



University of Utah

Forge

Beaver County, UT

16A(78)-32

16A(78)-32

Design: 16A(78)-32

Standard Survey Report

19 December, 2020





Project: Forge
 Site: Beaver County, UT
 Well: 16A(78)-32
 GL: GE + RKB (5414' + 30') @ 5444.00usft (Frontier 16)
 SHL Northing: 13987645.20
 SHL Easting: 1097896.92
 Rig: Frontier 16
 Plan: Design: 16A(78)-32 plan 1

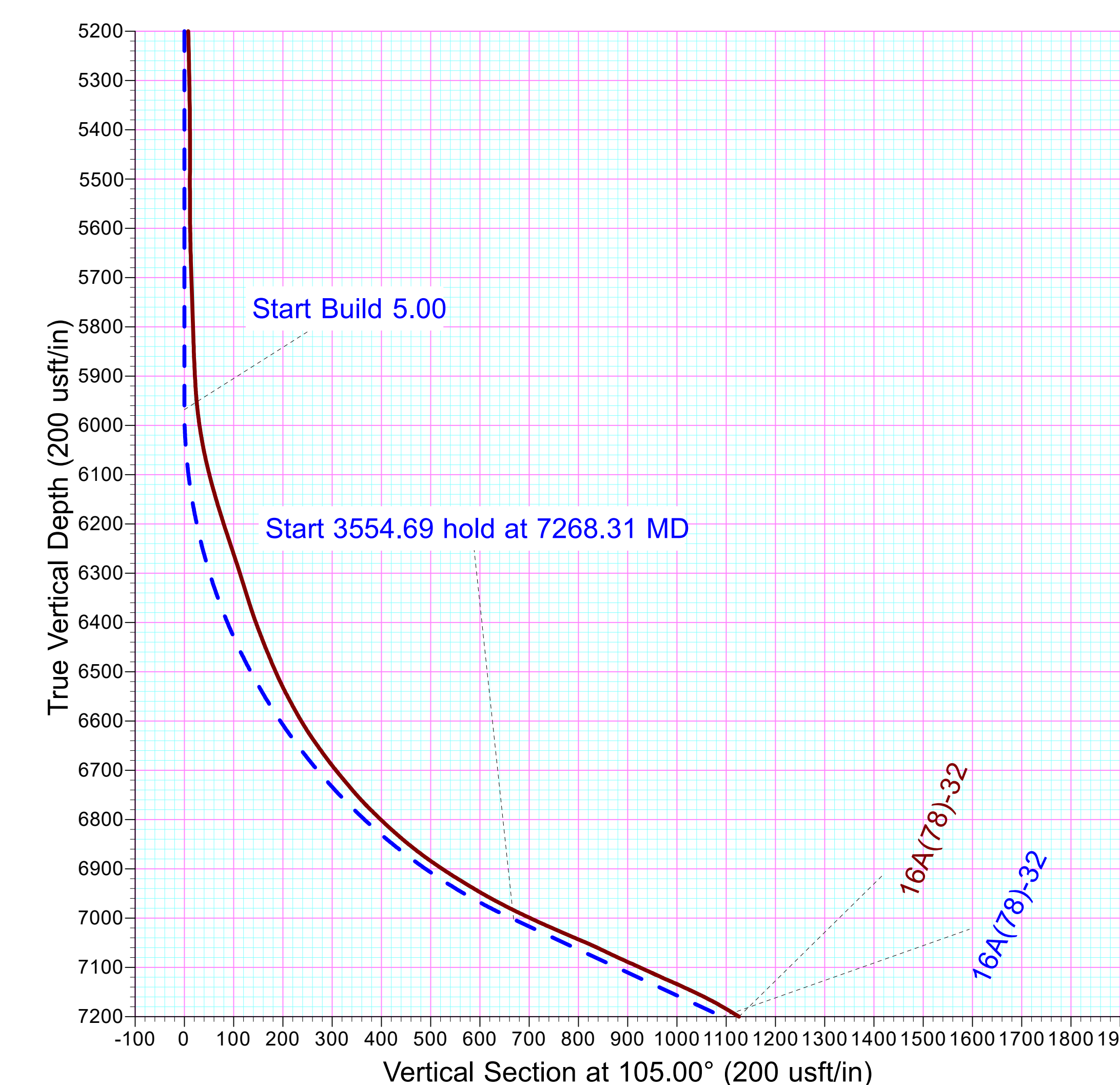
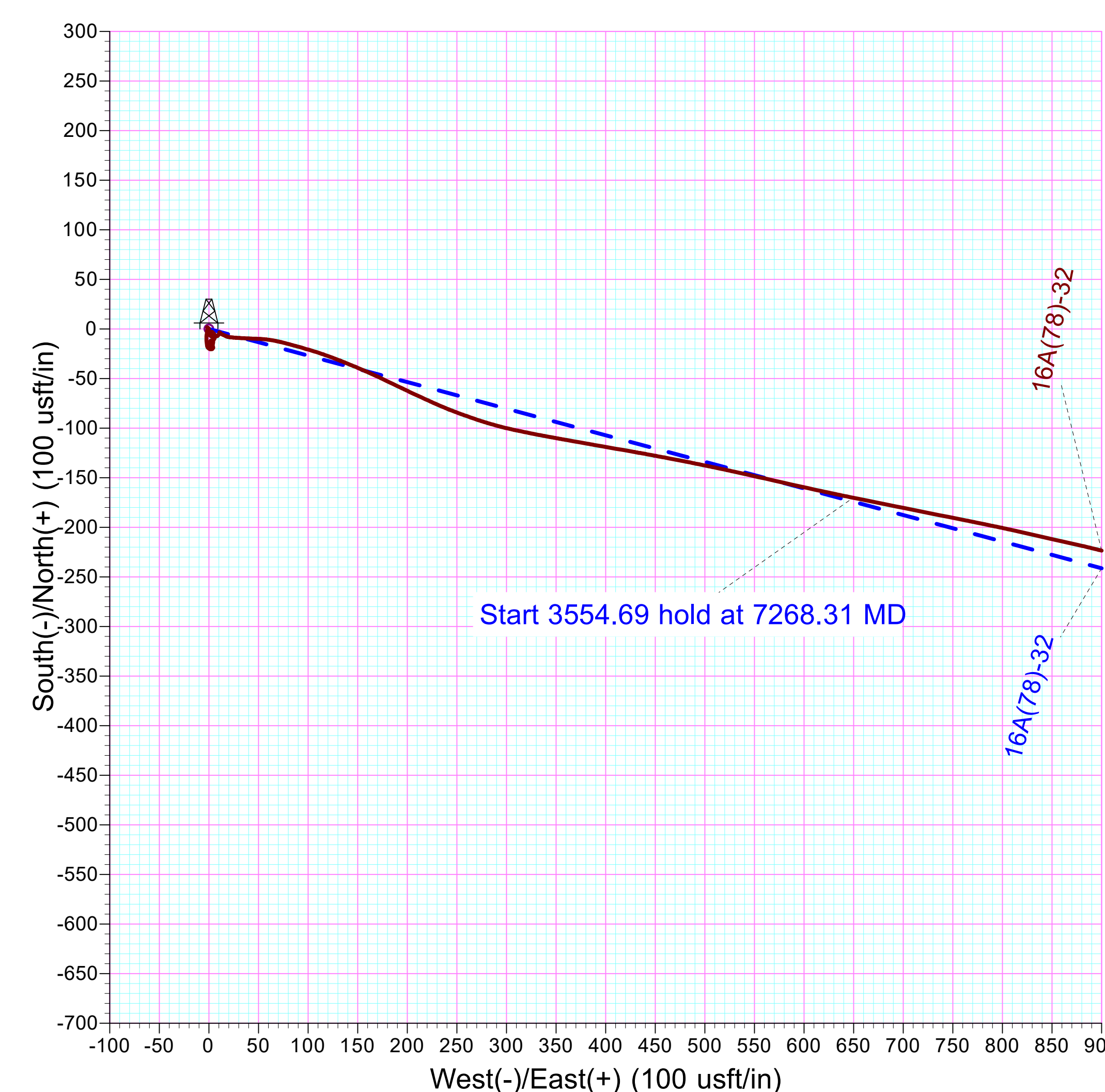
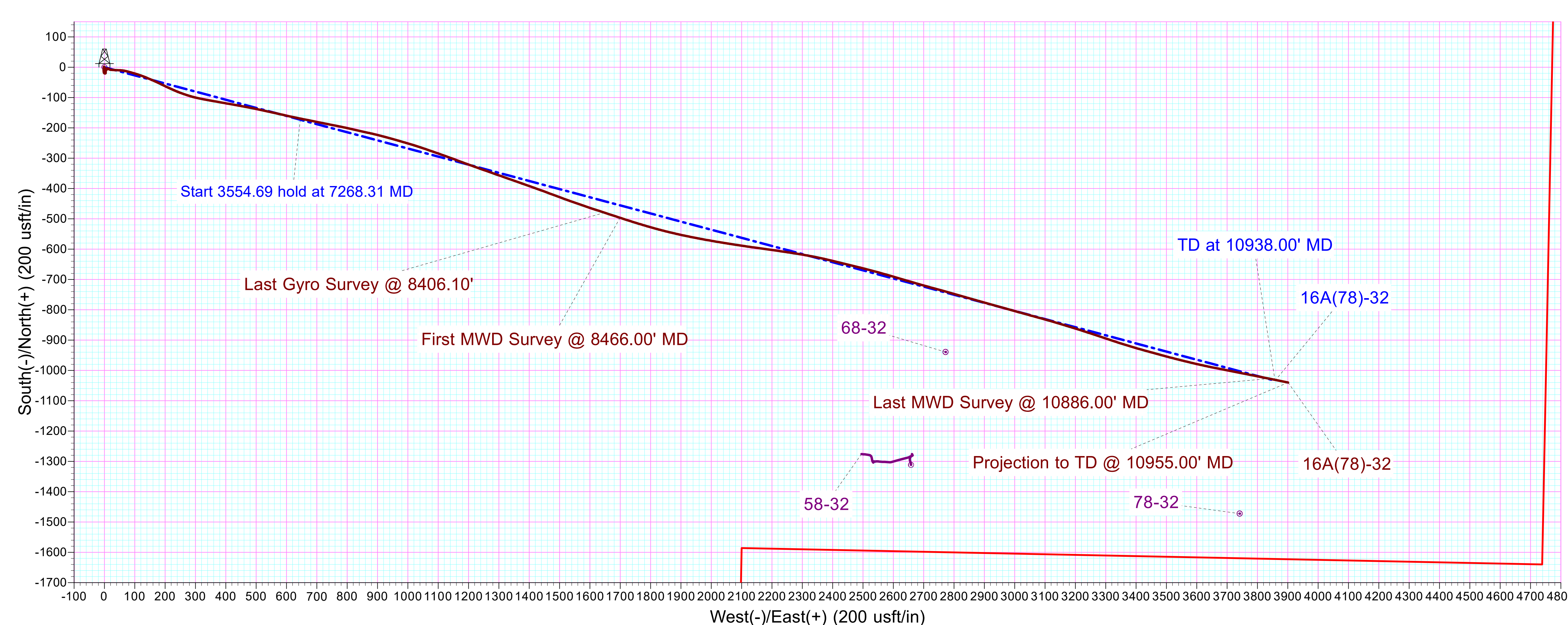
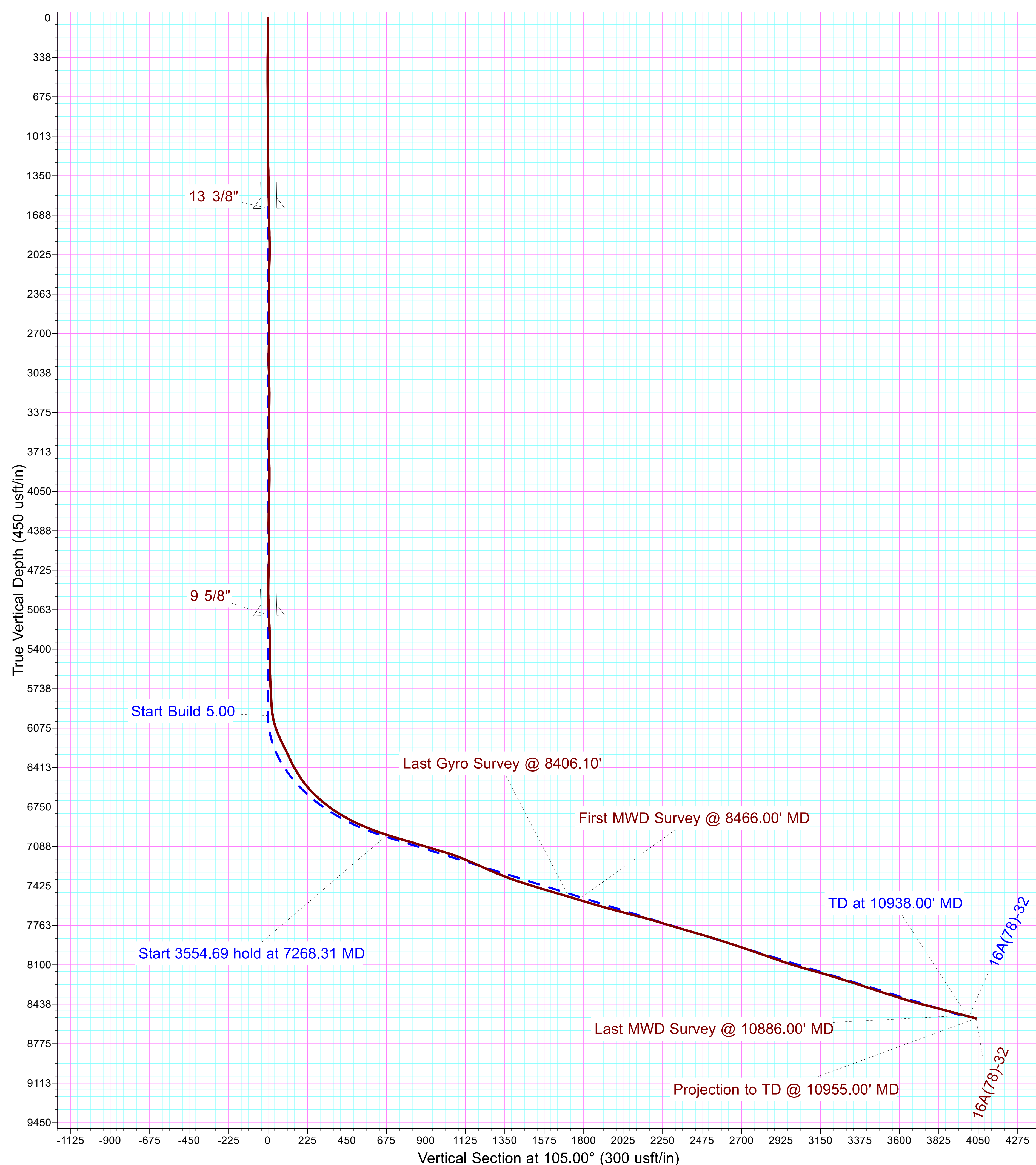


