



Utah Forge

Beaver (University of Utah)

Utah Forge

16B(78)-32

16B(78)-32

Design: 16B(78)-32 Final Surveys

Standard Survey Report

26 June, 2023



Company:	Utah Forge	Local Co-ordinate Reference:	Well 16B(78)-32
Project:	Beaver (University of Utah)	TVD Reference:	KB 32' @ 5447.65usft
Site:	Utah Forge	MD Reference:	KB 32' @ 5447.65usft
Well:	16B(78)-32	North Reference:	Grid
Wellbore:	16B(78)-32	Survey Calculation Method:	Minimum Curvature
Design:	16B(78)-32 Final Surveys	Database:	Bakersfield Database

Project	Beaver (University of Utah), UTAH, FORGE		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD83 Utah - HARN		
Map Zone:	Zone 12N (114 W to 108 W)		

Site	Utah Forge				
Site Position:		Northing:	13,986,162.95 usft	Latitude:	38.50017100
From:	Lat/Long	Easting:	1,101,930.11 usft	Longitude:	-112.88221000
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.17 °

Well	16B(78)-32					
Well Position	+N/-S	0.00 usft	Northing:	13,987,765.96 usft	Latitude:	38.50434511
	+E/-W	0.00 usft	Easting:	1,097,907.09 usft	Longitude:	-112.89638027
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	5,415.65 usft

Wellbore	16B(78)-32				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2021_FILE	12/31/2021	11.18	64.00	49,830.60000000

Design	16B(78)-32 Final 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	106.85	

Survey Program	Date	6/26/2023			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
25.00	10,400.00	16B(78)-32 Drop Gyro Surveys (16B(78)-3	SDI_KPR_DRP_NS	SDI Keeper Gyrocompass Drop	
10,400.00	10,947.00	16B(78)-32 MWD Surveys (16B(78)-32)	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	
25.00	0.22	52.11	25.00	0.03	0.04	0.03	0.88	0.88	0.00	
50.00	0.45	52.11	50.00	0.12	0.15	0.11	0.92	0.92	0.00	
75.00	0.36	38.82	75.00	0.24	0.28	0.20	0.52	-0.36	-53.16	
100.00	0.14	58.33	100.00	0.32	0.36	0.25	0.93	-0.88	78.04	
125.00	0.54	131.51	125.00	0.26	0.47	0.38	2.07	1.60	292.72	
150.00	0.64	102.12	150.00	0.15	0.69	0.62	1.26	0.40	-117.56	
175.00	0.65	75.44	175.00	0.15	0.97	0.88	1.19	0.04	-106.72	
200.00	0.44	58.93	199.99	0.24	1.19	1.07	1.04	-0.84	-66.04	
225.00	0.26	44.13	224.99	0.33	1.31	1.16	0.80	-0.72	-59.20	

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Well:	16B(78)-32	North Reference:	Grid
Wellbore:	16B(78)-32	Survey Calculation Method:	Minimum Curvature
Design:	16B(78)-32 Final Surveys	Database:	Bakersfield Database

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)
250.00	0.19	119.27	249.99	0.35	1.38	1.22	1.12	-0.28	300.56
275.00	0.40	126.68	274.99	0.28	1.49	1.35	0.85	0.84	29.64
300.00	0.55	112.24	299.99	0.18	1.67	1.55	0.76	0.60	-57.76
325.00	0.69	107.15	324.99	0.09	1.93	1.82	0.60	0.56	-20.36
350.00	0.84	80.36	349.99	0.08	2.25	2.13	1.53	0.60	-107.16
375.00	0.70	69.14	374.99	0.16	2.57	2.42	0.82	-0.56	-44.88
400.00	0.52	73.07	399.99	0.25	2.83	2.63	0.74	-0.72	15.72
425.00	0.42	91.96	424.98	0.28	3.03	2.82	0.73	-0.40	75.56
450.00	0.42	109.31	449.98	0.25	3.20	3.00	0.51	0.00	69.40
475.00	0.59	117.89	474.98	0.16	3.40	3.21	0.74	0.68	34.32
500.00	0.88	107.57	499.98	0.04	3.70	3.53	1.27	1.16	-41.28
525.00	1.07	89.12	524.98	-0.02	4.12	3.95	1.46	0.76	-73.80
550.00	1.10	80.69	549.97	0.03	4.59	4.38	0.65	0.12	-33.72
575.00	0.92	68.20	574.97	0.14	5.01	4.76	1.13	-0.72	-49.96
600.00	0.89	80.60	599.97	0.25	5.39	5.09	0.79	-0.12	49.60
625.00	0.88	85.61	624.96	0.29	5.77	5.44	0.31	-0.04	20.04
650.00	0.97	98.35	649.96	0.28	6.17	5.83	0.90	0.36	50.96
675.00	1.48	95.91	674.95	0.21	6.70	6.35	2.05	2.04	-9.76
700.00	1.59	84.67	699.94	0.21	7.37	6.99	1.28	0.44	-44.96
725.00	1.44	79.09	724.94	0.30	8.02	7.59	0.84	-0.60	-22.32
750.00	1.35	81.48	749.93	0.41	8.62	8.14	0.43	-0.36	9.56
775.00	1.37	85.13	774.92	0.47	9.21	8.68	0.36	0.08	14.60
800.00	1.22	92.17	799.92	0.49	9.78	9.21	0.87	-0.60	28.16
825.00	1.37	97.63	824.91	0.44	10.34	9.77	0.78	0.60	21.84
850.00	1.76	95.25	849.90	0.37	11.02	10.44	1.58	1.56	-9.52
875.00	1.78	87.92	874.89	0.34	11.79	11.18	0.91	0.08	-29.32
900.00	1.85	87.44	899.87	0.38	12.58	11.93	0.29	0.28	-1.92
925.00	1.76	80.97	924.86	0.45	13.36	12.65	0.89	-0.36	-25.88
950.00	1.69	83.12	949.85	0.56	14.11	13.34	0.38	-0.28	8.60
975.00	1.64	83.53	974.84	0.64	14.83	14.00	0.21	-0.20	1.64
1,000.00	1.68	86.08	999.83	0.71	15.55	14.67	0.34	0.16	10.20
1,025.00	1.67	88.73	1,024.82	0.74	16.28	15.36	0.31	-0.04	10.60
1,050.00	1.85	93.72	1,049.81	0.72	17.04	16.10	0.94	0.72	19.96
1,075.00	2.24	91.88	1,074.79	0.68	17.94	16.97	1.58	1.56	-7.36
1,100.00	2.03	83.69	1,099.77	0.71	18.86	17.85	1.48	-0.84	-32.76
1,125.00	1.79	83.37	1,124.76	0.81	19.69	18.61	0.96	-0.96	-1.28
1,150.00	1.83	92.60	1,149.75	0.83	20.48	19.36	1.18	0.16	36.92
1,175.00	2.07	95.76	1,174.73	0.77	21.33	20.19	1.05	0.96	12.64
1,200.00	1.83	93.18	1,199.72	0.70	22.17	21.02	1.02	-0.96	-10.32
1,225.00	1.22	85.74	1,224.71	0.70	22.84	21.65	2.56	-2.44	-29.76
1,250.00	0.57	87.60	1,249.71	0.73	23.23	22.02	2.60	-2.60	7.44
1,275.00	0.39	95.12	1,274.71	0.72	23.44	22.22	0.76	-0.72	30.08
1,300.00	0.23	87.94	1,299.71	0.72	23.57	22.35	0.66	-0.64	-28.72

