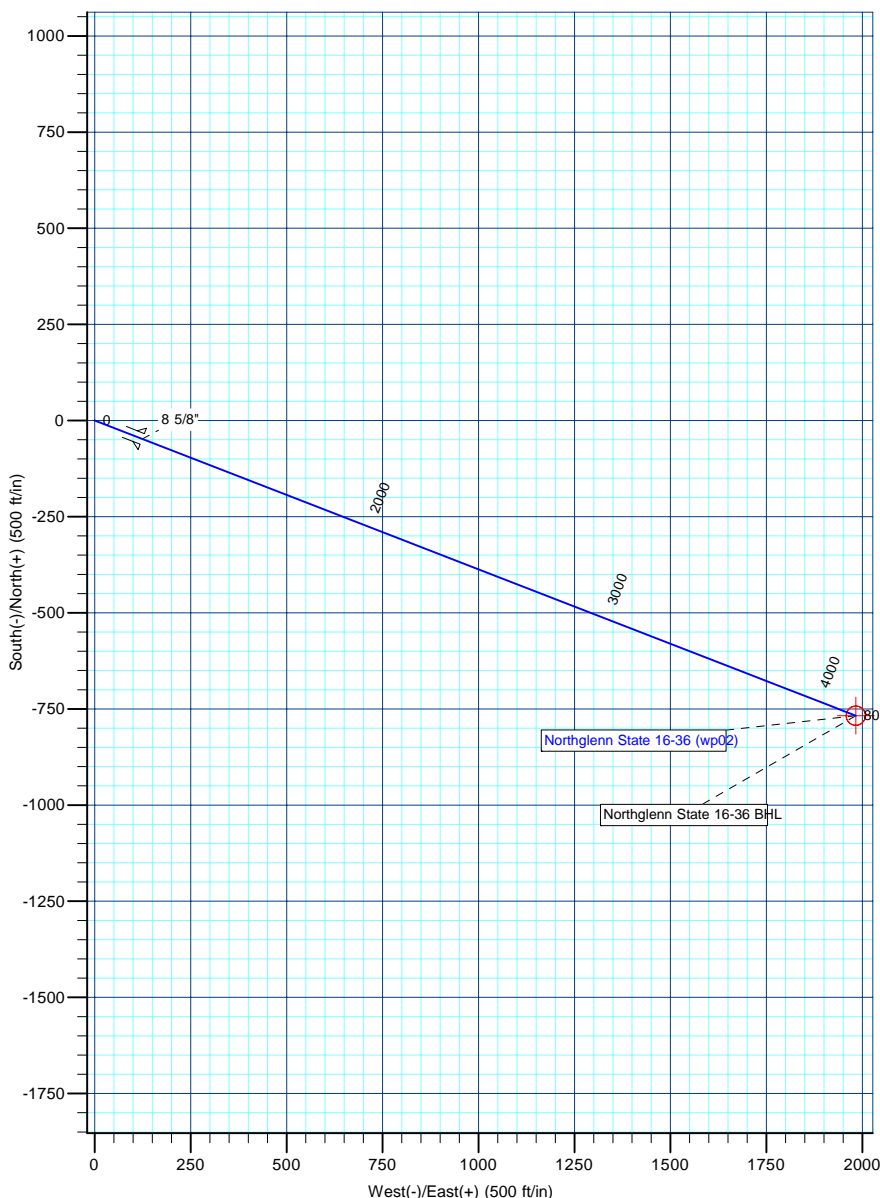
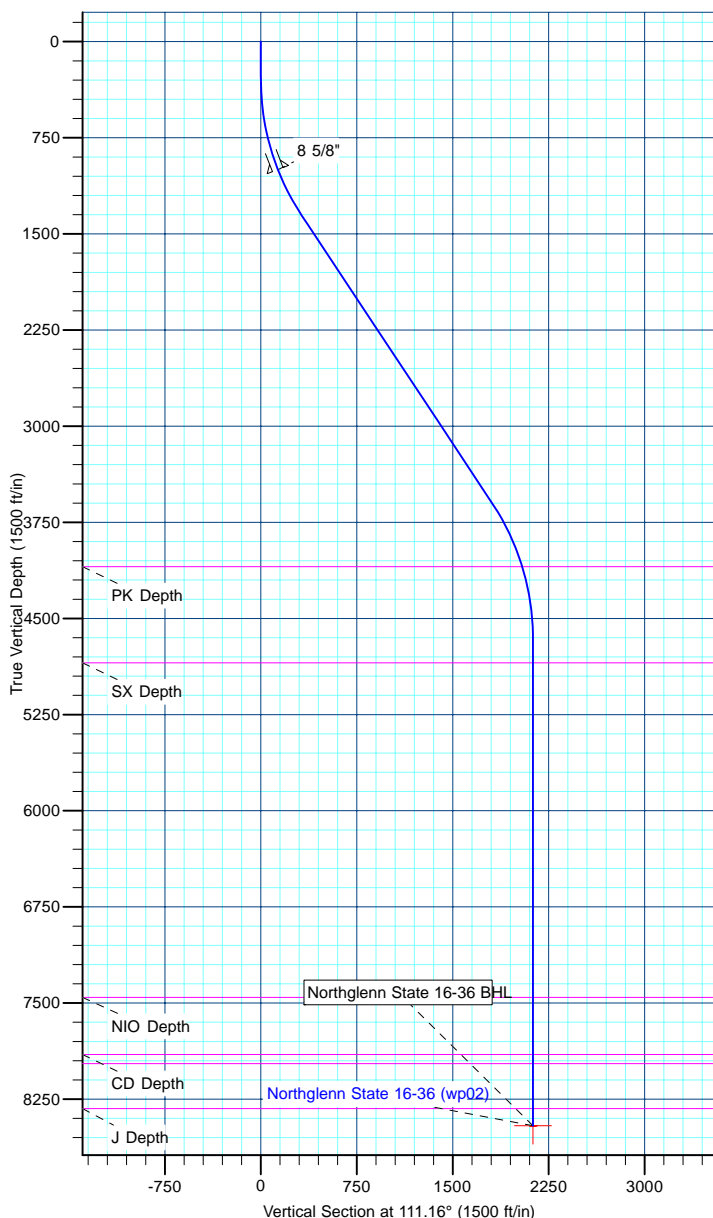
TVD	MD	Name	Size
1000.00	1016.70	8 5/8"	8-5/8