SECTION DETAILS	
No plan data is available	



Azimuths to Grid North
 True North: 1.18°
 Magnetic North: 12.47°
 Magnetic Field
 Strength: 49966.2snT
 Dip Angle: 64.01°
 Date: 10/30/2020
 Model: USER DEFINED

DESIGN TARGET DETAILS	
No target data is available.	



Company:	University of Utah	Local Co-ordinate Reference:	Well 16A(78)-32
Project:	Forge	TVD Reference:	GE + RKB (5414' + 30') @ 5444.00usft (Frontier 16)
Site:	Beaver County, UT	MD Reference:	GE + RKB (5414' + 30') @ 5444.00usft (Frontier 16)
Well:	16A(78)-32	North Reference:	Grid
Wellbore:	16A(78)-32	Survey Calculation Method:	Minimum Curvature
Design:	16A(78)-32	Database:	EDM 5000.1 Single User Db

Project	Forge		
Map System:	Universal Transverse Mercator (US Survey Fee	System Datum:	Mean Sea Level
Geo Datum:	NAD83 Utah - HARN		
Map Zone:	Zone 12N (114 W to 108 W)		

Site	Beaver County, UT				
Site Position:		Northing:	13,987,645.19 usft	Latitude:	38° 30' 14.447 N
From:	Lat/Long	Easting:	1,097,896.92 usft	Longitude:	112° 53' 47.066 W
Position Uncertainty:	2.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.18 °

Well	16A(78)-32					
Well Position	+N/-S	0.00 usft	Northing:	13,987,645.20 usft	Latitude:	38° 30' 14.447 N
	+E/-W	0.00 usft	Easting:	1,097,896.92 usft	Longitude:	112° 53' 47.066 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	5,414.00 usft

Wellbore	16A(78)-32				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	10/30/2020	11.29	64.01	49,966.20000000

Design	16A(78)-32				
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	105.00	

Survey Program	Date	12/19/2020			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
80.00	8,406.10	Survey #10 Gyro Corrected (16A(78)-32)	GYD_G003_GC+DROP+(Gyrodata Stationary Tool drop on BHA on open h	
8,466.00	10,955.00	Survey #11 Gyro Corrected + MWD + HRC	B001Mb_MWD+HRGM	OWSG MWD + HRGM	

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	0.00
80.00	0.34	324.91	80.00	0.19	-0.14	-0.18	0.43	0.43	0.00	
175.00	0.33	322.79	175.00	0.64	-0.46	-0.61	0.02	-0.01	-2.23	
267.00	0.47	312.36	267.00	1.11	-0.90	-1.16	0.17	0.15	-11.34	
359.00	0.36	310.55	358.99	1.55	-1.40	-1.75	0.12	-0.12	-1.97	
453.00	0.03	309.87	452.99	1.76	-1.64	-2.04	0.35	-0.35	-0.72	
548.00	0.56	157.85	547.99	1.34	-1.49	-1.79	0.62	0.56	-160.02	
643.00	0.59	172.48	642.99	0.43	-1.25	-1.32	0.16	0.03	15.40	