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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)
1,325.00	0.14	152.75	1,324.71	0.69	23.64	22.42	0.85	-0.36	259.24
1,350.00	0.33	127.31	1,349.71	0.62	23.71	22.51	0.85	0.76	-101.76
1,375.00	0.46	106.77	1,374.70	0.55	23.86	22.68	0.76	0.52	-82.16
1,400.00	0.62	73.81	1,399.70	0.56	24.09	22.89	1.37	0.64	-131.84
1,425.00	0.52	59.26	1,424.70	0.65	24.31	23.08	0.70	-0.40	-58.20
1,450.00	0.37	34.29	1,449.70	0.78	24.46	23.18	0.97	-0.60	-99.88
1,475.00	0.15	331.37	1,474.70	0.87	24.49	23.18	1.32	-0.88	-251.68
1,500.00	0.50	112.05	1,499.70	0.86	24.57	23.27	2.49	1.40	562.72
1,525.00	0.54	64.38	1,524.70	0.87	24.78	23.46	1.69	0.16	-190.68
1,550.00	0.26	47.98	1,549.70	0.96	24.93	23.58	1.20	-1.12	-65.60
1,575.00	0.26	124.60	1,574.70	0.97	25.02	23.66	1.29	0.00	306.48
1,600.00	0.73	95.79	1,599.70	0.92	25.22	23.87	2.07	1.88	-115.24
1,625.00	0.60	74.68	1,624.70	0.94	25.51	24.14	1.10	-0.52	-84.44
1,650.00	0.60	73.49	1,649.70	1.01	25.76	24.36	0.05	0.00	-4.76
1,675.00	0.44	80.68	1,674.69	1.06	25.98	24.56	0.69	-0.64	28.76
1,700.00	0.69	93.99	1,699.69	1.07	26.22	24.79	1.12	1.00	53.24
1,725.00	0.64	108.67	1,724.69	1.01	26.51	25.07	0.71	-0.20	58.72
1,750.00	1.15	119.45	1,749.69	0.84	26.86	25.46	2.14	2.04	43.12
1,775.00	1.09	96.52	1,774.68	0.69	27.31	25.94	1.80	-0.24	-91.72
1,800.00	0.81	114.26	1,799.68	0.59	27.71	26.35	1.61	-1.12	70.96
1,825.00	1.24	109.58	1,824.68	0.43	28.12	26.79	1.75	1.72	-18.72
1,850.00	0.81	118.64	1,849.67	0.25	28.53	27.24	1.83	-1.72	36.24
1,875.00	1.20	124.87	1,874.67	0.02	28.90	27.66	1.62	1.56	24.92
1,900.00	1.08	128.11	1,899.66	-0.27	29.30	28.13	0.54	-0.48	12.96
1,925.00	0.97	142.35	1,924.66	-0.59	29.62	28.52	1.11	-0.44	56.96
1,950.00	0.91	158.10	1,949.66	-0.94	29.82	28.81	1.06	-0.24	63.00
1,975.00	0.81	187.42	1,974.65	-1.30	29.87	28.97	1.78	-0.40	117.28
2,000.00	0.84	206.25	1,999.65	-1.64	29.77	28.97	1.09	0.12	75.32
2,025.00	0.88	192.96	2,024.65	-1.99	29.65	28.95	0.81	0.16	-53.16
2,050.00	0.71	238.52	2,049.65	-2.26	29.47	28.86	2.54	-0.68	182.24
2,075.00	1.20	230.46	2,074.64	-2.51	29.14	28.61	2.03	1.96	-32.24
2,100.00	1.15	213.31	2,099.64	-2.88	28.80	28.40	1.42	-0.20	-68.60
2,125.00	0.96	209.74	2,124.63	-3.27	28.56	28.28	0.80	-0.76	-14.28
2,150.00	0.65	229.80	2,149.63	-3.55	28.34	28.15	1.66	-1.24	80.24
2,175.00	0.97	219.10	2,174.63	-3.80	28.10	28.00	1.41	1.28	-42.80
2,200.00	0.76	207.02	2,199.63	-4.11	27.89	27.89	1.11	-0.84	-48.32
2,225.00	0.71	199.97	2,224.62	-4.41	27.76	27.85	0.41	-0.20	-28.20
2,250.00	0.84	180.93	2,249.62	-4.74	27.71	27.89	1.15	0.52	-76.16
2,275.00	0.87	204.99	2,274.62	-5.09	27.63	27.92	1.43	0.12	96.24
2,300.00	0.84	211.64	2,299.62	-5.42	27.45	27.84	0.41	-0.12	26.60
2,325.00	1.11	207.93	2,324.61	-5.79	27.24	27.75	1.11	1.08	-14.84
2,350.00	1.23	204.99	2,349.61	-6.25	27.01	27.66	0.54	0.48	-11.76
2,375.00	0.84	187.87	2,374.60	-6.67	26.87	27.65	1.97	-1.56	-68.48

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Well:	16B(78)-32	North Reference:	Grid
Wellbore:	16B(78)-32	Survey Calculation Method:	Minimum Curvature
Design:	16B(78)-32 Final Surveys	Database:	Bakersfield Database