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Northglenn State 16-36 BHL	8457.00	-767.46	1982.71	1243968.35	3155659.55	40.001740	-104.944360	Circle (Radius: 25.00)

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00
1418.51	33.56	111.16	1355.66	-114.89	296.82	3.00	111.16	318.28
4113.27	33.56	111.16	3601.34	-652.57	1685.89	0.00	0.00	1807.78
5231.78	0.00	0.00	4657.00	-767.46	1982.71	3.00	180.00	2126.06
9031.78	0.00	0.00	8457.00	-767.46	1982.71	0.00	0.00	2126.06



Database:	edm5000p	Local Co-ordinate Reference:	Well Northglenn State 16-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 5120.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 5120.00ft (Original Well Elev)
Site:	WELD_NORTHGLENN STATE PAD	North Reference:	True
Well:	Northglenn State 16-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	Northglenn State 16-36		
Design:	Northglenn State 16-36 (wp02)		

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_NORTHGLENN STATE PAD			
Site Position:		Northing:	1,244,823.33 ft	Latitude:	40.004121
From:	Lat/Long	Easting:	3,153,671.35 ft	Longitude:	-104.951438
Position Uncertainty:	0.00 ft	Slot Radius:	0 "	Grid Convergence:	0.35

Well	Northglenn State 16-36					
Well Position	+N-S	-99.80 ft	Northing:	1,244,723.53 ft	Latitude:	40.003847
	+E-W	0.17 ft	Easting:	3,153,672.13 ft	Longitude:	-104.951438
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	5,120.00 ft

Wellbore	Northglenn State 16-36				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/18/2011	8.95	66.70	52,916

Design	Northglenn State 16-36 (wp02)			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	111.16

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,418.51	33.56	111.16	1,355.66	-114.89	296.82	3.00	3.00	0.00	111.16	
4,113.27	33.56	111.16	3,601.34	-652.57	1,685.89	0.00	0.00	0.00	0.00	
5,231.78	0.00	0.00	4,657.00	-767.46	1,982.71	3.00	-3.00	0.00	180.00	
9,031.78	0.00	0.00	8,457.00	-767.46	1,982.71	0.00	0.00	0.00	0.00	Northglenn State 16

