



Utah Forge

Beaver (University of Utah)

Utah Forge

16B(78)-32

16B(78)-32

Design: 16B(78)-32 Final Surveys

Survey Report - Geographic

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

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

Wellbore	16B(78)-32		
Magnetics	Model Name	Sample Date	Declination (°)
	HDGM2021_FILE	12/31/2021	11.18
			Dip Angle (°)
			64.00
			Field Strength (nT)
			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)
	0.00	0.00	0.00
			Direction (°)
			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)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	13,987,765.96	1,097,907.09	38.50434511	-112.89638027
25.00	0.22	52.11	25.00	0.03	0.04	13,987,765.99	1,097,907.13	38.50434520	-112.89638014
50.00	0.45	52.11	50.00	0.12	0.15	13,987,766.08	1,097,907.24	38.50434545	-112.89637974
75.00	0.36	38.82	75.00	0.24	0.28	13,987,766.20	1,097,907.37	38.50434579	-112.89637931
100.00	0.14	58.33	100.00	0.32	0.36	13,987,766.28	1,097,907.45	38.50434601	-112.89637905
125.00	0.54	131.51	125.00	0.26	0.47	13,987,766.22	1,097,907.56	38.50434584	-112.89637864
150.00	0.64	102.12	150.00	0.15	0.69	13,987,766.11	1,097,907.78	38.50434556	-112.89637785
175.00	0.65	75.44	175.00	0.15	0.97	13,987,766.12	1,097,908.06	38.50434559	-112.89637690
200.00	0.44	58.93	199.99	0.24	1.19	13,987,766.20	1,097,908.28	38.50434584	-112.89637614
225.00	0.26	44.13	224.99	0.33	1.31	13,987,766.29	1,097,908.40	38.50434609	-112.89637572
250.00	0.19	119.27	249.99	0.35	1.38	13,987,766.31	1,097,908.48	38.50434616	-112.89637545