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)
2,400.00	0.76	208.12	2,399.60	-7.00	26.77	27.65	1.17	-0.32	81.00
2,425.00	1.04	219.68	2,424.60	-7.32	26.55	27.53	1.33	1.12	46.24
2,450.00	1.21	210.79	2,449.59	-7.72	26.27	27.38	0.97	0.68	-35.56
2,475.00	1.04	192.72	2,474.59	-8.17	26.08	27.33	1.56	-0.68	-72.28
2,500.00	1.00	208.44	2,499.58	-8.58	25.93	27.30	1.13	-0.16	62.88
2,525.00	1.09	187.83	2,524.58	-9.01	25.79	27.30	1.54	0.36	-82.44
2,550.00	0.76	213.73	2,549.58	-9.38	25.67	27.29	2.10	-1.32	103.60
2,575.00	0.96	210.63	2,574.57	-9.70	25.47	27.19	0.82	0.80	-12.40
2,600.00	1.16	200.62	2,599.57	-10.12	25.27	27.12	1.09	0.80	-40.04
2,625.00	1.04	210.58	2,624.56	-10.55	25.07	27.05	0.90	-0.48	39.84
2,650.00	1.03	221.52	2,649.56	-10.91	24.80	26.90	0.79	-0.04	43.76
2,675.00	1.25	256.28	2,674.56	-11.15	24.39	26.57	2.85	0.88	139.04
2,700.00	1.29	254.86	2,699.55	-11.29	23.85	26.10	0.20	0.16	-5.68
2,725.00	1.46	259.88	2,724.54	-11.41	23.27	25.58	0.83	0.68	20.08
2,750.00	1.44	253.95	2,749.53	-11.56	22.65	25.03	0.61	-0.08	-23.72
2,775.00	1.20	250.69	2,774.53	-11.73	22.10	24.56	1.01	-0.96	-13.04
2,800.00	0.90	255.68	2,799.52	-11.87	21.67	24.18	1.25	-1.20	19.96
2,825.00	1.01	280.25	2,824.52	-11.88	21.26	23.79	1.68	0.44	98.28
2,850.00	1.03	284.67	2,849.52	-11.78	20.83	23.35	0.32	0.08	17.68
2,875.00	1.17	282.11	2,874.51	-11.67	20.36	22.87	0.59	0.56	-10.24
2,900.00	1.13	283.34	2,899.51	-11.56	19.87	22.37	0.19	-0.16	4.92
2,925.00	1.01	271.93	2,924.50	-11.49	19.41	21.91	0.98	-0.48	-45.64
2,950.00	0.65	279.18	2,949.50	-11.46	19.05	21.55	1.50	-1.44	29.00
2,975.00	0.87	303.93	2,974.50	-11.34	18.75	21.23	1.56	0.88	99.00
3,000.00	1.01	284.44	2,999.49	-11.17	18.38	20.83	1.39	0.56	-77.96
3,025.00	0.61	286.05	3,024.49	-11.08	18.04	20.48	1.60	-1.60	6.44
3,050.00	0.71	301.26	3,049.49	-10.97	17.78	20.20	0.80	0.40	60.84
3,075.00	0.84	275.53	3,074.49	-10.87	17.46	19.87	1.47	0.52	-102.92
3,100.00	0.61	293.64	3,099.49	-10.80	17.16	19.55	1.29	-0.92	72.44
3,125.00	0.78	311.23	3,124.48	-10.63	16.91	19.27	1.08	0.68	70.36
3,150.00	0.77	279.28	3,149.48	-10.49	16.62	18.94	1.71	-0.04	-127.80
3,175.00	0.71	320.79	3,174.48	-10.35	16.35	18.65	2.11	-0.24	166.04
3,200.00	0.91	300.34	3,199.48	-10.12	16.08	18.33	1.39	0.80	-81.80
3,225.00	0.52	282.31	3,224.48	-10.00	15.80	18.02	1.78	-1.56	-72.12
3,250.00	0.68	314.84	3,249.47	-9.87	15.59	17.78	1.48	0.64	130.12
3,275.00	0.45	329.64	3,274.47	-9.68	15.43	17.58	1.08	-0.92	59.20
3,300.00	0.56	330.00	3,299.47	-9.49	15.32	17.41	0.44	0.44	1.44
3,325.00	0.47	322.18	3,324.47	-9.30	15.20	17.24	0.46	-0.36	-31.28
3,350.00	0.35	336.04	3,349.47	-9.15	15.10	17.11	0.62	-0.48	55.44
3,375.00	0.24	4.68	3,374.47	-9.03	15.08	17.05	0.72	-0.44	114.56
3,400.00	0.37	63.06	3,399.47	-8.94	15.15	17.09	1.27	0.52	233.52
3,425.00	0.46	101.84	3,424.47	-8.93	15.32	17.25	1.15	0.36	155.12
3,450.00	0.50	109.13	3,449.47	-8.98	15.52	17.46	0.29	0.16	29.16
3,475.00	0.82	99.96	3,474.47	-9.05	15.80	17.75	1.34	1.28	-36.68

Company:	Utah Forge	Local Co-ordinate Reference:	Well 16B(78)-32
Project:	Beaver (University of Utah)	TVD Reference:	KB 32' @ 5447.65usft
Site:	Utah Forge	MD Reference:	KB 32' @ 5447.65usft
Well:	16B(78)-32	North Reference:	Grid
Wellbore:	16B(78)-32	Survey Calculation Method:	Minimum Curvature
Design:	16B(78)-32 Final Surveys	Database:	Bakersfield Database

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)
3,500.00	0.58	113.04	3,499.46	-9.13	16.10	18.05	1.15	-0.96	52.32
3,525.00	0.97	104.22	3,524.46	-9.23	16.42	18.39	1.63	1.56	-35.28
3,550.00	0.70	87.67	3,549.46	-9.28	16.77	18.74	1.44	-1.08	-66.20
3,575.00	0.86	82.09	3,574.46	-9.25	17.11	19.06	0.71	0.64	-22.32
3,600.00	0.75	95.48	3,599.46	-9.24	17.46	19.39	0.87	-0.44	53.56
3,625.00	0.50	124.27	3,624.45	-9.31	17.71	19.65	1.58	-1.00	115.16
3,650.00	0.80	109.58	3,649.45	-9.43	17.97	19.93	1.36	1.20	-58.76
3,675.00	0.67	114.35	3,674.45	-9.55	18.27	20.25	0.57	-0.52	19.08
3,700.00	0.74	97.06	3,699.45	-9.63	18.56	20.56	0.89	0.28	-69.16
3,725.00	0.74	101.53	3,724.45	-9.68	18.88	20.88	0.23	0.00	17.88
3,750.00	0.63	78.68	3,749.44	-9.69	19.17	21.16	1.17	-0.44	-91.40
3,775.00	0.55	107.07	3,774.44	-9.70	19.42	21.40	1.20	-0.32	113.56
3,800.00	0.59	86.48	3,799.44	-9.72	19.66	21.64	0.83	0.16	-82.36
3,825.00	0.84	100.27	3,824.44	-9.75	19.97	21.94	1.21	1.00	55.16
3,850.00	0.57	108.99	3,849.44	-9.82	20.27	22.25	1.16	-1.08	34.88
3,875.00	0.77	92.88	3,874.44	-9.87	20.56	22.54	1.09	0.80	-64.44
3,900.00	0.80	104.43	3,899.43	-9.92	20.89	22.87	0.64	0.12	46.20
3,925.00	1.07	95.63	3,924.43	-9.99	21.29	23.28	1.22	1.08	-35.20
3,950.00	0.80	93.60	3,949.43	-10.02	21.70	23.67	1.09	-1.08	-8.12
3,975.00	0.79	89.00	3,974.42	-10.03	22.05	24.01	0.26	-0.04	-18.40
4,000.00	1.13	96.30	3,999.42	-10.06	22.46	24.42	1.44	1.36	29.20
4,025.00	0.68	93.00	4,024.42	-10.09	22.86	24.80	1.81	-1.80	-13.20
4,050.00	0.75	118.09	4,049.42	-10.18	23.15	25.11	1.27	0.28	100.36
4,075.00	0.89	111.94	4,074.41	-10.32	23.47	25.46	0.66	0.56	-24.60
4,100.00	0.42	119.05	4,099.41	-10.44	23.74	25.74	1.90	-1.88	28.44
4,125.00	0.46	106.27	4,124.41	-10.51	23.91	25.93	0.42	0.16	-51.12
4,150.00	0.82	100.72	4,149.41	-10.58	24.18	26.21	1.46	1.44	-22.20
4,175.00	0.43	81.17	4,174.41	-10.59	24.45	26.47	1.76	-1.56	-78.20
4,200.00	0.45	112.30	4,199.41	-10.62	24.64	26.66	0.95	0.08	124.52
4,225.00	0.43	110.11	4,224.41	-10.69	24.81	26.85	0.10	-0.08	-8.76
4,250.00	0.63	103.96	4,249.41	-10.75	25.04	27.08	0.83	0.80	-24.60
4,275.00	0.80	127.54	4,274.40	-10.89	25.31	27.38	1.34	0.68	94.32
4,300.00	0.48	98.21	4,299.40	-11.01	25.55	27.65	1.79	-1.28	-117.32
4,325.00	0.61	124.90	4,324.40	-11.10	25.76	27.88	1.13	0.52	106.76
4,350.00	0.68	92.28	4,349.40	-11.19	26.02	28.15	1.47	0.28	-130.48
4,375.00	0.69	119.99	4,374.40	-11.27	26.30	28.44	1.31	0.04	110.84
4,400.00	0.61	73.25	4,399.40	-11.30	26.56	28.69	2.08	-0.32	-186.96
4,425.00	0.56	93.68	4,424.40	-11.27	26.81	28.92	0.85	-0.20	81.72
4,450.00	0.77	69.92	4,449.39	-11.22	27.09	29.18	1.37	0.84	-95.04
4,475.00	1.11	81.57	4,474.39	-11.13	27.48	29.53	1.55	1.36	46.60
4,500.00	0.70	92.27	4,499.39	-11.10	27.87	29.90	1.77	-1.64	42.80
4,525.00	0.95	69.37	4,524.38	-11.03	28.22	30.21	1.64	1.00	-91.60
4,550.00	0.70	96.10	4,549.38	-10.98	28.57	30.52	1.81	-1.00	106.92

