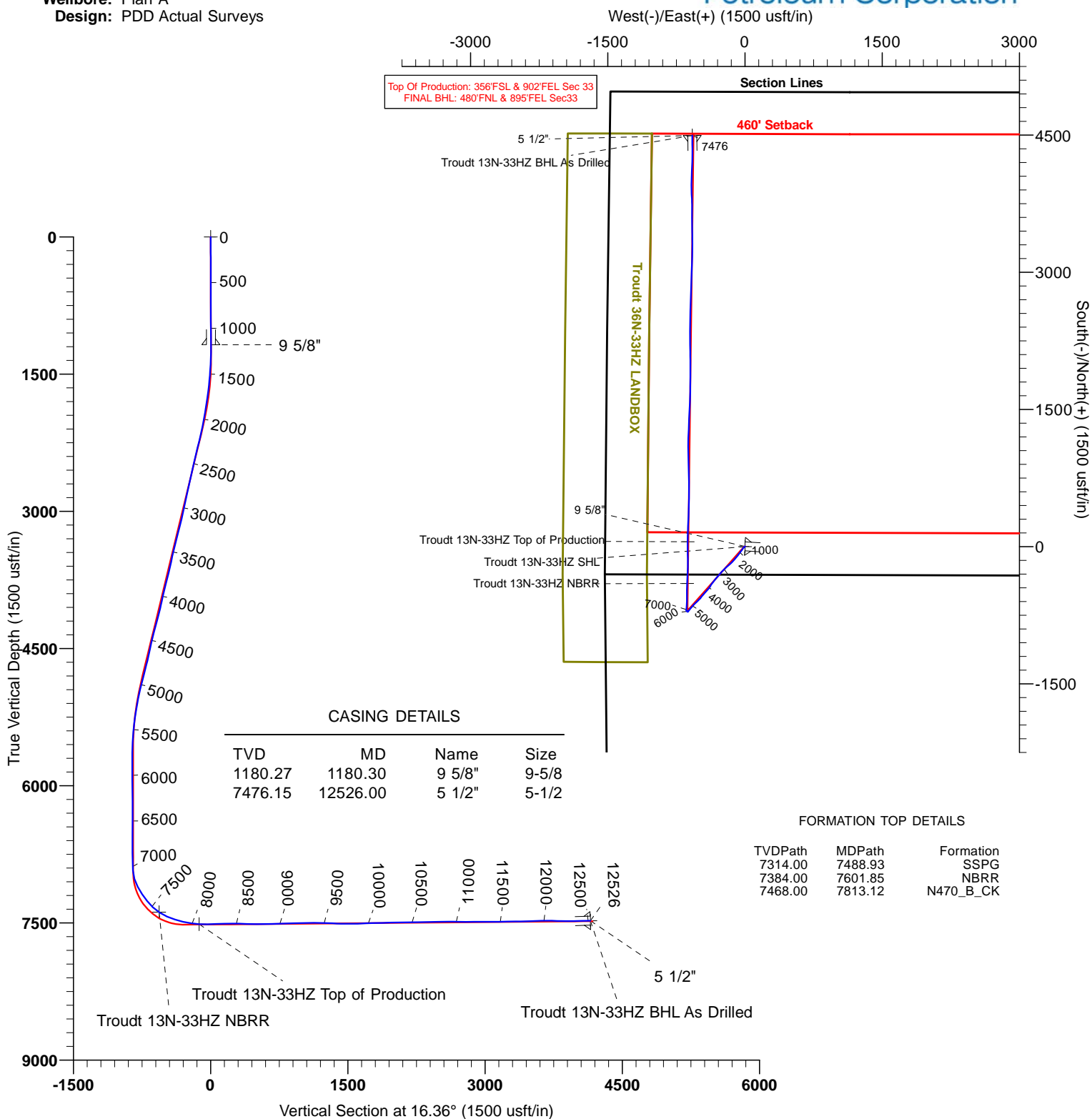


US ROCKIES WATTENBERG PLANNING



Project: WELD-NAD83-UTMFT13N
Site: 2N-67W-33 Troutd 14N-33HZ Pad
Well: Troutd 13N-33HZ
Wellbore: Plan A
Design: PDD Actual Surveys