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)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
275.00	0.40	126.68	274.99	0.28	1.49	13,987,766.24	1,097,908.58	38.50434596	-112.89637508
300.00	0.55	112.24	299.99	0.18	1.67	13,987,766.14	1,097,908.76	38.50434571	-112.89637444
325.00	0.69	107.15	324.99	0.09	1.93	13,987,766.06	1,097,909.02	38.50434547	-112.89637354
350.00	0.84	80.36	349.99	0.08	2.25	13,987,766.04	1,097,909.34	38.50434545	-112.89637241
375.00	0.70	69.14	374.99	0.16	2.57	13,987,766.13	1,097,909.67	38.50434571	-112.89637128
400.00	0.52	73.07	399.99	0.25	2.83	13,987,766.21	1,097,909.92	38.50434596	-112.89637041
425.00	0.42	91.96	424.98	0.28	3.03	13,987,766.24	1,097,910.12	38.50434605	-112.89636971
450.00	0.42	109.31	449.98	0.25	3.20	13,987,766.21	1,097,910.29	38.50434597	-112.89636909
475.00	0.59	117.89	474.98	0.16	3.40	13,987,766.12	1,097,910.49	38.50434573	-112.89636838
500.00	0.88	107.57	499.98	0.04	3.70	13,987,766.00	1,097,910.79	38.50434543	-112.89636734
525.00	1.07	89.12	524.98	-0.02	4.12	13,987,765.95	1,097,911.21	38.50434530	-112.89636588
550.00	1.10	80.69	549.97	0.03	4.59	13,987,765.99	1,097,911.68	38.50434544	-112.89636424
575.00	0.92	68.20	574.97	0.14	5.01	13,987,766.10	1,097,912.10	38.50434578	-112.89636277
600.00	0.89	80.60	599.97	0.25	5.39	13,987,766.21	1,097,912.48	38.50434609	-112.89636146
625.00	0.88	85.61	624.96	0.29	5.77	13,987,766.26	1,097,912.86	38.50434624	-112.89636012
650.00	0.97	98.35	649.96	0.28	6.17	13,987,766.24	1,097,913.26	38.50434622	-112.89635872
675.00	1.48	95.91	674.95	0.21	6.70	13,987,766.18	1,097,913.79	38.50434607	-112.89635686
700.00	1.59	84.67	699.94	0.21	7.37	13,987,766.17	1,097,914.46	38.50434611	-112.89635453
725.00	1.44	79.09	724.94	0.30	8.02	13,987,766.27	1,097,915.11	38.50434640	-112.89635226
750.00	1.35	81.48	749.93	0.41	8.62	13,987,766.37	1,097,915.71	38.50434671	-112.89635017
775.00	1.37	85.13	774.92	0.47	9.21	13,987,766.44	1,097,916.30	38.50434694	-112.89634812
800.00	1.22	92.17	799.92	0.49	9.78	13,987,766.45	1,097,916.87	38.50434701	-112.89634615
825.00	1.37	97.63	824.91	0.44	10.34	13,987,766.40	1,097,917.43	38.50434691	-112.89634418
850.00	1.76	95.25	849.90	0.37	11.02	13,987,766.33	1,097,918.11	38.50434674	-112.89634180
875.00	1.78	87.92	874.89	0.34	11.79	13,987,766.31	1,097,918.88	38.50434673	-112.89633911
900.00	1.85	87.44	899.87	0.38	12.58	13,987,766.34	1,097,919.67	38.50434686	-112.89633635
925.00	1.76	80.97	924.86	0.45	13.36	13,987,766.42	1,097,920.45	38.50434712	-112.89633362
950.00	1.69	83.12	949.85	0.56	14.11	13,987,766.52	1,097,921.20	38.50434745	-112.89633103
975.00	1.64	83.53	974.84	0.64	14.83	13,987,766.61	1,097,921.92	38.50434772	-112.89632851
1,000.00	1.68	86.08	999.83	0.71	15.55	13,987,766.67	1,097,922.64	38.50434794	-112.89632600
1,025.00	1.67	88.73	1,024.82	0.74	16.28	13,987,766.71	1,097,923.37	38.50434807	-112.89632345
1,050.00	1.85	93.72	1,049.81	0.72	17.04	13,987,766.69	1,097,924.14	38.50434807	-112.89632077
1,075.00	2.24	91.88	1,074.79	0.68	17.94	13,987,766.65	1,097,925.03	38.50434800	-112.89631765
1,100.00	2.03	83.69	1,099.77	0.71	18.86	13,987,766.68	1,097,925.95	38.50434814	-112.89631441
1,125.00	1.79	83.37	1,124.76	0.81	19.69	13,987,766.77	1,097,926.78	38.50434845	-112.89631152
1,150.00	1.83	92.60	1,149.75	0.83	20.48	13,987,766.80	1,097,927.57	38.50434856	-112.89630878
1,175.00	2.07	95.76	1,174.73	0.77	21.33	13,987,766.74	1,097,928.42	38.50434844	-112.89630581
1,200.00	1.83	93.18	1,199.72	0.70	22.17	13,987,766.67	1,097,929.26	38.50434830	-112.89630284
1,225.00	1.22	85.74	1,224.71	0.70	22.84	13,987,766.67	1,097,929.93	38.50434833	-112.89630052
1,250.00	0.57	87.60	1,249.71	0.73	23.23	13,987,766.69	1,097,930.32	38.50434842	-112.89629916
1,275.00	0.39	95.12	1,274.71	0.72	23.44	13,987,766.69	1,097,930.53	38.50434843	-112.89629843
1,300.00	0.23	87.94	1,299.71	0.72	23.57	13,987,766.68	1,097,930.66	38.50434842	-112.89629796
1,325.00	0.14	152.75	1,324.71	0.69	23.64	13,987,766.66	1,097,930.73	38.50434835	-112.89629774
1,350.00	0.33	127.31	1,349.71	0.62	23.71	13,987,766.59	1,097,930.80	38.50434816	-112.89629748
1,375.00	0.46	106.77	1,374.70	0.55	23.86	13,987,766.51	1,097,930.95	38.50434797	-112.89629694
1,400.00	0.62	73.81	1,399.70	0.56	24.09	13,987,766.52	1,097,931.18	38.50434801	-112.89629615
1,425.00	0.52	59.26	1,424.70	0.65	24.31	13,987,766.62	1,097,931.40	38.50434829	-112.89629537
1,450.00	0.37	34.29	1,449.70	0.78	24.46	13,987,766.74	1,097,931.55	38.50434864	-112.89629487
1,475.00	0.15	331.37	1,474.70	0.87	24.49	13,987,766.84	1,097,931.58	38.50434890	-112.89629478
1,500.00	0.50	112.05	1,499.70	0.86	24.57	13,987,766.83	1,097,931.66	38.50434887	-112.89629448
1,525.00	0.54	64.38	1,524.70	0.87	24.78	13,987,766.84	1,097,931.87	38.50434891	-112.89629375
1,550.00	0.26	47.98	1,549.70	0.96	24.93	13,987,766.93	1,097,932.02	38.50434916	-112.89629324
1,575.00	0.26	124.60	1,574.70	0.97	25.02	13,987,766.93	1,097,932.11	38.50434918	-112.89629293
1,600.00	0.73	95.79	1,599.70	0.92	25.22	13,987,766.88	1,097,932.31	38.50434906	-112.89629221
1,625.00	0.60	74.68	1,624.70	0.94	25.51	13,987,766.90	1,097,932.60	38.50434913	-112.89629122