Company:	Utah Forge	Local Co-ordinate Reference:	Well 16B(78)-32
Project:	Beaver (University of Utah)	TVD Reference:	KB 32' @ 5447.65usft
Site:	Utah Forge	MD Reference:	KB 32' @ 5447.65usft
Well:	16B(78)-32	North Reference:	Grid
Wellbore:	16B(78)-32	Survey Calculation Method:	Minimum Curvature
Design:	16B(78)-32 Final Surveys	Database:	Bakersfield Database

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)	
4,575.00	1.07	104.17	4,574.38	-11.05	28.95	30.91	1.56	1.48	32.28	
4,600.00	1.20	92.90	4,599.37	-11.12	29.43	31.39	1.03	0.52	-45.08	
4,625.00	0.98	88.69	4,624.37	-11.13	29.91	31.85	0.94	-0.88	-16.84	
4,650.00	1.10	102.12	4,649.37	-11.18	30.36	32.29	1.08	0.48	53.72	
4,675.00	1.22	115.26	4,674.36	-11.34	30.83	32.80	1.16	0.48	52.56	
4,700.00	1.49	118.69	4,699.35	-11.61	31.36	33.38	1.13	1.08	13.72	
4,725.00	1.85	122.18	4,724.34	-11.98	31.98	34.08	1.50	1.44	13.96	
4,750.00	2.17	121.80	4,749.33	-12.44	32.73	34.93	1.28	1.28	-1.52	
4,775.00	2.44	123.54	4,774.31	-12.99	33.57	35.90	1.12	1.08	6.96	
4,800.00	2.50	124.15	4,799.28	-13.59	34.47	36.93	0.26	0.24	2.44	
4,825.00	2.62	125.62	4,824.26	-14.23	35.38	37.99	0.55	0.48	5.88	
4,850.00	2.53	133.12	4,849.23	-14.94	36.25	39.03	1.39	-0.36	30.00	
4,875.00	2.88	126.33	4,874.21	-15.69	37.16	40.11	1.90	1.40	-27.16	
4,900.00	2.27	133.86	4,899.18	-16.40	38.02	41.15	2.79	-2.44	30.12	
4,925.00	1.87	158.06	4,924.16	-17.12	38.53	41.84	3.81	-1.60	96.80	
4,950.00	1.96	148.14	4,949.15	-17.86	38.91	42.42	1.37	0.36	-39.68	
4,975.00	1.61	152.88	4,974.14	-18.54	39.30	42.98	1.52	-1.40	18.96	
5,000.00	1.74	163.36	4,999.13	-19.22	39.57	43.44	1.33	0.52	41.92	
5,025.00	0.86	165.60	5,024.12	-19.76	39.72	43.74	3.53	-3.52	8.96	
5,050.00	0.90	154.12	5,049.12	-20.12	39.85	43.97	0.72	0.16	-45.92	
5,075.00	1.00	174.59	5,074.11	-20.51	39.96	44.19	1.41	0.40	81.88	
5,100.00	0.75	166.03	5,099.11	-20.89	40.02	44.36	1.13	-1.00	-34.24	
5,125.00	0.71	143.03	5,124.11	-21.17	40.15	44.57	1.17	-0.16	-92.00	
5,150.00	0.71	138.33	5,149.11	-21.41	40.35	44.82	0.23	0.00	-18.80	
5,175.00	1.17	131.70	5,174.10	-21.70	40.64	45.19	1.89	1.84	-26.52	
5,200.00	1.63	128.59	5,199.10	-22.09	41.11	45.75	1.86	1.84	-12.44	
5,225.00	1.63	130.30	5,224.09	-22.54	41.66	46.40	0.19	0.00	6.84	
5,250.00	1.64	134.48	5,249.08	-23.02	42.19	47.05	0.48	0.04	16.72	
5,275.00	2.18	141.42	5,274.06	-23.64	42.74	47.76	2.35	2.16	27.76	
5,300.00	2.05	146.12	5,299.05	-24.39	43.28	48.49	0.87	-0.52	18.80	
5,325.00	1.61	158.24	5,324.03	-25.08	43.66	49.06	2.33	-1.76	48.48	
5,350.00	1.29	175.24	5,349.03	-25.69	43.82	49.38	2.13	-1.28	68.00	
5,375.00	0.96	199.55	5,374.02	-26.17	43.77	49.48	2.29	-1.32	97.24	
5,400.00	1.10	231.33	5,399.02	-26.52	43.51	49.33	2.32	0.56	127.12	
5,425.00	1.39	228.65	5,424.01	-26.87	43.10	49.03	1.18	1.16	-10.72	
5,450.00	1.21	228.97	5,449.00	-27.24	42.67	48.73	0.72	-0.72	1.28	
5,475.00	0.58	243.49	5,474.00	-27.47	42.36	48.50	2.66	-2.52	58.08	
5,500.00	0.43	165.75	5,499.00	-27.62	42.27	48.46	2.58	-0.60	-310.96	
5,525.00	1.50	134.22	5,524.00	-27.94	42.53	48.80	4.62	4.28	-126.12	
5,550.00	2.96	126.35	5,548.98	-28.55	43.28	49.70	5.95	5.84	-31.48	
5,575.00	4.84	121.77	5,573.92	-29.48	44.70	51.32	7.62	7.52	-18.32	
5,600.00	6.56	122.66	5,598.79	-30.81	46.80	53.72	6.89	6.88	3.56	
5,625.00	7.83	125.08	5,623.60	-32.56	49.39	56.71	5.22	5.08	9.68	