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Well:	16A(78)-32	North Reference:	Grid
Wellbore:	16A(78)-32	Survey Calculation Method:	Minimum Curvature
Design:	16A(78)-32	Database:	EDM 5000.1 Single User 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)	
739.00	0.51	198.76	738.98	-0.47	-1.32	-1.16	0.27	-0.08	27.38	
833.00	0.84	191.72	832.98	-1.54	-1.60	-1.14	0.36	0.35	-7.49	
928.00	1.24	186.85	927.96	-3.24	-1.86	-0.96	0.43	0.42	-5.13	
1,022.00	1.62	188.31	1,021.93	-5.56	-2.17	-0.66	0.41	0.40	1.55	
1,117.00	1.93	182.52	1,116.88	-8.49	-2.44	-0.16	0.38	0.33	-6.09	
1,211.00	2.07	175.74	1,210.83	-11.76	-2.38	0.74	0.29	0.15	-7.21	
1,306.00	1.68	171.17	1,305.78	-14.85	-2.04	1.87	0.44	-0.41	-4.81	
1,402.00	1.19	173.45	1,401.75	-17.23	-1.71	2.81	0.51	-0.51	2.38	
1,497.00	0.70	142.32	1,496.73	-18.67	-1.24	3.63	0.73	-0.52	-32.77	
1,592.00	0.72	125.01	1,591.73	-19.47	-0.40	4.65	0.23	0.02	-18.22	
1,629.00	0.76	122.45	1,628.72	-19.74	0.00	5.11	0.14	0.10	-6.91	
13 3/8"										
1,687.00	0.82	118.93	1,686.72	-20.15	0.68	5.87	0.14	0.11	-6.07	
1,783.00	0.87	95.89	1,782.71	-20.55	2.01	7.26	0.36	0.05	-24.00	
1,878.00	1.00	65.55	1,877.70	-20.28	3.48	8.61	0.53	0.14	-31.94	
1,974.00	1.14	14.63	1,973.68	-19.01	4.49	9.25	0.97	0.15	-53.04	
2,069.00	1.16	321.31	2,068.66	-17.35	4.12	8.47	1.09	0.02	-56.13	
2,164.00	1.04	278.62	2,163.65	-16.47	2.67	6.84	0.85	-0.13	-44.94	
2,258.00	0.87	236.76	2,257.64	-16.73	1.23	5.52	0.75	-0.18	-44.53	
2,352.00	0.71	163.66	2,351.63	-17.68	0.80	5.35	1.01	-0.17	-77.77	
2,446.00	0.74	107.66	2,445.62	-18.42	1.54	6.25	0.72	0.03	-59.57	
2,540.00	0.76	48.82	2,539.62	-18.20	2.59	7.21	0.78	0.02	-62.60	
2,634.00	1.13	359.64	2,633.60	-16.86	3.05	7.31	0.91	0.39	-52.32	
2,729.00	1.21	312.16	2,728.59	-15.25	2.30	6.17	0.99	0.08	-49.98	
2,823.00	1.01	262.95	2,822.57	-14.69	0.74	4.52	1.00	-0.21	-52.35	
2,918.00	0.63	188.09	2,917.56	-15.31	-0.16	3.80	1.10	-0.40	-78.80	
3,013.00	1.04	123.23	3,012.56	-16.30	0.49	4.69	1.01	0.43	-68.27	
3,107.00	1.38	79.63	3,106.54	-16.56	2.31	6.52	1.01	0.36	-46.38	
3,201.00	1.54	28.28	3,200.51	-15.24	4.02	7.83	1.35	0.17	-54.63	
3,295.00	1.30	349.04	3,294.48	-13.08	4.42	7.66	1.04	-0.26	-41.74	
3,390.00	0.99	291.49	3,389.47	-11.72	3.45	6.37	1.20	-0.33	-60.58	
3,484.00	0.81	250.73	3,483.46	-11.65	2.07	5.01	0.69	-0.19	-43.36	
3,578.00	0.48	184.81	3,577.45	-12.26	1.41	4.53	0.80	-0.35	-70.13	
3,673.00	0.75	95.07	3,672.45	-12.71	1.99	5.22	0.94	0.28	-94.46	
3,766.00	1.46	59.45	3,765.43	-12.16	3.62	6.65	1.03	0.76	-38.30	
3,862.00	1.71	33.75	3,861.39	-10.35	5.47	7.96	0.78	0.26	-26.77	
3,956.00	1.66	3.11	3,955.36	-7.82	6.32	8.13	0.95	-0.05	-32.60	
4,051.00	1.35	327.79	4,050.32	-5.50	5.80	7.03	1.01	-0.33	-37.18	
4,146.00	1.12	281.82	4,145.30	-4.36	4.30	5.28	1.04	-0.24	-48.39	
4,241.00	0.84	230.53	4,240.29	-4.62	2.85	3.95	0.93	-0.29	-53.99	
4,335.00	1.07	183.14	4,334.28	-5.93	2.27	3.73	0.85	0.24	-50.41	
4,430.00	1.11	116.98	4,429.27	-7.23	3.04	4.81	1.25	0.04	-69.64	

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Survey										
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4,524.00	1.45	32.77	4,523.25	-6.65	4.50	6.06	1.85	0.36	-89.59	
4,618.00	1.64	341.93	4,617.22	-4.37	4.72	5.69	1.42	0.20	-54.09	
4,713.00	1.45	284.79	4,712.19	-2.77	3.14	3.75	1.57	-0.20	-60.15	
4,807.00	1.13	233.60	4,806.17	-3.02	1.24	1.98	1.22	-0.34	-54.46	
4,902.00	1.21	185.35	4,901.15	-4.57	0.40	1.56	1.01	0.08	-50.79	
4,997.00	1.60	134.60	4,996.13	-6.50	1.25	2.89	1.32	0.41	-53.42	
5,007.00	1.57	131.93	5,006.12	-6.69	1.45	3.13	0.80	-0.30	-26.70	
5,017.00	1.54	129.15	5,016.12	-6.87	1.65	3.37	0.81	-0.30	-27.80	
5,027.00	1.51	126.28	5,026.12	-7.03	1.86	3.62	0.82	-0.30	-28.70	
5,037.00	1.49	123.33	5,036.11	-7.18	2.08	3.87	0.80	-0.20	-29.50	
5,047.00	1.48	120.30	5,046.11	-7.32	2.30	4.11	0.79	-0.10	-30.30	
5,057.00	1.46	117.22	5,056.11	-7.44	2.52	4.36	0.81	-0.20	-30.80	
5,067.00	1.46	114.09	5,066.10	-7.55	2.75	4.61	0.80	0.00	-31.30	
5,077.00	1.45	110.94	5,076.10	-7.65	2.99	4.87	0.81	-0.10	-31.50	
5,087.00	1.46	107.78	5,086.10	-7.73	3.23	5.12	0.81	0.10	-31.60	
5,097.00	1.46	104.64	5,096.09	-7.80	3.47	5.37	0.80	0.00	-31.40	
5,107.00	1.47	101.54	5,106.09	-7.86	3.72	5.63	0.80	0.10	-31.00	
5,113.00	1.48	99.69	5,112.09	-7.89	3.87	5.78	0.82	0.19	-30.77	
9 5/8"										
5,117.00	1.49	98.48	5,116.09	-7.90	3.98	5.89	0.82	0.21	-30.35	
5,127.00	1.50	95.49	5,126.08	-7.94	4.23	6.14	0.79	0.10	-29.90	
5,137.00	1.53	92.58	5,136.08	-7.95	4.50	6.40	0.83	0.30	-29.10	
5,147.00	1.55	89.76	5,146.08	-7.96	4.77	6.66	0.78	0.20	-28.20	
5,157.00	1.58	87.04	5,156.07	-7.95	5.04	6.93	0.80	0.30	-27.20	
5,167.00	1.58	85.49	5,166.07	-7.93	5.31	7.19	0.43	0.00	-15.50	
5,177.00	1.56	84.02	5,176.06	-7.91	5.59	7.44	0.45	-0.20	-14.70	
5,187.00	1.55	82.52	5,186.06	-7.88	5.86	7.70	0.42	-0.10	-15.00	
5,197.00	1.54	81.01	5,196.06	-7.84	6.12	7.94	0.42	-0.10	-15.10	
5,207.00	1.53	79.47	5,206.05	-7.79	6.39	8.19	0.42	-0.10	-15.40	
5,217.00	1.52	77.91	5,216.05	-7.74	6.65	8.43	0.43	-0.10	-15.60	
5,227.00	1.51	76.33	5,226.05	-7.68	6.91	8.66	0.43	-0.10	-15.80	
5,237.00	1.51	74.74	5,236.04	-7.62	7.16	8.89	0.42	0.00	-15.90	
5,247.00	1.50	73.14	5,246.04	-7.54	7.41	9.11	0.43	-0.10	-16.00	
5,257.00	1.50	71.38	5,256.04	-7.46	7.66	9.33	0.46	0.00	-17.60	
5,267.00	1.49	68.16	5,266.03	-7.37	7.91	9.55	0.85	-0.10	-32.20	
5,277.00	1.48	64.92	5,276.03	-7.27	8.15	9.75	0.85	-0.10	-32.40	
5,287.00	1.48	61.67	5,286.03	-7.15	8.38	9.94	0.84	0.00	-32.50	
5,297.00	1.49	58.44	5,296.02	-7.03	8.60	10.13	0.84	0.10	-32.30	
5,307.00	1.50	55.24	5,306.02	-6.88	8.82	10.30	0.84	0.10	-32.00	
5,317.00	1.52	52.10	5,316.02	-6.73	9.03	10.46	0.85	0.20	-31.40	
5,327.00	1.54	49.03	5,326.01	-6.56	9.24	10.62	0.84	0.20	-30.70	
5,337.00	1.56	46.04	5,336.01	-6.37	9.44	10.76	0.83	0.20	-29.90	