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)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,650.00	0.60	73.49	1,649.70	1.01	25.76	13,987,766.97	1,097,932.85	38.50434934	-112.89629034
1,675.00	0.44	80.68	1,674.69	1.06	25.98	13,987,767.03	1,097,933.07	38.50434950	-112.89628958
1,700.00	0.69	93.99	1,699.69	1.07	26.22	13,987,767.03	1,097,933.31	38.50434953	-112.89628872
1,725.00	0.64	108.67	1,724.69	1.01	26.51	13,987,766.98	1,097,933.60	38.50434939	-112.89628773
1,750.00	1.15	119.45	1,749.69	0.84	26.86	13,987,766.81	1,097,933.95	38.50434895	-112.89628650
1,775.00	1.09	96.52	1,774.68	0.69	27.31	13,987,766.66	1,097,934.40	38.50434856	-112.89628490
1,800.00	0.81	114.26	1,799.68	0.59	27.71	13,987,766.56	1,097,934.80	38.50434831	-112.89628350
1,825.00	1.24	109.58	1,824.68	0.43	28.12	13,987,766.39	1,097,935.22	38.50434789	-112.89628204
1,850.00	0.81	118.64	1,849.67	0.25	28.53	13,987,766.22	1,097,935.63	38.50434743	-112.89628059
1,875.00	1.20	124.87	1,874.67	0.02	28.90	13,987,765.98	1,097,935.99	38.50434681	-112.89627928
1,900.00	1.08	128.11	1,899.66	-0.27	29.30	13,987,765.69	1,097,936.40	38.50434602	-112.89627786
1,925.00	0.97	142.35	1,924.66	-0.59	29.62	13,987,765.38	1,097,936.71	38.50434518	-112.89627674
1,950.00	0.91	158.10	1,949.66	-0.94	29.82	13,987,765.02	1,097,936.91	38.50434422	-112.89627600
1,975.00	0.81	187.42	1,974.65	-1.30	29.87	13,987,764.67	1,097,936.96	38.50434324	-112.89627580
2,000.00	0.84	206.25	1,999.65	-1.64	29.77	13,987,764.33	1,097,936.86	38.50434230	-112.89627614
2,025.00	0.88	192.96	2,024.65	-1.99	29.65	13,987,763.97	1,097,936.74	38.50434133	-112.89627655
2,050.00	0.71	238.52	2,049.65	-2.26	29.47	13,987,763.71	1,097,936.56	38.50434058	-112.89627714
2,075.00	1.20	230.46	2,074.64	-2.51	29.14	13,987,763.46	1,097,936.23	38.50433988	-112.89627829
2,100.00	1.15	213.31	2,099.64	-2.88	28.80	13,987,763.08	1,097,935.89	38.50433883	-112.89627945
2,125.00	0.96	209.74	2,124.63	-3.27	28.56	13,987,762.69	1,097,935.65	38.50433774	-112.89628026
2,150.00	0.65	229.80	2,149.63	-3.55	28.34	13,987,762.42	1,097,935.43	38.50433698	-112.89628099
2,175.00	0.97	219.10	2,174.63	-3.80	28.10	13,987,762.16	1,097,935.19	38.50433627	-112.89628181
2,200.00	0.76	207.02	2,199.63	-4.11	27.89	13,987,761.85	1,097,934.98	38.50433540	-112.89628252
2,225.00	0.71	199.97	2,224.62	-4.41	27.76	13,987,761.56	1,097,934.85	38.50433458	-112.89628295
2,250.00	0.84	180.93	2,249.62	-4.74	27.71	13,987,761.23	1,097,934.80	38.50433368	-112.89628312
2,275.00	0.87	204.99	2,274.62	-5.09	27.63	13,987,760.87	1,097,934.72	38.50433270	-112.89628338
2,300.00	0.84	211.64	2,299.62	-5.42	27.45	13,987,760.54	1,097,934.54	38.50433179	-112.89628397