Company:	Utah Forge	Local Co-ordinate Reference:	Well 16B(78)-32
Project:	Beaver (University of Utah)	TVD Reference:	KB 32' @ 5447.65usft
Site:	Utah Forge	MD Reference:	KB 32' @ 5447.65usft
Well:	16B(78)-32	North Reference:	Grid
Wellbore:	16B(78)-32	Survey Calculation Method:	Minimum Curvature
Design:	16B(78)-32 Final Surveys	Database:	Bakersfield Database

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)
5,650.00	9.35	127.99	5,648.32	-34.79	52.39	60.22	6.32	6.08	11.64
5,675.00	11.11	130.02	5,672.92	-37.59	55.83	64.33	7.19	7.04	8.12
5,700.00	12.62	132.49	5,697.38	-40.98	59.69	69.01	6.37	6.04	9.88
5,725.00	13.02	132.67	5,721.76	-44.74	63.77	74.00	1.61	1.60	0.72
5,750.00	12.94	131.97	5,746.12	-48.52	67.93	79.07	0.71	-0.32	-2.80
5,775.00	13.32	131.34	5,770.47	-52.29	72.17	84.23	1.62	1.52	-2.52
5,800.00	13.57	131.01	5,794.78	-56.12	76.55	89.53	1.05	1.00	-1.32
5,825.00	14.14	130.26	5,819.05	-60.01	81.09	95.00	2.39	2.28	-3.00
5,850.00	15.03	129.35	5,843.25	-64.04	85.93	100.80	3.68	3.56	-3.64
5,875.00	16.43	127.94	5,867.31	-68.27	91.22	107.09	5.80	5.60	-5.64
5,900.00	17.59	126.76	5,891.22	-72.71	97.04	113.95	4.84	4.64	-4.72
5,925.00	19.51	125.12	5,914.92	-77.37	103.48	121.46	7.96	7.68	-6.56
5,950.00	21.32	123.21	5,938.35	-82.26	110.70	129.79	7.71	7.24	-7.64
5,975.00	22.24	121.77	5,961.56	-87.24	118.52	138.72	4.26	3.68	-5.76
6,000.00	22.68	120.17	5,984.67	-92.16	126.71	147.98	3.01	1.76	-6.40
6,025.00	23.51	117.92	6,007.66	-96.91	135.28	157.57	4.85	3.32	-9.00
6,050.00	24.17	115.17	6,030.53	-101.42	144.32	167.52	5.17	2.64	-11.00
6,075.00	24.86	114.22	6,053.28	-105.76	153.75	177.80	3.18	2.76	-3.80
6,100.00	25.39	113.55	6,075.91	-110.05	163.45	188.34	2.41	2.12	-2.68
6,125.00	26.00	112.81	6,098.44	-114.32	173.42	199.11	2.76	2.44	-2.96
6,150.00	26.44	112.75	6,120.87	-118.60	183.60	210.09	1.76	1.76	-0.24
6,175.00	26.83	112.51	6,143.21	-122.91	193.95	221.25	1.62	1.56	-0.96
6,200.00	27.64	112.69	6,165.44	-127.31	204.51	232.63	3.26	3.24	0.72
6,225.00	28.43	112.24	6,187.51	-131.80	215.37	244.32	3.27	3.16	-1.80
6,250.00	29.28	112.36	6,209.40	-136.37	226.53	256.33	3.41	3.40	0.48
6,275.00	30.50	112.61	6,231.08	-141.14	238.04	268.73	4.91	4.88	1.00
6,300.00	31.74	112.75	6,252.48	-146.12	249.96	281.58	4.97	4.96	0.56
6,325.00	33.33	112.67	6,273.56	-151.31	262.36	294.96	6.36	6.36	-0.32
6,350.00	34.45	112.70	6,294.31	-156.69	275.22	308.83	4.48	4.48	0.12
6,375.00	35.95	112.89	6,314.74	-162.27	288.51	323.16	6.02	6.00	0.76
6,400.00	37.34	113.25	6,334.79	-168.12	302.24	337.99	5.63	5.56	1.44
6,425.00	38.33	113.65	6,354.54	-174.22	316.30	353.23	4.08	3.96	1.60
6,450.00	39.22	114.66	6,374.03	-180.63	330.59	368.75	4.37	3.56	4.04
6,475.00	40.08	115.86	6,393.28	-187.44	345.01	384.53	4.61	3.44	4.80
6,500.00	41.96	116.75	6,412.14	-194.71	359.72	400.72	7.87	7.52	3.56
6,525.00	43.71	117.49	6,430.47	-202.46	374.85	417.44	7.28	7.00	2.96
6,550.00	44.97	117.96	6,448.35	-210.59	390.31	434.60	5.21	5.04	1.88
6,575.00	45.99	117.69	6,465.88	-218.91	406.08	452.10	4.15	4.08	-1.08
6,600.00	47.03	117.17	6,483.09	-227.26	422.18	469.93	4.43	4.16	-2.08
6,625.00	47.18	116.36	6,500.10	-235.51	438.53	487.97	2.45	0.60	-3.24
6,650.00	46.87	114.80	6,517.14	-243.41	455.03	506.05	4.73	-1.24	-6.24
6,675.00	46.72	113.29	6,534.26	-250.83	471.67	524.12	4.44	-0.60	-6.04
6,700.00	47.29	112.19	6,551.31	-257.90	488.53	542.31	3.94	2.28	-4.40
6,725.00	48.37	111.94	6,568.09	-264.86	505.70	560.76	4.38	4.32	-1.00

Company:	Utah Forge	Local Co-ordinate Reference:	Well 16B(78)-32
Project:	Beaver (University of Utah)	TVD Reference:	KB 32' @ 5447.65usft
Site:	Utah Forge	MD Reference:	KB 32' @ 5447.65usft
Well:	16B(78)-32	North Reference:	Grid
Wellbore:	16B(78)-32	Survey Calculation Method:	Minimum Curvature
Design:	16B(78)-32 Final Surveys	Database:	Bakersfield Database