Database:	edm5000p	Local Co-ordinate Reference:	Well Northglenn State 16-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 5120.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 5120.00ft (Original Well Elev)
Site:	WELD_NORTHGLENN STATE PAD	North Reference:	True
Well:	Northglenn State 16-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	Northglenn State 16-36		
Design:	Northglenn State 16-36 (wp02)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	3.00	111.16	399.95	-0.94	2.44	2.62	3.00	3.00	0.00
500.00	6.00	111.16	499.63	-3.78	9.76	10.46	3.00	3.00	0.00
600.00	9.00	111.16	598.77	-8.49	21.93	23.51	3.00	3.00	0.00
700.00	12.00	111.16	697.08	-15.07	38.92	41.74	3.00	3.00	0.00
800.00	15.00	111.16	794.31	-23.49	60.69	65.08	3.00	3.00	0.00
900.00	18.00	111.16	890.18	-33.74	87.17	93.48	3.00	3.00	0.00
1,000.00	21.00	111.16	984.43	-45.79	118.30	126.85	3.00	3.00	0.00
1,016.70	21.50	111.16	1,000.00	-47.98	123.94	132.91	3.00	3.00	0.00
8 5/8"									
1,100.00	24.00	111.16	1,076.81	-59.60	153.98	165.12	3.00	3.00	0.00
1,200.00	27.00	111.16	1,167.06	-75.14	194.13	208.16	3.00	3.00	0.00
1,300.00	30.00	111.16	1,254.93	-92.36	238.62	255.87	3.00	3.00	0.00
1,400.00	33.00	111.16	1,340.18	-111.22	287.34	308.12	3.00	3.00	0.00
1,418.51	33.56	111.16	1,355.66	-114.89	296.82	318.28	3.00	3.00	0.00
1,500.00	33.56	111.16	1,423.57	-131.15	338.82	363.32	0.00	0.00	0.00
1,600.00	33.56	111.16	1,506.90	-151.10	390.37	418.59	0.00	0.00	0.00
1,700.00	33.56	111.16	1,590.24	-171.05	441.91	473.86	0.00	0.00	0.00
1,800.00	33.56	111.16	1,673.57	-191.01	493.46	529.14	0.00	0.00	0.00
1,900.00	33.56	111.16	1,756.91	-210.96	545.01	584.41	0.00	0.00	0.00
2,000.00	33.56	111.16	1,840.24	-230.91	596.56	639.69	0.00	0.00	0.00
2,100.00	33.56	111.16	1,923.58	-250.86	648.10	694.96	0.00	0.00	0.00
2,200.00	33.56	111.16	2,006.91	-270.82	699.65	750.24	0.00	0.00	0.00
2,300.00	33.56	111.16	2,090.25	-290.77	751.20	805.51	0.00	0.00	0.00
2,400.00	33.56	111.16	2,173.58	-310.72	802.75	860.79	0.00	0.00	0.00
2,500.00	33.56	111.16	2,256.92	-330.68	854.29	916.06	0.00	0.00	0.00
2,600.00	33.56	111.16	2,340.26	-350.63	905.84	971.33	0.00	0.00	0.00
2,700.00	33.56	111.16	2,423.59	-370.58	957.39	1,026.61	0.00	0.00	0.00
2,800.00	33.56	111.16	2,506.93	-390.53	1,008.94	1,081.88	0.00	0.00	0.00
2,900.00	33.56	111.16	2,590.26	-410.49	1,060.48	1,137.16	0.00	0.00	0.00
3,000.00	33.56	111.16	2,673.60	-430.44	1,112.03	1,192.43	0.00	0.00	0.00
3,100.00	33.56	111.16	2,756.93	-450.39	1,163.58	1,247.71	0.00	0.00	0.00
3,200.00	33.56	111.16	2,840.27	-470.34	1,215.13	1,302.98	0.00	0.00	0.00
3,300.00	33.56	111.16	2,923.60	-490.30	1,266.67	1,358.25	0.00	0.00	0.00
3,400.00	33.56	111.16	3,006.94	-510.25	1,318.22	1,413.53	0.00	0.00	0.00
3,500.00	33.56	111.16	3,090.27	-530.20	1,369.77	1,468.80	0.00	0.00	0.00
3,600.00	33.56	111.16	3,173.61	-550.16	1,421.32	1,524.08	0.00	0.00	0.00
3,700.00	33.56	111.16	3,256.94	-570.11	1,472.86	1,579.35	0.00	0.00	0.00
3,800.00	33.56	111.16	3,340.28	-590.06	1,524.41	1,634.63	0.00	0.00	0.00
3,900.00	33.56	111.16	3,423.61	-610.01	1,575.96	1,689.90	0.00	0.00	0.00
4,000.00	33.56	111.16	3,506.95	-629.97	1,627.51	1,745.17	0.00	0.00	0.00
4,100.00	33.56	111.16	3,590.28	-649.92	1,679.05	1,800.45	0.00	0.00	0.00
4,113.27	33.56	111.16	3,601.34	-652.57	1,685.89	1,807.78	0.00	0.00	0.00
4,200.00	30.95	111.16	3,674.68	-669.27	1,729.06	1,854.07	3.00	-3.00	0.00
4,300.00	27.95	111.16	3,761.75	-687.02	1,774.91	1,903.23	3.00	-3.00	0.00
4,400.00	24.95	111.16	3,851.27	-703.10	1,816.45	1,947.77	3.00	-3.00	0.00
4,500.00	21.95	111.16	3,942.99	-717.46	1,853.56	1,987.57	3.00	-3.00	0.00
4,600.00	18.95	111.16	4,036.68	-730.08	1,886.14	2,022.51	3.00	-3.00	0.00
4,663.43	17.05	111.16	4,097.00	-737.15	1,904.42	2,042.11	3.00	-3.00	0.00
PK Depth									
4,700.00	15.95	111.16	4,132.06	-740.90	1,914.11	2,052.50	3.00	-3.00	0.00