2,325.00	1.11	207.93	2,324.61	-5.79	27.24	13,987,760.17	1,097,934.33	38.50433076	-112.89628468
2,350.00	1.23	204.99	2,349.61	-6.25	27.01	13,987,759.72	1,097,934.10	38.50432949	-112.89628544
2,375.00	0.84	187.87	2,374.60	-6.67	26.87	13,987,759.29	1,097,933.96	38.50432832	-112.89628589
2,400.00	0.76	208.12	2,399.60	-7.00	26.77	13,987,758.96	1,097,933.86	38.50432741	-112.89628623
2,425.00	1.04	219.68	2,424.60	-7.32	26.55	13,987,758.64	1,097,933.64	38.50432652	-112.89628699
2,450.00	1.21	210.79	2,449.59	-7.72	26.27	13,987,758.24	1,097,933.36	38.50432540	-112.89628794
2,475.00	1.04	192.72	2,474.59	-8.17	26.08	13,987,757.79	1,097,933.17	38.50432416	-112.89628855
2,500.00	1.00	208.44	2,499.58	-8.58	25.93	13,987,757.38	1,097,933.02	38.50432302	-112.89628906
2,525.00	1.09	187.83	2,524.58	-9.01	25.79	13,987,756.95	1,097,932.88	38.50432184	-112.89628950
2,550.00	0.76	213.73	2,549.58	-9.38	25.67	13,987,756.58	1,097,932.76	38.50432081	-112.89628991
2,575.00	0.96	210.63	2,574.57	-9.70	25.47	13,987,756.26	1,097,932.56	38.50431992	-112.89629058
2,600.00	1.16	200.62	2,599.57	-10.12	25.27	13,987,755.85	1,097,932.36	38.50431876	-112.89629124
2,625.00	1.04	210.58	2,624.56	-10.55	25.07	13,987,755.41	1,097,932.16	38.50431757	-112.89629192
2,650.00	1.03	221.52	2,649.56	-10.91	24.80	13,987,755.05	1,097,931.90	38.50431655	-112.89629282
2,675.00	1.25	256.28	2,674.56	-11.15	24.39	13,987,754.82	1,097,931.48	38.50431589	-112.89629425
2,700.00	1.29	254.86	2,699.55	-11.29	23.85	13,987,754.68	1,097,930.94	38.50431548	-112.89629611
2,725.00	1.46	259.88	2,724.54	-11.41	23.27	13,987,754.55	1,097,930.36	38.50431509	-112.89629815
2,750.00	1.44	253.95	2,749.53	-11.56	22.65	13,987,754.41	1,097,929.74	38.50431467	-112.89630029
2,775.00	1.20	250.69	2,774.53	-11.73	22.10	13,987,754.23	1,097,929.20	38.50431416	-112.89630219
2,800.00	0.90	255.68	2,799.52	-11.87	21.67	13,987,754.10	1,097,928.76	38.50431376	-112.89630371
2,825.00	1.01	280.25	2,824.52	-11.88	21.26	13,987,754.09	1,097,928.35	38.50431371	-112.89630513
2,850.00	1.03	284.67	2,849.52	-11.78	20.83	13,987,754.18	1,097,927.92	38.50431395	-112.89630665
2,875.00	1.17	282.11	2,874.51	-11.67	20.36	13,987,754.30	1,097,927.45	38.50431423	-112.89630829
2,900.00	1.13	283.34	2,899.51	-11.56	19.87	13,987,754.41	1,097,926.96	38.50431451	-112.89631001
2,925.00	1.01	271.93	2,924.50	-11.49	19.41	13,987,754.47	1,097,926.50	38.50431466	-112.89631162
2,950.00	0.65	279.18	2,949.50	-11.46	19.05	13,987,754.50	1,097,926.14	38.50431472	-112.89631288
2,975.00	0.87	303.93	2,974.50	-11.34	18.75	13,987,754.63	1,097,925.84	38.50431505	-112.89631393
3,000.00	1.01	284.44	2,999.49	-11.17	18.38	13,987,754.79	1,097,925.47	38.50431547	-112.89631524