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)
6,750.00	49.80	112.00	6,584.47	-271.93	523.22	579.58	5.72	5.72	0.24
6,775.00	52.04	111.64	6,600.22	-279.14	541.24	598.91	9.03	8.96	-1.44
6,800.00	54.52	109.48	6,615.17	-286.17	560.00	618.91	12.10	9.92	-8.64
6,825.00	56.63	107.12	6,629.31	-292.64	579.58	639.52	11.48	8.44	-9.44
6,850.00	59.80	105.25	6,642.47	-298.56	599.98	660.76	14.18	12.68	-7.48
6,875.00	61.70	103.64	6,654.69	-303.99	621.10	682.56	9.45	7.60	-6.44
6,900.00	62.50	102.69	6,666.39	-309.03	642.62	704.60	4.64	3.20	-3.80
6,925.00	63.76	102.36	6,677.69	-313.86	664.39	726.84	5.18	5.04	-1.32
6,950.00	64.35	102.72	6,688.62	-318.74	686.33	749.26	2.69	2.36	1.44
6,975.00	66.98	102.80	6,698.92	-323.77	708.54	771.98	10.52	10.52	0.32
7,000.00	67.60	102.74	6,708.58	-328.87	731.04	794.98	2.49	2.48	-0.24
7,025.00	68.06	102.68	6,718.01	-333.96	753.62	818.07	1.85	1.84	-0.24
7,050.00	67.92	102.56	6,727.38	-339.03	776.24	841.18	0.72	-0.56	-0.48
7,075.00	67.88	102.68	6,736.78	-344.09	798.84	864.28	0.47	-0.16	0.48
7,100.00	68.05	102.94	6,746.16	-349.23	821.44	887.40	1.18	0.68	1.04
7,125.00	67.80	102.88	6,755.56	-354.40	844.02	910.51	1.02	-1.00	-0.24
7,150.00	68.12	102.52	6,764.94	-359.50	866.63	933.63	1.85	1.28	-1.44
7,175.00	67.88	102.55	6,774.31	-364.53	889.25	956.74	0.97	-0.96	0.12
7,200.00	67.35	102.18	6,783.83	-369.48	911.83	979.79	2.52	-2.12	-1.48
7,225.00	66.47	102.16	6,793.63	-374.33	934.31	1,002.71	3.52	-3.52	-0.08
7,250.00	66.03	102.55	6,803.70	-379.22	956.67	1,025.52	2.27	-1.76	1.56
7,275.00	65.66	102.97	6,813.93	-384.26	978.91	1,048.27	2.13	-1.48	1.68
7,300.00	66.58	103.11	6,824.05	-389.42	1,001.18	1,071.08	3.72	3.68	0.56
7,325.00	66.87	102.76	6,833.93	-394.56	1,023.57	1,093.99	1.73	1.16	-1.40
7,350.00	66.65	102.48	6,843.79	-399.58	1,045.98	1,116.90	1.35	-0.88	-1.12
7,375.00	66.57	102.48	6,853.72	-404.54	1,068.39	1,139.78	0.32	-0.32	0.00
7,400.00	66.12	102.77	6,863.75	-409.54	1,090.73	1,162.62	2.09	-1.80	1.16
7,425.00	66.07	103.34	6,873.88	-414.70	1,113.00	1,185.42	2.09	-0.20	2.28
7,450.00	65.57	103.89	6,884.12	-420.07	1,135.16	1,208.19	2.83	-2.00	2.20
7,475.00	65.39	104.20	6,894.50	-425.59	1,157.23	1,230.91	1.34	-0.72	1.24
7,500.00	65.17	103.95	6,904.95	-431.12	1,179.26	1,253.59	1.26	-0.88	-1.00
7,525.00	65.49	103.50	6,915.38	-436.51	1,201.32	1,276.28	2.08	1.28	-1.80
7,550.00	65.70	103.44	6,925.71	-441.81	1,223.46	1,299.00	0.87	0.84	-0.24
7,575.00	65.58	103.96	6,936.03	-447.20	1,245.59	1,321.74	1.95	-0.48	2.08
7,600.00	65.87	104.18	6,946.30	-452.74	1,267.70	1,344.51	1.41	1.16	0.88
7,625.00	66.57	104.35	6,956.38	-458.38	1,289.87	1,367.36	2.87	2.80	0.68
7,650.00	67.21	104.31	6,966.20	-464.07	1,312.15	1,390.33	2.56	2.56	-0.16
7,675.00	67.56	104.30	6,975.81	-469.77	1,334.51	1,413.39	1.40	1.40	-0.04
7,700.00	69.65	104.16	6,984.93	-475.49	1,357.07	1,436.64	8.38	8.36	-0.56
7,725.00	69.76	103.84	6,993.60	-481.17	1,379.82	1,460.06	1.28	0.44	-1.28
7,750.00	70.67	103.53	7,002.06	-486.73	1,402.68	1,483.54	3.82	3.64	-1.24
7,775.00	71.05	103.28	7,010.26	-492.21	1,425.65	1,507.12	1.79	1.52	-1.00
7,800.00	69.78	103.19	7,018.64	-497.60	1,448.58	1,530.63	5.09	-5.08	-0.36

Company:	Utah Forge	Local Co-ordinate Reference:	Well 16B(78)-32
Project:	Beaver (University of Utah)	TVD Reference:	KB 32' @ 5447.65usft
Site:	Utah Forge	MD Reference:	KB 32' @ 5447.65usft
Well:	16B(78)-32	North Reference:	Grid
Wellbore:	16B(78)-32	Survey Calculation Method:	Minimum Curvature
Design:	16B(78)-32 Final Surveys	Database:	Bakersfield Database