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5,347.00	1.59	43.16	5,346.00	-6.18	9.63	10.90	0.85	0.30	-28.80	
5,357.00	1.53	40.89	5,356.00	-5.98	9.81	11.02	0.86	-0.60	-22.70	
5,367.00	1.46	38.32	5,366.00	-5.78	9.98	11.13	0.97	-0.70	-25.70	
5,377.00	1.40	35.51	5,375.99	-5.58	10.13	11.23	0.92	-0.60	-28.10	
5,387.00	1.33	32.44	5,385.99	-5.38	10.26	11.30	1.01	-0.70	-30.70	
5,397.00	1.28	29.08	5,395.99	-5.18	10.38	11.37	0.91	-0.50	-33.60	
5,407.00	1.23	25.43	5,405.99	-4.99	10.48	11.41	0.94	-0.50	-36.50	
5,417.00	1.18	21.46	5,415.98	-4.80	10.56	11.44	0.97	-0.50	-39.70	
5,427.00	1.14	17.20	5,425.98	-4.61	10.63	11.46	0.95	-0.40	-42.60	
5,437.00	1.11	12.65	5,435.98	-4.42	10.68	11.46	0.94	-0.30	-45.50	
5,447.00	1.03	9.93	5,445.98	-4.23	10.72	11.45	0.95	-0.80	-27.20	
5,457.00	0.90	10.09	5,455.98	-4.07	10.75	11.43	1.30	-1.30	1.60	
5,467.00	0.76	10.32	5,465.98	-3.92	10.77	11.42	1.40	-1.40	2.30	
5,477.00	0.62	10.64	5,475.98	-3.81	10.79	11.41	1.40	-1.40	3.20	
5,487.00	0.49	11.14	5,485.98	-3.71	10.81	11.40	1.30	-1.30	5.00	
5,497.00	0.35	12.02	5,495.97	-3.64	10.83	11.40	1.40	-1.40	8.80	
5,507.00	0.21	14.04	5,505.97	-3.59	10.84	11.40	1.40	-1.40	20.20	
5,517.00	0.08	22.99	5,515.97	-3.57	10.84	11.40	1.32	-1.30	89.50	
5,527.00	0.06	170.93	5,525.97	-3.57	10.85	11.40	1.35	-0.20	1,479.40	
5,537.00	0.19	181.76	5,535.97	-3.59	10.85	11.41	1.32	1.30	108.30	
5,547.00	0.27	157.90	5,545.97	-3.63	10.86	11.42	1.23	0.80	-238.60	
5,557.00	0.38	146.55	5,555.97	-3.68	10.88	11.46	1.27	1.10	-113.50	
5,567.00	0.50	140.39	5,565.97	-3.74	10.93	11.52	1.29	1.20	-61.60	
5,577.00	0.62	136.61	5,575.97	-3.81	10.99	11.61	1.25	1.20	-37.80	
5,587.00	0.75	134.07	5,585.97	-3.89	11.08	11.71	1.33	1.30	-25.40	
5,597.00	0.87	132.26	5,595.97	-3.99	11.18	11.83	1.23	1.20	-18.10	
5,607.00	1.00	130.90	5,605.97	-4.10	11.30	11.98	1.32	1.30	-13.60	
5,617.00	1.12	129.84	5,615.97	-4.22	11.44	12.15	1.22	1.20	-10.60	
5,627.00	1.25	129.00	5,625.97	-4.35	11.60	12.34	1.31	1.30	-8.40	
5,637.00	1.36	127.86	5,635.96	-4.49	11.78	12.54	1.13	1.10	-11.40	
5,647.00	1.44	125.27	5,645.96	-4.64	11.98	12.77	1.02	0.80	-25.90	
5,657.00	1.52	122.96	5,655.96	-4.78	12.19	13.02	1.00	0.80	-23.10	
5,667.00	1.61	120.88	5,665.95	-4.93	12.43	13.28	1.06	0.90	-20.80	
5,677.00	1.69	119.01	5,675.95	-5.07	12.67	13.55	0.96	0.80	-18.70	
5,687.00	1.78	117.32	5,685.95	-5.21	12.94	13.85	1.04	0.90	-16.90	
5,697.00	1.87	115.78	5,695.94	-5.35	13.23	14.16	1.02	0.90	-15.40	
5,707.00	1.95	114.39	5,705.93	-5.50	13.53	14.49	0.92	0.80	-13.90	
5,717.00	2.04	113.12	5,715.93	-5.64	13.85	14.83	1.00	0.90	-12.70	
5,727.00	2.11	112.36	5,725.92	-5.78	14.18	15.19	0.75	0.70	-7.60	
5,737.00	2.07	112.92	5,735.92	-5.92	14.52	15.55	0.45	-0.40	5.60	
5,747.00	2.04	113.50	5,745.91	-6.06	14.85	15.91	0.37	-0.30	5.80	
5,757.00	2.00	114.10	5,755.90	-6.20	15.17	16.26	0.45	-0.40	6.00	

Company:	University of Utah	Local Co-ordinate Reference:	Well 16A(78)-32
Project:	Forge	TVD Reference:	GE + RKB (5414' + 30') @ 5444.00usft (Frontier 16)
Site:	Beaver County, UT	MD Reference:	GE + RKB (5414' + 30') @ 5444.00usft (Frontier 16)
Well:	16A(78)-32	North Reference:	Grid
Wellbore:	16A(78)-32	Survey Calculation Method:	Minimum Curvature
Design:	16A(78)-32	Database:	EDM 5000.1 Single User 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)
5,767.00	1.96	114.72	5,765.90	-6.34	15.48	16.60	0.45	-0.40	6.20
5,777.00	1.93	115.37	5,775.89	-6.49	15.79	16.93	0.37	-0.30	6.50
5,787.00	1.90	116.03	5,785.89	-6.63	16.09	17.26	0.37	-0.30	6.60
5,797.00	1.86	116.73	5,795.88	-6.78	16.39	17.58	0.46	-0.40	7.00
5,807.00	1.83	117.45	5,805.87	-6.92	16.67	17.90	0.38	-0.30	7.20
5,817.00	1.79	118.19	5,815.87	-7.07	16.95	18.21	0.46	-0.40	7.40
5,827.00	1.86	116.32	5,825.86	-7.22	17.24	18.52	0.92	0.70	-18.70
5,837.00	1.99	113.39	5,835.86	-7.36	17.54	18.85	1.63	1.30	-29.30
5,847.00	2.12	110.82	5,845.85	-7.49	17.87	19.20	1.59	1.30	-25.70
5,857.00	2.26	108.55	5,855.85	-7.62	18.23	19.58	1.65	1.40	-22.70
5,867.00	2.40	106.55	5,865.84	-7.74	18.62	19.99	1.62	1.40	-20.00
5,877.00	2.54	104.77	5,875.83	-7.86	19.04	20.42	1.60	1.40	-17.80
5,887.00	2.68	103.18	5,885.82	-7.97	19.48	20.88	1.58	1.40	-15.90
5,897.00	2.83	101.75	5,895.81	-8.07	19.95	21.36	1.65	1.50	-14.30
5,907.00	2.98	100.47	5,905.79	-8.17	20.44	21.86	1.63	1.50	-12.80
5,917.00	3.22	99.27	5,915.78	-8.26	20.98	22.40	2.49	2.40	-12.00
5,927.00	3.83	97.79	5,925.76	-8.35	21.58	23.01	6.17	6.10	-14.80
5,937.00	4.44	96.72	5,935.73	-8.44	22.30	23.73	6.15	6.10	-10.70
5,947.00	5.05	95.91	5,945.70	-8.53	23.12	24.54	6.14	6.10	-8.10
5,957.00	5.67	95.27	5,955.66	-8.63	24.05	25.46	6.23	6.20	-6.40
5,967.00	6.29	94.76	5,965.60	-8.72	25.09	26.49	6.22	6.20	-5.10
5,977.00	6.90	94.34	5,975.53	-8.81	26.23	27.62	6.12	6.10	-4.20
5,987.00	7.52	93.99	5,985.46	-8.90	27.49	28.85	6.22	6.20	-3.50
5,997.00	8.14	93.69	5,995.36	-8.99	28.85	30.19	6.21	6.20	-3.00
6,007.00	8.75	93.43	6,005.25	-9.08	30.31	31.63	6.11	6.10	-2.60
6,017.00	9.37	93.21	6,015.13	-9.17	31.88	33.17	6.21	6.20	-2.20
6,027.00	9.99	93.01	6,024.99	-9.26	33.56	34.82	6.21	6.20	-2.00
6,037.00	10.60	92.84	6,034.83	-9.35	35.35	36.56	6.11	6.10	-1.70
6,047.00	11.22	92.68	6,044.64	-9.44	37.24	38.41	6.21	6.20	-1.60
6,057.00	11.84	92.54	6,054.44	-9.54	39.23	40.37	6.21	6.20	-1.40
6,067.00	12.46	92.42	6,064.22	-9.63	41.34	42.42	6.21	6.20	-1.20
6,077.00	13.07	92.30	6,073.97	-9.72	43.54	44.58	6.11	6.10	-1.20
6,087.00	13.69	92.20	6,083.70	-9.81	45.86	46.83	6.20	6.20	-1.00
6,097.00	14.31	92.11	6,093.40	-9.90	48.27	49.19	6.20	6.20	-0.90
6,107.00	14.85	92.48	6,103.08	-10.00	50.79	51.65	5.48	5.40	3.70
6,117.00	15.13	94.05	6,112.74	-10.15	53.37	54.18	4.93	2.80	15.70
6,127.00	15.43	95.56	6,122.39	-10.37	56.00	56.77	4.98	3.00	15.10
6,137.00	15.73	97.02	6,132.02	-10.66	58.67	59.43	4.94	3.00	14.60
6,147.00	16.04	98.42	6,141.64	-11.03	61.38	62.14	4.93	3.10	14.00
6,157.00	16.36	99.77	6,151.24	-11.47	64.13	64.92	4.94	3.20	13.50
6,167.00	16.69	101.07	6,160.83	-11.99	66.93	67.75	4.96	3.30	13.00
6,177.00	17.03	102.32	6,170.40	-12.58	69.77	70.65	4.97	3.40	12.50