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)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
3,025.00	0.61	286.05	3,024.49	-11.08	18.04	13,987,754.88	1,097,925.13	38.50431571	-112.89631644
3,050.00	0.71	301.26	3,049.49	-10.97	17.78	13,987,755.00	1,097,924.87	38.50431601	-112.89631736
3,075.00	0.84	275.53	3,074.49	-10.87	17.46	13,987,755.10	1,097,924.56	38.50431627	-112.89631846
3,100.00	0.61	293.64	3,099.49	-10.80	17.16	13,987,755.17	1,097,924.25	38.50431644	-112.89631953
3,125.00	0.78	311.23	3,124.48	-10.63	16.91	13,987,755.33	1,097,924.00	38.50431688	-112.89632042
3,150.00	0.77	279.28	3,149.48	-10.49	16.62	13,987,755.47	1,097,923.71	38.50431725	-112.89632145
3,175.00	0.71	320.79	3,174.48	-10.35	16.35	13,987,755.62	1,097,923.44	38.50431764	-112.89632239
3,200.00	0.91	300.34	3,199.48	-10.12	16.08	13,987,755.84	1,097,923.17	38.50431823	-112.89632334
3,225.00	0.52	282.31	3,224.48	-10.00	15.80	13,987,755.96	1,097,922.89	38.50431855	-112.89632434
3,250.00	0.68	314.84	3,249.47	-9.87	15.59	13,987,756.09	1,097,922.68	38.50431889	-112.89632510
3,275.00	0.45	329.64	3,274.47	-9.68	15.43	13,987,756.28	1,097,922.52	38.50431941	-112.89632566
3,300.00	0.56	330.00	3,299.47	-9.49	15.32	13,987,756.47	1,097,922.41	38.50431992	-112.89632606
3,325.00	0.47	322.18	3,324.47	-9.30	15.20	13,987,756.66	1,097,922.29	38.50432043	-112.89632650
3,350.00	0.35	336.04	3,349.47	-9.15	15.10	13,987,756.81	1,097,922.19	38.50432084	-112.89632684
3,375.00	0.24	4.68	3,374.47	-9.03	15.08	13,987,756.93	1,097,922.17	38.50432117	-112.89632694
3,400.00	0.37	63.06	3,399.47	-8.94	15.15	13,987,757.02	1,097,922.24	38.50432142	-112.89632668
3,425.00	0.46	101.84	3,424.47	-8.93	15.32	13,987,757.04	1,097,922.41	38.50432147	-112.89632609
3,450.00	0.50	109.13	3,449.47	-8.98	15.52	13,987,756.98	1,097,922.61	38.50432133	-112.89632538
3,475.00	0.82	99.96	3,474.47	-9.05	15.80	13,987,756.91	1,097,922.89	38.50432116	-112.89632440
3,500.00	0.58	113.04	3,499.46	-9.13	16.10	13,987,756.83	1,097,923.19	38.50432096	-112.89632337
3,525.00	0.97	104.22	3,524.46	-9.23	16.42	13,987,756.73	1,097,923.51	38.50432070	-112.89632224
3,550.00	0.70	87.67	3,549.46	-9.28	16.77	13,987,756.69	1,097,923.87	38.50432059	-112.89632099
3,575.00	0.86	82.09	3,574.46	-9.25	17.11	13,987,756.72	1,097,924.20	38.50432070	-112.89631981
3,600.00	0.75	95.48	3,599.46	-9.24	17.46	13,987,756.73	1,097,924.55	38.50432075	-112.89631859
3,625.00	0.50	124.27	3,624.45	-9.31	17.71	13,987,756.65	1,097,924.81	38.50432055	-112.89631770
3,650.00	0.80	109.58	3,649.45	-9.43	17.97	13,987,756.53	1,097,925.06	38.50432023	-112.89631681
3,675.00	0.67	114.35	3,674.45	-9.55	18.27	13,987,756.41	1,097,925.36	38.50431992	-112.89631576