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)	
7,825.00	68.87	103.32	7,027.47	-502.96	1,471.35	1,553.97	3.67	-3.64	0.52	
7,850.00	67.82	103.50	7,036.69	-508.35	1,493.95	1,577.16	4.25	-4.20	0.72	
7,875.00	67.40	103.52	7,046.21	-513.75	1,516.42	1,600.24	1.68	-1.68	0.08	
7,900.00	66.47	103.33	7,056.01	-519.09	1,538.80	1,623.20	3.79	-3.72	-0.76	
7,925.00	65.25	103.06	7,066.23	-524.30	1,561.01	1,645.97	4.98	-4.88	-1.08	
7,950.00	64.87	102.95	7,076.77	-529.40	1,583.10	1,668.58	1.57	-1.52	-0.44	
7,975.00	64.58	102.83	7,087.45	-534.44	1,605.13	1,691.14	1.24	-1.16	-0.48	
8,000.00	63.91	102.62	7,098.31	-539.40	1,627.10	1,713.59	2.78	-2.68	-0.84	
8,025.00	63.76	102.48	7,109.34	-544.28	1,649.00	1,735.97	0.78	-0.60	-0.56	
8,050.00	63.38	102.43	7,120.46	-549.11	1,670.86	1,758.29	1.53	-1.52	-0.20	
8,075.00	62.78	102.54	7,131.78	-553.93	1,692.62	1,780.52	2.43	-2.40	0.44	
8,100.00	62.36	102.54	7,143.30	-558.74	1,714.28	1,802.64	1.68	-1.68	0.00	
8,125.00	64.09	102.34	7,154.56	-563.55	1,736.08	1,824.90	6.96	6.92	-0.80	
8,150.00	64.60	102.20	7,165.38	-568.34	1,758.10	1,847.36	2.10	2.04	-0.56	
8,175.00	65.84	102.30	7,175.86	-573.16	1,780.28	1,869.98	4.97	4.96	0.40	
8,200.00	65.28	102.56	7,186.21	-578.06	1,802.50	1,892.68	2.43	-2.24	1.04	
8,225.00	66.06	103.04	7,196.51	-583.10	1,824.72	1,915.40	3.58	3.12	1.92	
8,250.00	66.08	103.49	7,206.65	-588.35	1,846.96	1,938.21	1.65	0.08	1.80	
8,275.00	65.69	103.84	7,216.86	-593.74	1,869.13	1,960.99	2.02	-1.56	1.40	
8,300.00	64.17	104.30	7,227.45	-599.24	1,891.10	1,983.61	6.30	-6.08	1.84	
8,325.00	63.76	104.85	7,238.43	-604.89	1,912.84	2,006.05	2.57	-1.64	2.20	
8,350.00	63.18	105.10	7,249.59	-610.67	1,934.44	2,028.41	2.49	-2.32	1.00	
8,375.00	62.53	105.27	7,261.00	-616.50	1,955.91	2,050.64	2.67	-2.60	0.68	
8,400.00	61.70	105.28	7,272.69	-622.32	1,977.23	2,072.73	3.32	-3.32	0.04	
8,425.00	60.13	105.42	7,284.84	-628.11	1,998.30	2,094.57	6.30	-6.28	0.56	
8,450.00	60.12	105.26	7,297.30	-633.84	2,019.20	2,116.24	0.56	-0.04	-0.64	
8,475.00	60.10	105.09	7,309.75	-639.51	2,040.12	2,137.91	0.59	-0.08	-0.68	
8,500.00	60.03	104.89	7,322.23	-645.12	2,061.05	2,159.56	0.75	-0.28	-0.80	
8,525.00	60.48	104.64	7,334.63	-650.65	2,082.04	2,181.25	2.00	1.80	-1.00	
8,550.00	60.60	104.54	7,346.93	-656.13	2,103.10	2,203.00	0.59	0.48	-0.40	
8,575.00	60.56	104.60	7,359.21	-661.61	2,124.18	2,224.76	0.26	-0.16	0.24	
8,600.00	61.05	104.59	7,371.40	-667.11	2,145.30	2,246.57	1.96	1.96	-0.04	
8,625.00	61.72	104.51	7,383.38	-672.62	2,166.54	2,268.50	2.69	2.68	-0.32	
8,650.00	62.37	104.34	7,395.10	-678.12	2,187.93	2,290.56	2.67	2.60	-0.68	
8,675.00	62.87	104.06	7,406.59	-683.57	2,209.45	2,312.74	2.23	2.00	-1.12	
8,700.00	63.56	103.92	7,417.86	-688.96	2,231.11	2,335.02	2.80	2.76	-0.56	
8,725.00	64.43	103.66	7,428.82	-694.32	2,252.93	2,357.46	3.60	3.48	-1.04	
8,750.00	64.59	103.34	7,439.58	-699.59	2,274.87	2,379.99	1.32	0.64	-1.28	
8,775.00	63.15	103.21	7,450.59	-704.74	2,296.71	2,402.39	5.78	-5.76	-0.52	
8,800.00	63.67	102.97	7,461.78	-709.81	2,318.49	2,424.70	2.25	2.08	-0.96	
8,825.00	63.64	102.82	7,472.87	-714.80	2,340.33	2,447.05	0.55	-0.12	-0.60	
8,850.00	63.45	102.60	7,484.01	-719.73	2,362.16	2,469.37	1.09	-0.76	-0.88	
8,875.00	63.44	102.54	7,495.19	-724.60	2,383.99	2,491.67	0.22	-0.04	-0.24	

Company:	Utah Forge	Local Co-ordinate Reference:	Well 16B(78)-32
Project:	Beaver (University of Utah)	TVD Reference:	KB 32' @ 5447.65usft
Site:	Utah Forge	MD Reference:	KB 32' @ 5447.65usft
Well:	16B(78)-32	North Reference:	Grid
Wellbore:	16B(78)-32	Survey Calculation Method:	Minimum Curvature
Design:	16B(78)-32 Final Surveys	Database:	Bakersfield Database