Company:	University of Utah	Local Co-ordinate Reference:	Well 16A(78)-32
Project:	Forge	TVD Reference:	GE + RKB (5414' + 30') @ 5444.00usft (Frontier 16)
Site:	Beaver County, UT	MD Reference:	GE + RKB (5414' + 30') @ 5444.00usft (Frontier 16)
Well:	16A(78)-32	North Reference:	Grid
Wellbore:	16A(78)-32	Survey Calculation Method:	Minimum Curvature
Design:	16A(78)-32	Database:	EDM 5000.1 Single User 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)
6,187.00	17.37	103.52	6,179.95	-13.24	72.65	73.60	4.91	3.40	12.00
6,197.00	17.72	104.68	6,189.49	-13.97	75.58	76.62	4.95	3.50	11.60
6,207.00	17.86	104.94	6,199.01	-14.75	78.53	79.67	1.61	1.40	2.60
6,217.00	17.99	105.10	6,208.52	-15.55	81.50	82.75	1.39	1.30	1.60
6,227.00	18.13	105.27	6,218.03	-16.36	84.49	85.85	1.50	1.40	1.70
6,237.00	18.26	105.44	6,227.53	-17.19	87.51	88.97	1.40	1.30	1.70
6,247.00	18.38	105.62	6,237.02	-18.03	90.53	92.12	1.33	1.20	1.80
6,257.00	18.39	105.91	6,246.51	-18.89	93.57	95.27	0.92	0.10	2.90
6,267.00	18.39	106.20	6,256.00	-19.76	96.60	98.42	0.91	0.00	2.90
6,277.00	18.29	106.44	6,265.49	-20.64	99.62	101.57	1.25	-1.00	2.40
6,287.00	18.21	106.73	6,274.99	-21.54	102.62	104.70	1.21	-0.80	2.90
6,297.00	18.14	106.96	6,284.49	-22.44	105.61	107.82	1.00	-0.70	2.30
6,307.00	17.95	107.64	6,294.00	-23.36	108.57	110.91	2.84	-1.90	6.80
6,317.00	17.70	108.18	6,303.52	-24.30	111.48	113.97	3.00	-2.50	5.40
6,327.00	17.59	108.98	6,313.05	-25.27	114.35	117.00	2.66	-1.10	8.00
6,337.00	17.45	109.58	6,322.59	-26.26	117.19	120.00	2.29	-1.40	6.00
6,347.00	17.39	110.07	6,332.13	-27.28	120.01	122.98	1.58	-0.60	4.90
6,357.00	17.38	110.41	6,341.67	-28.31	122.81	125.96	1.02	-0.10	3.40
6,367.00	17.32	110.72	6,351.22	-29.36	125.60	128.92	1.10	-0.60	3.10
6,377.00	17.55	111.00	6,360.76	-30.43	128.40	131.90	2.45	2.30	2.80
6,387.00	17.87	111.26	6,370.28	-31.52	131.24	134.93	3.30	3.20	2.60
6,397.00	18.84	111.60	6,379.77	-32.67	134.17	138.06	9.76	9.70	3.40
6,407.00	19.62	111.90	6,389.21	-33.90	137.23	141.33	7.86	7.80	3.00
6,417.00	20.26	112.17	6,398.62	-35.17	140.39	144.71	6.47	6.40	2.70
6,427.00	20.69	112.57	6,407.98	-36.51	143.63	148.18	4.52	4.30	4.00
6,437.00	20.94	112.89	6,417.33	-37.88	146.91	151.70	2.75	2.50	3.20
6,447.00	21.10	113.11	6,426.67	-39.28	150.21	155.26	1.78	1.60	2.20
6,457.00	21.45	113.28	6,435.98	-40.71	153.54	158.85	3.55	3.50	1.70
6,467.00	21.94	113.43	6,445.28	-42.18	156.94	162.50	4.93	4.90	1.50
6,477.00	22.43	113.57	6,454.54	-43.68	160.40	166.24	4.93	4.90	1.40
6,487.00	22.82	113.85	6,463.77	-45.23	163.92	170.04	4.05	3.90	2.80
6,497.00	23.07	114.51	6,472.97	-46.83	167.48	173.89	3.59	2.50	6.60
6,507.00	23.29	115.06	6,482.17	-48.48	171.05	177.77	3.09	2.20	5.50
6,517.00	23.56	115.51	6,491.34	-50.17	174.65	181.68	3.24	2.70	4.50
6,527.00	24.08	115.61	6,500.49	-51.92	178.29	185.65	5.22	5.20	1.00
6,537.00	24.83	115.58	6,509.59	-53.70	182.02	189.72	7.50	7.50	-0.30
6,547.00	25.53	115.62	6,518.64	-55.54	185.86	193.90	7.00	7.00	0.40
6,557.00	26.28	115.65	6,527.64	-57.43	189.80	198.20	7.50	7.50	0.30
6,567.00	27.19	115.58	6,536.57	-59.38	193.85	202.62	9.11	9.10	-0.70
6,577.00	28.16	115.37	6,545.43	-61.38	198.05	207.18	9.75	9.70	-2.10
6,587.00	28.60	115.20	6,554.22	-63.41	202.35	211.86	4.47	4.40	-1.70
6,597.00	28.74	115.11	6,563.00	-65.44	206.69	216.58	1.47	1.40	-0.90