3,700.00	0.74	97.06	3,699.45	-9.63	18.56	13,987,756.33	1,097,925.65	38.50431972	-112.89631473
3,725.00	0.74	101.53	3,724.45	-9.68	18.88	13,987,756.28	1,097,925.97	38.50431960	-112.89631361
3,750.00	0.63	78.68	3,749.44	-9.69	19.17	13,987,756.28	1,097,926.26	38.50431960	-112.89631259
3,775.00	0.55	107.07	3,774.44	-9.70	19.42	13,987,756.27	1,097,926.51	38.50431959	-112.89631171
3,800.00	0.59	86.48	3,799.44	-9.72	19.66	13,987,756.24	1,097,926.75	38.50431953	-112.89631086
3,825.00	0.84	100.27	3,824.44	-9.75	19.97	13,987,756.21	1,097,927.06	38.50431948	-112.89630978
3,850.00	0.57	108.99	3,849.44	-9.82	20.27	13,987,756.14	1,097,927.36	38.50431929	-112.89630874
3,875.00	0.77	92.88	3,874.44	-9.87	20.56	13,987,756.09	1,097,927.65	38.50431918	-112.89630774
3,900.00	0.80	104.43	3,899.43	-9.92	20.89	13,987,756.04	1,097,927.98	38.50431905	-112.89630655
3,925.00	1.07	95.63	3,924.43	-9.99	21.29	13,987,755.97	1,097,928.39	38.50431889	-112.89630515
3,950.00	0.80	93.60	3,949.43	-10.02	21.70	13,987,755.94	1,097,928.79	38.50431882	-112.89630373
3,975.00	0.79	89.00	3,974.42	-10.03	22.05	13,987,755.93	1,097,929.14	38.50431882	-112.89630251
4,000.00	1.13	96.30	3,999.42	-10.06	22.46	13,987,755.91	1,097,929.56	38.50431878	-112.89630105
4,025.00	0.68	93.00	4,024.42	-10.09	22.86	13,987,755.87	1,097,929.95	38.50431871	-112.89629968
4,050.00	0.75	118.09	4,049.42	-10.18	23.15	13,987,755.79	1,097,930.24	38.50431849	-112.89629865
4,075.00	0.89	111.94	4,074.41	-10.32	23.47	13,987,755.64	1,097,930.57	38.50431810	-112.89629751
4,100.00	0.42	119.05	4,099.41	-10.44	23.74	13,987,755.52	1,097,930.83	38.50431779	-112.89629659
4,125.00	0.46	106.27	4,124.41	-10.51	23.91	13,987,755.45	1,097,931.00	38.50431760	-112.89629597
4,150.00	0.82	100.72	4,149.41	-10.58	24.18	13,987,755.39	1,097,931.27	38.50431745	-112.89629501
4,175.00	0.43	81.17	4,174.41	-10.59	24.45	13,987,755.37	1,097,931.54	38.50431741	-112.89629407
4,200.00	0.45	112.30	4,199.41	-10.62	24.64	13,987,755.35	1,097,931.73	38.50431736	-112.89629343
4,225.00	0.43	110.11	4,224.41	-10.69	24.81	13,987,755.28	1,097,931.91	38.50431718	-112.89629280
4,250.00	0.63	103.96	4,249.41	-10.75	25.04	13,987,755.21	1,097,932.13	38.50431701	-112.89629202
4,275.00	0.80	127.54	4,274.40	-10.89	25.31	13,987,755.07	1,097,932.40	38.50431664	-112.89629106
4,300.00	0.48	98.21	4,299.40	-11.01	25.55	13,987,754.95	1,097,932.64	38.50431632	-112.89629021
4,325.00	0.61	124.90	4,324.40	-11.10	25.76	13,987,754.86	1,097,932.85	38.50431609	-112.89628946
4,350.00	0.68	92.28	4,349.40	-11.19	26.02	13,987,754.78	1,097,933.11	38.50431588	-112.89628855
4,375.00	0.69	119.99	4,374.40	-11.27	26.30	13,987,754.70	1,097,933.39	38.50431567	-112.89628757