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)	
8,900.00	62.61	102.56	7,506.53	-729.44	2,405.73	2,513.89	3.32	-3.32	0.08	
8,925.00	62.31	102.67	7,518.09	-734.28	2,427.37	2,536.00	1.26	-1.20	0.44	
8,950.00	61.88	102.73	7,529.79	-739.14	2,448.92	2,558.03	1.73	-1.72	0.24	
8,975.00	61.85	102.92	7,541.58	-744.03	2,470.42	2,580.02	0.68	-0.12	0.76	
9,000.00	61.88	102.95	7,553.36	-748.96	2,491.90	2,602.02	0.16	0.12	0.12	
9,025.00	61.97	102.96	7,565.13	-753.91	2,513.40	2,624.02	0.36	0.36	0.04	
9,050.00	61.87	102.88	7,576.90	-758.84	2,534.90	2,646.03	0.49	-0.40	-0.32	
9,075.00	61.94	102.89	7,588.67	-763.76	2,556.40	2,668.03	0.28	0.28	0.04	
9,100.00	61.59	102.95	7,600.50	-768.68	2,577.86	2,690.00	1.42	-1.40	0.24	
9,125.00	61.40	103.16	7,612.43	-773.65	2,599.27	2,711.93	1.06	-0.76	0.84	
9,150.00	61.01	103.43	7,624.47	-778.68	2,620.59	2,733.79	1.82	-1.56	1.08	
9,175.00	60.67	103.55	7,636.65	-783.78	2,641.82	2,755.59	1.42	-1.36	0.48	
9,200.00	60.77	103.54	7,648.88	-788.88	2,663.02	2,777.36	0.40	0.40	-0.04	
9,225.00	60.74	103.74	7,661.09	-794.03	2,684.21	2,799.14	0.71	-0.12	0.80	
9,250.00	60.16	104.04	7,673.42	-799.25	2,705.33	2,820.85	2.54	-2.32	1.20	
9,275.00	60.11	104.28	7,685.87	-804.55	2,726.35	2,842.51	0.86	-0.20	0.96	
9,300.00	60.92	104.21	7,698.18	-809.91	2,747.44	2,864.25	3.25	3.24	-0.28	
9,325.00	61.82	104.07	7,710.15	-815.27	2,768.72	2,886.17	3.63	3.60	-0.56	
9,350.00	62.40	103.82	7,721.85	-820.59	2,790.16	2,908.24	2.48	2.32	-1.00	
9,375.00	63.03	103.63	7,733.31	-825.86	2,811.75	2,930.42	2.61	2.52	-0.76	
9,400.00	63.55	103.44	7,744.55	-831.09	2,833.46	2,952.72	2.19	2.08	-0.76	
9,425.00	64.19	103.16	7,755.56	-836.25	2,855.30	2,975.12	2.75	2.56	-1.12	
9,450.00	65.00	102.72	7,766.28	-841.31	2,877.31	2,997.65	3.61	3.24	-1.76	
9,475.00	65.55	102.47	7,776.74	-846.26	2,899.47	3,020.29	2.38	2.20	-1.00	
9,500.00	66.15	102.35	7,786.97	-851.16	2,921.75	3,043.04	2.44	2.40	-0.48	
9,525.00	66.70	102.36	7,796.97	-856.07	2,944.13	3,065.88	2.20	2.20	0.04	
9,550.00	67.05	103.05	7,806.78	-861.12	2,966.56	3,088.81	2.90	1.40	2.76	
9,575.00	67.06	103.89	7,816.53	-866.49	2,988.95	3,111.79	3.09	0.04	3.36	
9,600.00	66.91	104.58	7,826.30	-872.14	3,011.25	3,134.78	2.61	-0.60	2.76	
9,625.00	67.18	104.66	7,836.05	-877.95	3,033.53	3,157.78	1.12	1.08	0.32	
9,650.00	66.34	104.50	7,845.92	-883.74	3,055.76	3,180.73	3.41	-3.36	-0.64	
9,675.00	64.43	104.51	7,856.33	-889.43	3,077.76	3,203.44	7.64	-7.64	0.04	
9,700.00	64.34	104.42	7,867.14	-895.06	3,099.59	3,225.97	0.48	-0.36	-0.36	
9,725.00	64.36	104.41	7,877.96	-900.67	3,121.42	3,248.48	0.09	0.08	-0.04	
9,750.00	64.57	104.24	7,888.74	-906.25	3,143.28	3,271.02	1.04	0.84	-0.68	
9,775.00	65.60	103.44	7,899.27	-911.68	3,165.29	3,293.66	5.04	4.12	-3.20	
9,800.00	66.22	102.90	7,909.47	-916.88	3,187.51	3,316.43	3.17	2.48	-2.16	
9,825.00	66.54	102.64	7,919.49	-921.94	3,209.85	3,339.28	1.60	1.28	-1.04	
9,850.00	66.27	102.53	7,929.50	-926.93	3,232.21	3,362.13	1.15	-1.08	-0.44	
9,875.00	66.40	102.35	7,939.53	-931.86	3,254.57	3,384.96	0.84	0.52	-0.72	
9,900.00	66.63	102.61	7,949.50	-936.82	3,276.96	3,407.82	1.33	0.92	1.04	
9,925.00	67.16	102.62	7,959.31	-941.84	3,299.40	3,430.75	2.12	2.12	0.04	
9,950.00	67.03	102.45	7,969.04	-946.84	3,321.88	3,453.72	0.81	-0.52	-0.68	
9,975.00	67.29	102.55	7,978.74	-951.82	3,344.37	3,476.69	1.10	1.04	0.40	

Company:	Utah Forge	Local Co-ordinate Reference:	Well 16B(78)-32
Project:	Beaver (University of Utah)	TVD Reference:	KB 32' @ 5447.65usft
Site:	Utah Forge	MD Reference:	KB 32' @ 5447.65usft
Well:	16B(78)-32	North Reference:	Grid
Wellbore:	16B(78)-32	Survey Calculation Method:	Minimum Curvature
Design:	16B(78)-32 Final Surveys	Database:	Bakersfield Database

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)
10,000.00	67.15	102.71	7,988.42	-956.86	3,366.86	3,499.68	0.81	-0.56	0.64
10,025.00	66.74	102.64	7,998.21	-961.91	3,389.31	3,522.62	1.66	-1.64	-0.28
10,050.00	66.27	102.67	8,008.18	-966.93	3,411.68	3,545.48	1.88	-1.88	0.12
10,075.00	66.32	102.31	8,018.23	-971.88	3,434.02	3,568.31	1.33	0.20	-1.44
10,100.00	66.19	101.72	8,028.29	-976.65	3,456.41	3,591.11	2.22	-0.52	-2.36
10,125.00	66.92	101.69	8,038.24	-981.30	3,478.87	3,613.95	2.92	2.92	-0.12
10,150.00	66.97	101.68	8,048.03	-985.96	3,501.39	3,636.86	0.20	0.20	-0.04
10,175.00	66.45	101.20	8,057.92	-990.52	3,523.90	3,659.73	2.73	-2.08	-1.92
10,200.00	66.00	101.05	8,067.99	-994.93	3,546.35	3,682.49	1.88	-1.80	-0.60
10,225.00	65.46	100.56	8,078.27	-999.20	3,568.73	3,705.15	2.80	-2.16	-1.96
10,250.00	64.76	100.36	8,088.79	-1,003.32	3,591.03	3,727.69	2.89	-2.80	-0.80
10,275.00	64.50	99.98	8,099.50	-1,007.31	3,613.27	3,750.13	1.72	-1.04	-1.52
10,300.00	64.14	100.05	8,110.34	-1,011.23	3,635.46	3,772.50	1.46	-1.44	0.28
10,325.00	63.60	100.10	8,121.35	-1,015.15	3,657.55	3,794.78	2.17	-2.16	0.20
10,350.00	64.38	100.13	8,132.31	-1,019.10	3,679.67	3,817.10	3.12	3.12	0.12
10,375.00	64.42	99.90	8,143.11	-1,023.02	3,701.88	3,839.48	0.84	0.16	-0.92
10,400.00	64.85	99.61	8,153.82	-1,026.85	3,724.14	3,861.90	2.01	1.72	-1.16
Tie onto Gyro Surveys									
10,417.00	64.36	102.52	8,161.11	-1,029.79	3,739.21	3,877.18	15.73	-2.88	17.12
10,512.00	63.47	102.65	8,202.89	-1,048.38	3,822.48	3,962.26	0.94	-0.94	0.14
10,607.00	63.06	105.22	8,245.63	-1,068.81	3,904.82	4,046.99	2.45	-0.43	2.71
10,703.00	64.72	103.54	8,287.88	-1,090.21	3,988.32	4,133.10	2.34	1.73	-1.75
10,798.00	65.03	103.34	8,328.22	-1,110.20	4,071.97	4,218.96	0.38	0.33	-0.21
10,862.00	64.90	102.17	8,355.30	-1,123.00	4,128.53	4,276.80	1.67	-0.20	-1.83
Last MWD Surveys									
10,947.00	64.90	102.17	8,391.36	-1,139.23	4,203.77	4,353.52	0.00	0.00	0.00
Projection to TD									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,400.00	8,153.82	-1,026.85	3,724.14	Tie onto Gyro Surveys
10,862.00	8,355.30	-1,123.00	4,128.53	Last MWD Surveys
10,947.00	8,391.36	-1,139.23	4,203.77	Projection to TD

Checked By: _____ Approved By: _____ Date: _____