CASING DETAILS

TVD	MD	Name	Size
1180.27	1180.30	9 5/8"	9-5/8
7476.15	12526.00	5 1/2"	5-1/2

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
7314.00	7488.93	SSPG
7384.00	7601.85	NBRR
7468.00	7813.12	N470_B_CK

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Troutd 13N-33HZ SHL	0.00	0.00	0.00	14558939.90	1668425.16	40.088401	-104.899859	Point
Troutd 13N-33HZ NBRR	7384.00	-401.90	-631.99	14558537.29	1667793.62	40.087297	-104.902118	Point
Troutd 13N-33HZ BHL As Drilled	7476.15	4496.02	-575.88	14563435.27	1667844.22	40.100748	-104.901918	Point
Troutd 13N-33HZ Top of Production	7513.70	54.05	-626.75	14558993.24	1667798.35	40.088550	-104.902099	Point



Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well Troudt 13N-33HZ - Slot 13N-33HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	5037+25 @ 5062.00usft (H311)
Site:	2N-67W-33 Troudt 14N-33HZ Pad	MD Reference:	5037+25 @ 5062.00usft (H311)
Well:	Troudt 13N-33HZ	North Reference:	True
Wellbore:	Plan A	Survey Calculation Method:	Minimum Curvature
Design:	PDD Actual Surveys	Database:	EDM 5000 MultiUser DB

Project	WELD-NAD83-UTMFT13N		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Zone 13N (108 W to 102 W)		

Site		2N-67W-33 Troudt 14N-33HZ Pad, centered on 34C-33HZ			
Site Position:		Northing:	14,558,940.06 usft	Latitude:	40.088402
From:	Lat/Long	Easting:	1,668,395.17 usft	Longitude:	-104.899966
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.06 °

Well	Troudt 13N-33HZ - Slot 13N-33HZ					
Well Position	+N/-S	0.00 usft	Northing:	14,558,939.90 usft	Latitude:	40.088401
	+E/-W	0.00 usft	Easting:	1,668,425.16 usft	Longitude:	-104.899859
Position Uncertainty		3.28 usft	Wellhead Elevation:	usft	Ground Level:	5,037.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	4/1/2015	8.49	66.64	52,465

Design	PDD Actual Surveys				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	16.36	

Survey Program	Date	5/15/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
20.00	1,146.00	Cathedral MWD Surface (Plan A)	APC_ISCWSA REV 2 MWD	Fixed:v2:standard declination	
1,186.00	7,987.00	PDD MWD+IFR1 Vert/Curve (Plan A)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
8,081.00	12,430.00	PDD MWD+IFR1 Lateral (Plan A)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
12,526.00	12,526.00	PDD Projection to Bit (Plan A)	APC_BLIND	OWSG BLIND	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
20.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	
103.00	0.70	22.20	103.00	0.47	0.19	0.50	0.84	0.84	0.00	
168.00	0.70	26.70	167.99	1.19	0.52	1.29	0.08	0.00	6.92	
225.00	0.90	44.90	224.99	1.82	0.99	2.03	0.56	0.35	31.93	
286.00	0.20	3.80	285.98	2.27	1.34	2.55	1.25	-1.15	-67.38	
346.00	0.10	227.70	345.98	2.33	1.31	2.61	0.47	-0.17	-226.83	
410.00	0.20	128.00	409.98	2.23	1.35	2.52	0.37	0.16	-155.78	

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well Troudt 13N-33HZ - Slot 13N-33HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	5037+25 @ 5062.00usft (H311)
Site:	2N-67W-33 Troudt 14N-33HZ Pad	MD Reference:	5037+25 @ 5062.00usft (H311)
Well:	Troudt 13N-33HZ	North Reference:	True
Wellbore:	Plan A	Survey Calculation Method:	Minimum Curvature
Design:	PDD Actual Surveys	Database:	EDM 5000 MultiUser DB