Company:	University of Utah	Local Co-ordinate Reference:	Well 16A(78)-32
Project:	Forge	TVD Reference:	GE + RKB (5414' + 30') @ 5444.00usft (Frontier 16)
Site:	Beaver County, UT	MD Reference:	GE + RKB (5414' + 30') @ 5444.00usft (Frontier 16)
Well:	16A(78)-32	North Reference:	Grid
Wellbore:	16A(78)-32	Survey Calculation Method:	Minimum Curvature
Design:	16A(78)-32	Database:	EDM 5000.1 Single User 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)
6,607.00	28.98	114.98	6,571.76	-67.49	211.06	221.34	2.48	2.40	-1.30
6,617.00	29.48	114.72	6,580.48	-69.54	215.49	226.15	5.16	5.00	-2.60
6,627.00	30.08	114.42	6,589.16	-71.61	220.01	231.04	6.18	6.00	-3.00
6,637.00	30.88	114.12	6,597.78	-73.69	224.63	236.05	8.14	8.00	-3.00
6,647.00	31.63	113.78	6,606.33	-75.80	229.37	241.18	7.70	7.50	-3.40
6,657.00	32.41	113.19	6,614.81	-77.91	234.24	246.42	8.40	7.80	-5.90
6,667.00	33.19	112.51	6,623.21	-80.01	239.23	251.79	8.63	7.80	-6.80
6,677.00	34.40	111.33	6,631.52	-82.09	244.39	257.31	13.77	12.10	-11.80
6,687.00	35.07	110.58	6,639.74	-84.12	249.71	262.98	7.95	6.70	-7.50
6,697.00	35.42	109.97	6,647.91	-86.12	255.12	268.72	4.96	3.50	-6.10
6,707.00	35.81	109.50	6,656.04	-88.09	260.61	274.52	4.76	3.90	-4.70
6,717.00	36.14	109.05	6,664.13	-90.03	266.15	280.38	4.23	3.30	-4.50
6,727.00	36.58	108.38	6,672.18	-91.93	271.77	286.30	5.93	4.40	-6.70
6,737.00	37.15	107.37	6,680.18	-93.77	277.47	292.29	8.32	5.70	-10.10
6,747.00	37.72	106.36	6,688.12	-95.54	283.29	298.37	8.38	5.70	-10.10
6,757.00	38.24	105.52	6,696.01	-97.23	289.21	304.52	7.33	5.20	-8.40
6,767.00	39.14	104.36	6,703.81	-98.84	295.25	310.77	11.56	9.00	-11.60
6,777.00	39.56	103.10	6,711.54	-100.34	301.41	317.11	9.03	4.20	-12.60
6,787.00	39.85	102.29	6,719.24	-101.74	307.64	323.49	5.93	2.90	-8.10
6,797.00	40.20	101.75	6,726.90	-103.08	313.93	329.91	4.93	3.50	-5.40
6,807.00	40.35	101.44	6,734.53	-104.38	320.26	336.37	2.50	1.50	-3.10
6,817.00	40.87	101.13	6,742.12	-105.66	326.65	342.86	5.58	5.20	-3.10
6,827.00	41.59	100.87	6,749.64	-106.91	333.12	349.44	7.40	7.20	-2.60
6,837.00	42.46	100.59	6,757.07	-108.16	339.69	356.11	8.90	8.70	-2.80
6,847.00	43.24	100.39	6,764.40	-109.40	346.38	362.89	7.92	7.80	-2.00
6,857.00	44.22	100.23	6,771.62	-110.64	353.18	369.78	9.86	9.80	-1.60
6,867.00	45.11	100.02	6,778.74	-111.87	360.10	376.79	9.02	8.90	-2.10
6,877.00	45.59	100.03	6,785.76	-113.11	367.11	383.87	4.80	4.80	0.10
6,887.00	45.94	100.12	6,792.74	-114.36	374.16	391.01	3.56	3.50	0.90
6,897.00	46.42	100.11	6,799.66	-115.63	381.26	398.20	4.80	4.80	-0.10
6,907.00	46.97	100.00	6,806.52	-116.90	388.43	405.45	5.56	5.50	-1.10
6,917.00	47.58	99.93	6,813.31	-118.17	395.66	412.77	6.12	6.10	-0.70
6,927.00	48.11	99.88	6,820.02	-119.45	402.97	420.15	5.31	5.30	-0.50
6,937.00	48.66	99.89	6,826.66	-120.73	410.33	427.60	5.50	5.50	0.10
6,947.00	49.11	99.97	6,833.23	-122.03	417.75	435.10	4.54	4.50	0.80
6,957.00	49.78	100.06	6,839.74	-123.35	425.24	442.67	6.73	6.70	0.90
6,967.00	50.57	100.25	6,846.14	-124.71	432.80	450.32	8.03	7.90	1.90
6,977.00	51.25	100.41	6,852.45	-126.10	440.43	458.06	6.91	6.80	1.60
6,987.00	52.00	100.57	6,858.65	-127.52	448.14	465.88	7.60	7.50	1.60
6,997.00	52.69	100.72	6,864.76	-128.99	455.92	473.77	7.00	6.90	1.50
7,007.00	53.14	100.86	6,870.79	-130.48	463.76	481.73	4.64	4.50	1.40
7,017.00	54.01	100.93	6,876.73	-132.00	471.66	489.75	8.72	8.70	0.70

Company:	University of Utah	Local Co-ordinate Reference:	Well 16A(78)-32
Project:	Forge	TVD Reference:	GE + RKB (5414' + 30') @ 5444.00usft (Frontier 16)
Site:	Beaver County, UT	MD Reference:	GE + RKB (5414' + 30') @ 5444.00usft (Frontier 16)
Well:	16A(78)-32	North Reference:	Grid
Wellbore:	16A(78)-32	Survey Calculation Method:	Minimum Curvature
Design:	16A(78)-32	Database:	EDM 5000.1 Single User 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)
7,027.00	54.65	101.02	6,882.56	-133.55	479.63	497.85	6.44	6.40	0.90
7,037.00	55.19	101.15	6,888.31	-135.12	487.66	506.02	5.50	5.40	1.30
7,047.00	55.93	101.38	6,893.96	-136.73	495.75	514.25	7.64	7.40	2.30
7,057.00	56.46	101.78	6,899.53	-138.40	503.89	522.54	6.26	5.30	4.00
7,067.00	56.92	102.04	6,905.02	-140.13	512.07	530.89	5.09	4.60	2.60
7,077.00	57.30	102.22	6,910.45	-141.89	520.28	539.28	4.09	3.80	1.80
7,087.00	58.09	102.39	6,915.79	-143.69	528.54	547.72	8.03	7.90	1.70
7,097.00	58.37	102.47	6,921.06	-145.52	536.84	556.21	2.88	2.80	0.80
7,107.00	58.62	102.55	6,926.29	-147.37	545.16	564.73	2.59	2.50	0.80
7,117.00	58.79	102.58	6,931.48	-149.23	553.50	573.27	1.72	1.70	0.30
7,127.00	58.85	102.58	6,936.66	-151.09	561.85	581.81	0.60	0.60	0.00
7,137.00	59.18	102.60	6,941.81	-152.96	570.22	590.38	3.30	3.30	0.20
7,147.00	59.83	102.58	6,946.88	-154.84	578.63	598.99	6.50	6.50	-0.20
7,157.00	60.49	102.54	6,951.86	-156.72	587.10	607.65	6.61	6.60	-0.40
7,167.00	61.16	102.49	6,956.73	-158.62	595.62	616.38	6.71	6.70	-0.50
7,177.00	61.71	102.45	6,961.51	-160.51	604.20	625.15	5.51	5.50	-0.40
7,187.00	62.07	102.41	6,966.22	-162.41	612.81	633.96	3.62	3.60	-0.40
7,197.00	62.08	102.25	6,970.91	-164.30	621.44	642.79	1.42	0.10	-1.60
7,207.00	62.64	101.98	6,975.55	-166.16	630.10	651.64	6.09	5.60	-2.70
7,217.00	63.42	101.76	6,980.08	-167.99	638.82	660.54	8.04	7.80	-2.20
7,227.00	63.66	101.49	6,984.54	-169.79	647.59	669.47	3.41	2.40	-2.70
7,237.00	64.27	101.43	6,988.93	-171.58	656.40	678.44	6.12	6.10	-0.60
7,247.00	64.67	101.36	6,993.24	-173.36	665.25	687.45	4.05	4.00	-0.70
7,257.00	64.94	101.41	6,997.49	-175.15	674.12	696.48	2.74	2.70	0.50
7,267.00	65.18	101.42	7,001.71	-176.94	683.00	705.53	2.40	2.40	0.10
7,277.00	65.19	101.43	7,005.91	-178.74	691.90	714.59	0.14	0.10	0.10
7,287.00	65.36	101.42	7,010.09	-180.54	700.80	723.65	1.70	1.70	-0.10
7,297.00	65.84	101.36	7,014.22	-182.34	709.73	732.74	4.83	4.80	-0.60
7,307.00	66.12	101.32	7,018.29	-184.13	718.69	741.86	2.82	2.80	-0.40
7,317.00	66.28	101.30	7,022.33	-185.93	727.66	750.99	1.61	1.60	-0.20
7,327.00	66.60	101.30	7,026.32	-187.72	736.65	760.13	3.20	3.20	0.00
7,337.00	66.77	101.29	7,030.28	-189.52	745.65	769.30	1.70	1.70	-0.10
7,347.00	66.89	101.29	7,034.22	-191.32	754.67	778.47	1.20	1.20	0.00
7,357.00	67.06	101.32	7,038.13	-193.13	763.69	787.66	1.72	1.70	0.30
7,367.00	66.46	101.55	7,042.07	-194.95	772.70	796.83	6.36	-6.00	2.30
7,377.00	67.49	101.64	7,045.98	-196.80	781.72	806.01	10.33	10.30	0.90
7,387.00	66.81	101.86	7,049.87	-198.68	790.74	815.21	7.10	-6.80	2.20
7,397.00	66.16	102.17	7,053.86	-200.58	799.71	824.37	7.09	-6.50	3.10
7,407.00	65.23	102.39	7,057.97	-202.52	808.61	833.47	9.51	-9.30	2.20
7,417.00	64.75	102.57	7,062.20	-204.48	817.46	842.53	5.07	-4.80	1.80
7,427.00	64.15	102.63	7,066.51	-206.45	826.26	851.54	6.02	-6.00	0.60
7,437.00	64.43	102.69	7,070.85	-208.42	835.05	860.55	2.85	2.80	0.60