Database:	edm5000p	Local Co-ordinate Reference:	Well Northglenn State 16-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 5120.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 5120.00ft (Original Well Elev)
Site:	WELD_NORTHGLENN STATE PAD	North Reference:	True
Well:	Northglenn State 16-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	Northglenn State 16-36		
Design:	Northglenn State 16-36 (wp02)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,800.00	12.95	111.16	4,228.89	-749.91	1,937.38	2,077.46	3.00	-3.00	0.00
4,900.00	9.95	111.16	4,326.89	-757.08	1,955.90	2,097.31	3.00	-3.00	0.00
5,000.00	6.95	111.16	4,425.79	-762.38	1,969.61	2,112.01	3.00	-3.00	0.00
5,100.00	3.95	111.16	4,525.32	-765.81	1,978.47	2,121.51	3.00	-3.00	0.00
5,200.00	0.95	111.16	4,625.22	-767.36	1,982.46	2,125.79	3.00	-3.00	0.00
5,231.78	0.00	0.00	4,657.00	-767.46	1,982.71	2,126.06	3.00	-3.00	0.00
5,300.00	0.00	0.00	4,725.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
5,400.00	0.00	0.00	4,825.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
5,421.78	0.00	0.00	4,847.00	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
SX Depth									
5,500.00	0.00	0.00	4,925.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
5,600.00	0.00	0.00	5,025.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
5,700.00	0.00	0.00	5,125.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
5,800.00	0.00	0.00	5,225.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
5,900.00	0.00	0.00	5,325.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
6,000.00	0.00	0.00	5,425.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
6,100.00	0.00	0.00	5,525.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
6,200.00	0.00	0.00	5,625.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
6,300.00	0.00	0.00	5,725.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
6,400.00	0.00	0.00	5,825.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
6,500.00	0.00	0.00	5,925.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
6,600.00	0.00	0.00	6,025.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
6,700.00	0.00	0.00	6,125.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
6,800.00	0.00	0.00	6,225.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
6,900.00	0.00	0.00	6,325.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
7,000.00	0.00	0.00	6,425.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
7,100.00	0.00	0.00	6,525.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
7,200.00	0.00	0.00	6,625.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
7,300.00	0.00	0.00	6,725.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
7,400.00	0.00	0.00	6,825.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
7,500.00	0.00	0.00	6,925.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
7,600.00	0.00	0.00	7,025.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
7,700.00	0.00	0.00	7,125.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
7,800.00	0.00	0.00	7,225.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
7,900.00	0.00	0.00	7,325.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
8,000.00	0.00	0.00	7,425.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
8,031.78	0.00	0.00	7,457.00	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
NIO Depth									
8,100.00	0.00	0.00	7,525.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
8,200.00	0.00	0.00	7,625.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
8,300.00	0.00	0.00	7,725.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
8,400.00	0.00	0.00	7,825.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
8,477.78	0.00	0.00	7,903.00	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
CD Depth									
8,500.00	0.00	0.00	7,925.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
8,547.78	0.00	0.00	7,973.00	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
CD Depth									
8,600.00	0.00	0.00	8,025.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
8,700.00	0.00	0.00	8,125.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
8,800.00	0.00	0.00	8,225.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
8,898.78	0.00	0.00	8,324.00	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
J Depth									
8,900.00	0.00	0.00	8,325.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00

Database:	edm5000p	Local Co-ordinate Reference:	Well Northglenn State 16-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 5120.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 5120.00ft (Original Well Elev)
Site:	WELD_NORTHGLENN STATE PAD	North Reference:	True
Well:	Northglenn State 16-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	Northglenn State 16-36		
Design:	Northglenn State 16-36 (wp02)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
9,000.00	0.00	0.00	8,425.22	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
9,031.78	0.00	0.00	8,457.00	-767.46	1,982.71	2,126.06	0.00	0.00	0.00
Northglenn State 16-36 BHL									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Northglenn State 16-3	0.00	0.00	8,457.00	-767.46	1,982.71	1,243,968.35	3,155,659.55	40.001740	-104.944360
- plan hits target center									
- Circle (radius 25.00)									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
1,016.70	1,000.00	8 5/8"	8-5/8	11	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,663.43	4,097.00	PK Depth				
5,421.78	4,847.00	SX Depth				
8,031.78	7,457.00	NIO Depth				
8,477.78	7,903.00	CD Depth				
8,547.78	7,973.00	CD Depth				
8,898.78	8,324.00	J Depth				