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
473.00	0.01	278.60	472.98	2.16	1.43	2.48	0.33	-0.30	239.05
536.00	0.40	153.90	535.98	1.96	1.53	2.31	0.64	0.62	-197.94
600.00	0.20	154.20	599.98	1.66	1.67	2.07	0.31	-0.31	0.47
664.00	0.10	47.00	663.98	1.60	1.76	2.03	0.39	-0.16	-167.50
728.00	0.30	5.70	727.98	1.81	1.82	2.25	0.37	0.31	-64.53
791.00	0.40	232.20	790.98	1.84	1.66	2.23	1.02	0.16	-211.90
854.00	0.30	147.40	853.98	1.56	1.58	1.94	0.76	-0.16	-134.60
918.00	0.30	52.10	917.98	1.52	1.80	1.97	0.69	0.00	-148.91
982.00	0.60	356.30	981.98	1.96	1.91	2.42	0.78	0.47	-87.19
1,046.00	0.50	3.80	1,045.98	2.57	1.91	3.01	0.19	-0.16	11.72
1,111.00	0.40	313.60	1,110.97	3.01	1.76	3.39	0.60	-0.15	-77.23
1,146.00	0.70	302.70	1,145.97	3.21	1.49	3.50	0.90	0.86	-31.14
1,186.00	0.70	268.60	1,185.97	3.34	1.04	3.50	1.03	0.00	-85.25
1,280.00	0.90	277.40	1,279.96	3.42	-0.26	3.21	0.25	0.21	9.36
1,374.00	3.20	231.40	1,373.90	1.88	-3.05	0.94	2.82	2.45	-48.94
1,563.00	6.20	219.00	1,562.25	-9.35	-13.59	-12.80	1.67	1.59	-6.56
1,752.00	8.40	217.30	1,749.70	-28.26	-28.38	-35.11	1.17	1.16	-0.90
1,941.00	9.70	215.20	1,936.35	-52.26	-45.93	-63.07	0.71	0.69	-1.11
2,130.00	14.30	216.90	2,121.17	-83.95	-69.13	-100.02	2.44	2.43	0.90
2,319.00	13.90	220.50	2,304.48	-119.88	-97.89	-142.59	0.51	-0.21	1.90
2,507.00	15.50	222.20	2,486.32	-155.66	-129.43	-185.81	0.88	0.85	0.90
2,696.00	13.40	229.90	2,669.34	-188.48	-163.16	-226.80	1.50	-1.11	4.07
2,886.00	15.70	226.80	2,853.24	-220.27	-198.74	-267.32	1.28	1.21	-1.63
3,074.00	13.50	227.50	3,035.16	-252.51	-233.47	-308.03	1.17	-1.17	0.37
3,263.00	16.00	218.70	3,217.94	-287.75	-266.03	-351.02	1.77	1.32	-4.66
3,452.00	15.00	221.90	3,400.07	-326.29	-298.65	-397.18	0.70	-0.53	1.69
3,640.00	13.20	219.40	3,582.40	-360.98	-328.52	-438.89	1.01	-0.96	-1.33
3,830.00	15.70	215.90	3,766.38	-398.58	-357.37	-483.08	1.39	1.32	-1.84
4,019.00	12.50	212.00	3,949.66	-436.65	-383.21	-526.89	1.77	-1.69	-2.06
4,207.00	15.70	222.90	4,132.01	-472.55	-411.32	-569.26	2.20	1.70	5.80
4,396.00	17.10	220.80	4,313.31	-512.32	-446.89	-617.43	0.80	0.74	-1.11
4,585.00	12.10	216.60	4,496.16	-549.28	-476.88	-661.34	2.70	-2.65	-2.22
4,774.00	15.50	225.40	4,679.70	-582.93	-506.68	-702.02	2.11	1.80	4.66
4,963.00	17.40	226.80	4,860.95	-620.01	-545.26	-748.47	1.03	1.01	0.74
5,152.00	11.80	218.30	5,043.80	-654.55	-577.87	-790.79	3.16	-2.96	-4.50
5,341.00	9.50	221.50	5,229.53	-681.40	-600.19	-822.84	1.26	-1.22	1.69
5,530.00	4.90	214.50	5,416.99	-699.75	-615.10	-844.64	2.47	-2.43	-3.70
5,718.00	3.20	211.00	5,604.52	-710.86	-622.35	-857.35	0.91	-0.90	-1.86
5,907.00	2.30	345.60	5,793.42	-711.71	-626.02	-859.20	2.69	-0.48	71.22
6,096.00	1.60	329.80	5,982.31	-705.76	-628.29	-854.12	0.46	-0.37	-8.36
6,284.00	0.40	265.50	6,170.28	-703.54	-630.26	-852.55	0.78	-0.64	-34.20
6,473.00	0.90	277.80	6,359.27	-703.39	-632.39	-853.01	0.27	0.26	6.51
6,662.00	0.90	265.10	6,548.24	-703.32	-635.34	-853.77	0.11	0.00	-6.72