Company:	University of Utah	Local Co-ordinate Reference:	Well 16A(78)-32
Project:	Forge	TVD Reference:	GE + RKB (5414' + 30') @ 5444.00usft (Frontier 16)
Site:	Beaver County, UT	MD Reference:	GE + RKB (5414' + 30') @ 5444.00usft (Frontier 16)
Well:	16A(78)-32	North Reference:	Grid
Wellbore:	16A(78)-32	Survey Calculation Method:	Minimum Curvature
Design:	16A(78)-32	Database:	EDM 5000.1 Single User 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)
7,447.00	64.66	102.72	7,075.15	-210.41	843.86	869.57	2.32	2.30	0.30
7,457.00	65.22	102.75	7,079.39	-212.41	852.70	878.62	5.61	5.60	0.30
7,467.00	65.75	102.80	7,083.53	-214.42	861.57	887.71	5.32	5.30	0.50
7,477.00	66.18	102.85	7,087.61	-216.45	870.48	896.84	4.32	4.30	0.50
7,487.00	66.15	103.07	7,091.65	-218.50	879.39	905.98	2.03	-0.30	2.20
7,497.00	65.60	103.43	7,095.74	-220.59	888.27	915.10	6.41	-5.50	3.60
7,507.00	65.17	103.88	7,099.90	-222.73	897.11	924.19	5.94	-4.30	4.50
7,517.00	65.72	104.35	7,104.06	-224.95	905.93	933.28	6.97	5.50	4.70
7,527.00	65.71	104.71	7,108.17	-227.24	914.75	942.40	3.28	-0.10	3.60
7,537.00	64.48	105.01	7,112.38	-229.57	923.52	951.47	12.60	-12.30	3.00
7,547.00	65.76	105.24	7,116.59	-231.93	932.28	960.54	12.97	12.80	2.30
7,557.00	65.63	105.45	7,120.70	-234.34	941.07	969.65	2.31	-1.30	2.10
7,567.00	66.17	105.64	7,124.79	-236.79	949.86	978.78	5.67	5.40	1.90
7,577.00	66.87	105.77	7,128.77	-239.27	958.69	987.95	7.10	7.00	1.30
7,587.00	66.29	105.95	7,132.75	-241.78	967.52	997.13	6.03	-5.80	1.80
7,597.00	65.05	106.17	7,136.87	-244.30	976.27	1,006.24	12.56	-12.40	2.20
7,607.00	65.18	106.32	7,141.07	-246.84	984.98	1,015.31	1.88	1.30	1.50
7,617.00	65.42	106.55	7,145.25	-249.41	993.70	1,024.39	3.18	2.40	2.30
7,627.00	64.36	106.78	7,149.50	-252.01	1,002.37	1,033.44	10.80	-10.60	2.30
7,637.00	64.46	106.88	7,153.82	-254.62	1,011.00	1,042.45	1.35	1.00	1.00
7,647.00	64.10	107.09	7,158.16	-257.25	1,019.62	1,051.46	4.07	-3.60	2.10
7,657.00	63.14	107.76	7,162.60	-259.93	1,028.17	1,060.41	11.32	-9.60	6.70
7,667.00	62.36	108.20	7,167.18	-262.68	1,036.62	1,069.29	8.73	-7.80	4.40
7,677.00	61.19	108.52	7,171.91	-265.45	1,044.99	1,078.08	12.03	-11.70	3.20
7,687.00	60.25	108.65	7,176.80	-268.23	1,053.25	1,086.79	9.47	-9.40	1.30
7,697.00	60.16	108.88	7,181.77	-271.02	1,061.47	1,095.45	2.19	-0.90	2.30
7,707.00	59.67	109.11	7,186.78	-273.84	1,069.65	1,104.08	5.29	-4.90	2.30
7,717.00	58.31	109.20	7,191.93	-276.65	1,077.75	1,112.63	13.62	-13.60	0.90
7,727.00	59.08	109.31	7,197.13	-279.47	1,085.81	1,121.15	7.76	7.70	1.10
7,737.00	57.74	109.39	7,202.36	-282.29	1,093.85	1,129.64	13.42	-13.40	0.80
7,747.00	57.54	109.51	7,207.72	-285.10	1,101.82	1,138.06	2.24	-2.00	1.20
7,757.00	56.93	109.63	7,213.13	-287.92	1,109.74	1,146.44	6.18	-6.10	1.20
7,767.00	57.30	109.74	7,218.56	-290.75	1,117.65	1,154.81	3.81	3.70	1.10
7,777.00	56.69	109.90	7,224.01	-293.59	1,125.54	1,163.17	6.25	-6.10	1.60
7,787.00	56.55	110.04	7,229.51	-296.44	1,133.38	1,171.49	1.82	-1.40	1.40
7,797.00	56.88	110.15	7,235.00	-299.32	1,141.23	1,179.82	3.43	3.30	1.10
7,807.00	56.27	110.21	7,240.50	-302.20	1,149.07	1,188.13	6.12	-6.10	0.60
7,817.00	56.84	110.22	7,246.02	-305.08	1,156.90	1,196.44	5.70	5.70	0.10
7,827.00	55.56	110.23	7,251.58	-307.95	1,164.70	1,204.71	12.80	-12.80	0.10
7,837.00	56.05	110.26	7,257.20	-310.81	1,172.46	1,212.95	4.91	4.90	0.30
7,847.00	55.70	110.17	7,262.81	-313.67	1,180.22	1,221.19	3.58	-3.50	-0.90
7,857.00	55.44	110.13	7,268.46	-316.52	1,187.97	1,229.41	2.62	-2.60	-0.40

Company:	University of Utah	Local Co-ordinate Reference:	Well 16A(78)-32
Project:	Forge	TVD Reference:	GE + RKB (5414' + 30') @ 5444.00usft (Frontier 16)
Site:	Beaver County, UT	MD Reference:	GE + RKB (5414' + 30') @ 5444.00usft (Frontier 16)
Well:	16A(78)-32	North Reference:	Grid
Wellbore:	16A(78)-32	Survey Calculation Method:	Minimum Curvature
Design:	16A(78)-32	Database:	EDM 5000.1 Single User 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)
7,867.00	56.50	110.10	7,274.06	-319.37	1,195.75	1,237.66	10.60	10.60	-0.30
7,877.00	56.72	110.00	7,279.56	-322.23	1,203.59	1,245.98	2.35	2.20	-1.00
7,887.00	56.33	109.90	7,285.08	-325.07	1,211.43	1,254.29	3.99	-3.90	-1.00
7,897.00	57.31	109.81	7,290.55	-327.92	1,219.30	1,262.63	9.83	9.80	-0.90
7,907.00	57.39	109.66	7,295.95	-330.76	1,227.23	1,271.02	1.50	0.80	-1.50
7,917.00	57.70	109.57	7,301.31	-333.59	1,235.18	1,279.43	3.19	3.10	-0.90
7,927.00	57.09	109.46	7,306.70	-336.41	1,243.12	1,287.83	6.17	-6.10	-1.10
7,937.00	57.82	109.45	7,312.08	-339.21	1,251.07	1,296.23	7.30	7.30	-0.10
7,947.00	57.78	109.45	7,317.41	-342.03	1,259.05	1,304.67	0.40	-0.40	0.00
7,957.00	58.69	109.48	7,322.67	-344.87	1,267.06	1,313.15	9.10	9.10	0.30
7,967.00	58.35	109.52	7,327.89	-347.71	1,275.10	1,321.65	3.42	-3.40	0.40
7,977.00	58.05	109.53	7,333.16	-350.55	1,283.11	1,330.12	3.00	-3.00	0.10
7,987.00	59.55	109.52	7,338.34	-353.41	1,291.17	1,338.65	15.00	15.00	-0.10
7,997.00	59.63	109.46	7,343.41	-356.29	1,299.30	1,347.24	0.95	0.80	-0.60
8,007.00	60.18	109.46	7,348.42	-359.17	1,307.46	1,355.87	5.50	5.50	0.00
8,017.00	59.61	109.42	7,353.44	-362.05	1,315.62	1,364.50	5.71	-5.70	-0.40
8,027.00	60.79	109.42	7,358.41	-364.94	1,323.80	1,373.15	11.80	11.80	0.00
8,037.00	61.73	109.39	7,363.21	-367.85	1,332.07	1,381.89	9.40	9.40	-0.30
8,047.00	61.68	109.34	7,367.95	-370.77	1,340.38	1,390.67	0.67	-0.50	-0.50
8,057.00	62.77	109.37	7,372.61	-373.70	1,348.73	1,399.49	10.90	10.90	0.30
8,067.00	63.65	109.37	7,377.12	-376.66	1,357.15	1,408.39	8.80	8.80	0.00
8,077.00	63.47	109.39	7,381.57	-379.63	1,365.59	1,417.32	1.81	-1.80	0.20
8,087.00	63.23	109.44	7,386.06	-382.60	1,374.02	1,426.23	2.44	-2.40	0.50
8,097.00	64.29	109.57	7,390.48	-385.60	1,382.48	1,435.17	10.66	10.60	1.30
8,107.00	64.56	109.61	7,394.80	-388.62	1,390.98	1,444.16	2.72	2.70	0.40
8,117.00	64.96	109.64	7,399.06	-391.66	1,399.50	1,453.18	4.01	4.00	0.30
8,127.00	64.51	109.72	7,403.33	-394.71	1,408.01	1,462.19	4.56	-4.50	0.80
8,137.00	65.40	109.88	7,407.56	-397.77	1,416.54	1,471.22	9.02	8.90	1.60
8,147.00	65.45	109.94	7,411.72	-400.87	1,425.09	1,480.28	0.74	0.50	0.60
8,157.00	65.39	110.02	7,415.88	-403.98	1,433.63	1,489.34	0.94	-0.60	0.80
8,167.00	64.46	110.12	7,420.12	-407.09	1,442.14	1,498.36	9.34	-9.30	1.00
8,177.00	64.50	110.20	7,424.43	-410.20	1,450.61	1,507.35	0.83	0.40	0.80
8,187.00	65.25	110.26	7,428.67	-413.33	1,459.11	1,516.37	7.52	7.50	0.60
8,197.00	64.59	110.36	7,432.91	-416.47	1,467.60	1,525.38	6.66	-6.60	1.00
8,207.00	65.19	110.44	7,437.16	-419.63	1,476.09	1,534.40	6.04	6.00	0.80
8,217.00	64.26	110.51	7,441.43	-422.79	1,484.56	1,543.40	9.32	-9.30	0.70
8,227.00	65.61	110.53	7,445.66	-425.97	1,493.04	1,552.42	13.50	13.50	0.20
8,237.00	65.27	110.45	7,449.82	-429.15	1,501.56	1,561.47	3.48	-3.40	-0.80
8,247.00	65.35	110.31	7,454.00	-432.31	1,510.08	1,570.52	1.50	0.80	-1.40
8,257.00	65.99	109.92	7,458.12	-435.45	1,518.64	1,579.59	7.32	6.40	-3.90
8,267.00	66.53	109.62	7,462.14	-438.54	1,527.25	1,588.71	6.06	5.40	-3.00
8,277.00	66.37	109.34	7,466.14	-441.60	1,535.89	1,597.85	3.02	-1.60	-2.80