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well Troudt 13N-33HZ - Slot 13N-33HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	5037+25 @ 5062.00usft (H311)
Site:	2N-67W-33 Troudt 14N-33HZ Pad	MD Reference:	5037+25 @ 5062.00usft (H311)
Well:	Troudt 13N-33HZ	North Reference:	True
Wellbore:	Plan A	Survey Calculation Method:	Minimum Curvature
Design:	PDD Actual Surveys	Database:	EDM 5000 MultiUser DB

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,851.00	1.10	267.90	6,737.21	-703.51	-638.63	-854.88	0.11	0.11	1.48
7,040.00	3.50	347.70	6,926.08	-697.94	-641.67	-850.39	1.84	1.27	42.22
7,135.00	17.80	7.10	7,019.22	-680.60	-640.49	-833.42	15.31	15.05	20.42
7,230.00	28.20	6.00	7,106.55	-643.77	-636.34	-796.91	10.96	10.95	-1.16
7,324.00	35.50	0.40	7,186.36	-594.31	-633.82	-748.74	8.37	7.77	-5.96
7,419.00	38.50	358.60	7,262.22	-537.15	-634.35	-694.05	3.36	3.16	-1.89
7,513.00	48.40	1.10	7,330.38	-472.60	-634.39	-632.12	10.69	10.53	2.66
7,608.00	57.90	2.80	7,387.29	-396.72	-631.74	-558.56	10.10	10.00	1.79
7,703.00	66.50	3.20	7,431.56	-312.88	-627.33	-476.87	9.06	9.05	0.42
7,797.00	73.70	0.70	7,463.54	-224.60	-624.37	-391.34	8.06	7.66	-2.66
7,892.00	76.20	359.70	7,488.20	-132.87	-624.06	-303.23	2.82	2.63	-1.05
7,987.00	82.50	358.30	7,505.75	-39.57	-625.70	-214.17	6.79	6.63	-1.47
8,081.00	87.80	0.40	7,513.70	54.05	-626.75	-124.63	6.06	5.64	2.23
8,176.00	90.60	1.80	7,515.02	149.01	-624.93	-33.00	3.30	2.95	1.47
8,270.00	91.80	2.50	7,513.06	242.92	-621.40	58.10	1.48	1.28	0.74
8,365.00	91.70	1.80	7,510.15	337.81	-617.84	150.15	0.74	-0.11	-0.74
8,460.00	90.60	2.50	7,508.25	432.72	-614.28	242.23	1.37	-1.16	0.74
8,554.00	88.30	1.10	7,509.15	526.66	-611.32	333.20	2.86	-2.45	-1.49
8,649.00	88.30	359.70	7,511.97	621.61	-610.66	424.50	1.47	0.00	-1.47
8,744.00	88.70	359.00	7,514.46	716.57	-611.74	515.31	0.85	0.42	-0.74
8,838.00	91.00	358.60	7,514.70	810.55	-613.71	604.92	2.48	2.45	-0.43
8,933.00	93.30	358.30	7,511.14	905.44	-616.27	695.25	2.44	2.42	-0.32
9,027.00	91.30	358.30	7,507.37	999.32	-619.06	784.55	2.13	-2.13	0.00
9,122.00	90.80	0.00	7,505.62	1,094.29	-620.47	875.28	1.86	-0.53	1.79
9,216.00	90.30	2.50	7,504.72	1,188.25	-618.42	966.02	2.71	-0.53	2.66
9,311.00	92.60	2.10	7,502.32	1,283.14	-614.61	1,058.14	2.46	2.42	-0.42
9,405.00	90.60	2.50	7,499.69	1,377.02	-610.84	1,149.28	2.17	-2.13	0.43
9,500.00	87.10	2.80	7,501.60	1,471.88	-606.45	1,241.55	3.70	-3.68	0.32
9,595.00	87.60	2.10	7,505.99	1,566.70	-602.39	1,333.66	0.90	0.53	-0.74
9,689.00	88.70	1.40	7,509.03	1,660.60	-599.52	1,424.57	1.39	1.17	-0.74
9,784.00	89.90	0.70	7,510.19	1,755.58	-597.78	1,516.20	1.46	1.26	-0.74
9,878.00	91.30	0.70	7,509.20	1,849.56	-596.63	1,606.70	1.49	1.49	0.00
9,973.00	92.70	359.70	7,505.89	1,944.50	-596.30	1,697.89	1.81	1.47	-1.05
10,067.00	91.00	359.70	7,502.85	2,038.45	-596.79	1,787.90	1.81	-1.81	0.00
10,162.00	91.70	358.60	7,500.62	2,133.41	-598.20	1,878.62	1.37	0.74	-1.16
10,256.00	92.00	358.60	7,497.58	2,227.33	-600.50	1,968.09	0.32	0.32	0.00
10,350.00	90.40	0.40	7,495.61	2,321.30	-601.32	2,058.03	2.56	-1.70	1.91
10,445.00	91.30	0.40	7,494.20	2,416.28	-600.65	2,149.36	0.95	0.95	0.00
10,540.00	90.10	2.50	7,493.04	2,511.24	-598.25	2,241.15	2.55	-1.26	2.21
10,634.00	90.60	2.10	7,492.47	2,605.16	-594.48	2,332.33	0.68	0.53	-0.43
10,729.00	91.80	1.10	7,490.48	2,700.10	-591.82	2,424.18	1.64	1.26	-1.05
10,823.00	90.60	1.10	7,488.51	2,794.06	-590.02	2,514.84	1.28	-1.28	0.00
10,918.00	90.30	1.80	7,487.76	2,889.03	-587.62	2,606.64	0.80	-0.32	0.74
11,012.00	88.90	2.80	7,488.42	2,982.95	-583.84	2,697.82	1.83	-1.49	1.06

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well Troudt 13N-33HZ - Slot 13N-33HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	5037+25 @ 5062.00usft (H311)
Site:	2N-67W-33 Troudt 14N-33HZ Pad	MD Reference:	5037+25 @ 5062.00usft (H311)
Well:	Troudt 13N-33HZ	North Reference:	True
Wellbore:	Plan A	Survey Calculation Method:	Minimum Curvature
Design:	PDD Actual Surveys	Database:	EDM 5000 MultiUser DB

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,106.00	89.60	2.80	7,489.65	3,076.82	-579.25	2,789.19	0.74	0.74	0.00
11,201.00	91.00	1.80	7,489.15	3,171.74	-575.44	2,881.34	1.81	1.47	-1.05
11,296.00	89.60	0.00	7,488.66	3,266.72	-573.95	2,972.90	2.40	-1.47	-1.89
11,390.00	89.90	359.00	7,489.07	3,360.72	-574.77	3,062.86	1.11	0.32	-1.06
11,485.00	90.80	357.90	7,488.49	3,455.68	-577.34	3,153.26	1.50	0.95	-1.16
11,579.00	91.80	0.70	7,486.35	3,549.64	-578.49	3,243.09	3.16	1.06	2.98
11,674.00	89.90	0.00	7,484.94	3,644.62	-577.91	3,334.39	2.13	-2.00	-0.74
11,769.00	91.00	359.30	7,484.20	3,739.61	-578.49	3,425.38	1.37	1.16	-0.74
11,863.00	92.90	357.60	7,481.00	3,833.52	-581.03	3,514.76	2.71	2.02	-1.81
11,958.00	92.20	358.30	7,476.77	3,928.36	-584.42	3,604.81	1.04	-0.74	0.74
12,052.00	88.00	2.80	7,476.61	4,022.31	-583.52	3,695.22	6.55	-4.47	4.79
12,147.00	88.70	2.50	7,479.34	4,117.17	-579.13	3,787.47	0.80	0.74	-0.32
12,241.00	89.60	1.40	7,480.74	4,211.10	-575.93	3,878.50	1.51	0.96	-1.17
12,335.00	90.40	0.40	7,480.74	4,305.09	-574.45	3,969.10	1.36	0.85	-1.06
12,430.00	91.70	359.30	7,479.00	4,400.07	-574.70	4,060.17	1.79	1.37	-1.16
12,526.00	91.70	359.30	7,476.15	4,496.02	-575.88	4,151.91	0.00	0.00	0.00

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name		Casing Diameter (")	Hole Diameter (")
1,180.30	1,180.27	9 5/8"		9-5/8	12-1/4
12,526.00	7,476.15	5 1/2"		5-1/2	8-1/2