Company:	University of Utah	Local Co-ordinate Reference:	Well 16A(78)-32
Project:	Forge	TVD Reference:	GE + RKB (5414' + 30') @ 5444.00usft (Frontier 16)
Site:	Beaver County, UT	MD Reference:	GE + RKB (5414' + 30') @ 5444.00usft (Frontier 16)
Well:	16A(78)-32	North Reference:	Grid
Wellbore:	16A(78)-32	Survey Calculation Method:	Minimum Curvature
Design:	16A(78)-32	Database:	EDM 5000.1 Single User 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)	
8,287.00	66.65	109.26	7,470.12	-444.63	1,544.55	1,607.00	2.89	2.80	-0.80	
8,297.00	66.08	109.26	7,474.13	-447.65	1,553.20	1,616.13	5.70	-5.70	0.00	
8,307.00	66.72	109.23	7,478.14	-450.67	1,561.85	1,625.27	6.41	6.40	-0.30	
8,317.00	66.25	109.27	7,482.13	-453.70	1,570.51	1,634.42	4.71	-4.70	0.40	
8,327.00	66.07	109.20	7,486.17	-456.71	1,579.14	1,643.54	1.91	-1.80	-0.70	
8,337.00	66.30	109.09	7,490.20	-459.71	1,587.78	1,652.66	2.51	2.30	-1.10	
8,347.00	66.31	108.82	7,494.22	-462.69	1,596.44	1,661.80	2.47	0.10	-2.70	
8,357.00	66.11	108.50	7,498.26	-465.61	1,605.11	1,670.93	3.55	-2.00	-3.20	
8,367.00	66.69	108.25	7,502.26	-468.50	1,613.81	1,680.08	6.24	5.80	-2.50	
8,377.00	65.39	108.05	7,506.32	-471.35	1,622.49	1,689.20	13.13	-13.00	-2.00	
8,387.00	66.37	107.96	7,510.41	-474.17	1,631.17	1,698.32	9.83	9.80	-0.90	
8,397.00	66.78	107.99	7,514.38	-477.00	1,639.90	1,707.48	4.11	4.10	0.30	
8,406.10	66.17	108.02	7,518.02	-479.58	1,647.84	1,715.81	6.71	-6.70	0.33	
Last Gyro Survey @ 8406.10'										
8,466.00	65.60	108.41	7,542.49	-496.67	1,699.77	1,770.40	1.12	-0.95	0.65	
First MWD Survey @ 8466.00' MD										
8,573.00	65.90	106.23	7,586.44	-525.71	1,792.90	1,867.87	1.88	0.28	-2.04	
8,668.00	67.92	103.08	7,623.70	-547.80	1,877.43	1,955.24	3.72	2.13	-3.32	
8,763.00	68.32	100.55	7,659.11	-565.84	1,963.71	2,043.25	2.51	0.42	-2.66	
8,859.00	69.41	99.11	7,693.73	-581.12	2,051.93	2,132.42	1.80	1.14	-1.50	
8,953.00	65.25	98.06	7,729.95	-594.08	2,137.68	2,218.60	4.54	-4.43	-1.12	
9,048.00	66.34	98.00	7,768.90	-606.18	2,223.47	2,304.60	1.15	1.15	-0.06	
9,144.00	66.13	99.91	7,807.59	-619.86	2,310.26	2,391.97	1.83	-0.22	1.99	
9,239.00	66.64	103.70	7,845.66	-637.67	2,395.44	2,478.86	3.69	0.54	3.99	
9,333.00	64.64	103.67	7,884.43	-657.93	2,478.64	2,564.46	2.13	-2.13	-0.03	
9,429.00	63.62	105.78	7,926.32	-679.87	2,562.17	2,650.83	2.24	-1.06	2.20	
9,524.00	62.73	106.61	7,969.19	-703.52	2,643.58	2,735.59	1.22	-0.94	0.87	
9,618.00	62.36	105.28	8,012.53	-726.43	2,723.79	2,818.99	1.32	-0.39	-1.41	
9,741.00	62.89	106.07	8,069.09	-755.94	2,828.95	2,928.21	0.71	0.43	0.64	
9,837.00	65.42	105.64	8,110.93	-779.54	2,912.05	3,014.59	2.67	2.64	-0.45	
9,933.00	67.55	105.62	8,149.23	-803.26	2,996.82	3,102.60	2.22	2.22	-0.02	
10,028.00	65.93	105.44	8,186.75	-826.63	3,080.91	3,189.88	1.71	-1.71	-0.19	
10,124.00	65.17	106.84	8,226.48	-850.91	3,164.85	3,277.25	1.55	-0.79	1.46	
10,220.00	64.32	108.36	8,267.44	-877.16	3,247.61	3,363.98	1.68	-0.89	1.58	
10,316.00	63.32	108.30	8,309.80	-904.26	3,329.39	3,449.98	1.04	-1.04	-0.06	
10,411.00	64.68	105.97	8,351.45	-929.40	3,410.98	3,535.30	2.63	1.43	-2.45	
10,505.00	64.86	105.02	8,391.51	-952.12	3,492.92	3,620.33	0.93	0.19	-1.01	
10,604.00	68.46	103.44	8,430.73	-974.44	3,581.01	3,711.20	3.92	3.64	-1.60	
10,694.00	69.27	101.13	8,463.19	-992.29	3,663.03	3,795.04	2.56	0.90	-2.57	
10,790.00	68.00	101.18	8,498.16	-1,009.59	3,750.74	3,884.24	1.32	-1.32	0.05	
10,793.42	68.02	101.19	8,499.44	-1,010.21	3,753.86	3,887.41	0.67	0.62	0.27	
16A(78)-32										

Company:	University of Utah	Local Co-ordinate Reference:	Well 16A(78)-32
Project:	Forge	TVD Reference:	GE + RKB (5414' + 30') @ 5444.00usft (Frontier 16)
Site:	Beaver County, UT	MD Reference:	GE + RKB (5414' + 30') @ 5444.00usft (Frontier 16)
Well:	16A(78)-32	North Reference:	Grid
Wellbore:	16A(78)-32	Survey Calculation Method:	Minimum Curvature
Design:	16A(78)-32	Database:	EDM 5000.1 Single User 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)	
10,886.00	68.60	101.44	8,533.66	-1,027.08	3,838.21	3,973.25	0.67	0.63	0.27	
Last MWD Survey @ 10886.00' MD										
10,955.00	68.60	101.44	8,558.83	-1,039.83	3,901.17	4,037.37	0.00	0.00	0.00	
Projection to TD @ 10955.00' MD										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,629.00		13 3/8"	13-3/8	17-1/2	
5,113.00		9 5/8"	9-5/8	12-1/4	

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
8,406.10	7,518.02	-479.58	1,647.84	Last Gyro Survey @ 8406.10'	
8,466.00	7,542.49	-496.67	1,699.77	First MWD Survey @ 8466.00' MD	
10,886.00	8,533.66	-1,027.08	3,838.21	Last MWD Survey @ 10886.00' MD	
10,955.00	8,558.83	-1,039.83	3,901.17	Projection to TD @ 10955.00' MD	

Checked By: _____ Approved By: _____ Date: _____