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)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,400.00	0.61	73.25	4,399.40	-11.30	26.56	13,987,754.66	1,097,933.65	38.50431558	-112.89628667
4,425.00	0.56	93.68	4,424.40	-11.27	26.81	13,987,754.69	1,097,933.90	38.50431568	-112.89628580
4,450.00	0.77	69.92	4,449.39	-11.22	27.09	13,987,754.74	1,097,934.18	38.50431583	-112.89628483
4,475.00	1.11	81.57	4,474.39	-11.13	27.48	13,987,754.83	1,097,934.57	38.50431611	-112.89628345
4,500.00	0.70	92.27	4,499.39	-11.10	27.87	13,987,754.86	1,097,934.97	38.50431621	-112.89628208
4,525.00	0.95	69.37	4,524.38	-11.03	28.22	13,987,754.93	1,097,935.31	38.50431642	-112.89628087
4,550.00	0.70	96.10	4,549.38	-10.98	28.57	13,987,754.99	1,097,935.66	38.50431659	-112.89627967
4,575.00	1.07	104.17	4,574.38	-11.05	28.95	13,987,754.91	1,097,936.04	38.50431641	-112.89627834
4,600.00	1.20	92.90	4,599.37	-11.12	29.43	13,987,754.84	1,097,936.52	38.50431625	-112.89627663
4,625.00	0.98	88.69	4,624.37	-11.13	29.91	13,987,754.83	1,097,937.00	38.50431625	-112.89627497
4,650.00	1.10	102.12	4,649.37	-11.18	30.36	13,987,754.79	1,097,937.45	38.50431615	-112.89627340
4,675.00	1.22	115.26	4,674.36	-11.34	30.83	13,987,754.62	1,097,937.92	38.50431573	-112.89627173
4,700.00	1.49	118.69	4,699.35	-11.61	31.36	13,987,754.36	1,097,938.45	38.50431502	-112.89626987
4,725.00	1.85	122.18	4,724.34	-11.98	31.98	13,987,753.98	1,097,939.08	38.50431403	-112.89626766
4,750.00	2.17	121.80	4,749.33	-12.44	32.73	13,987,753.52	1,097,939.82	38.50431280	-112.89626502
4,775.00	2.44	123.54	4,774.31	-12.99	33.57	13,987,752.98	1,097,940.66	38.50431136	-112.89626203
4,800.00	2.50	124.15	4,799.28	-13.59	34.47	13,987,752.38	1,097,941.56	38.50430976	-112.89625886
4,825.00	2.62	125.62	4,824.26	-14.23	35.38	13,987,751.74	1,097,942.48	38.50430806	-112.89625561
4,850.00	2.53	133.12	4,849.23	-14.94	36.25	13,987,751.03	1,097,943.34	38.50430616	-112.89625253
4,875.00	2.88	126.33	4,874.21	-15.69	37.16	13,987,750.28	1,097,944.25	38.50430415	-112.89624930
4,900.00	2.27	133.86	4,899.18	-16.40	38.02	13,987,749.56	1,097,945.11	38.50430224	-112.89624624
4,925.00	1.87	158.06	4,924.16	-17.12	38.53	13,987,748.84	1,097,945.62	38.50430029	-112.89624441
4,950.00	1.96	148.14	4,949.15	-17.86	38.91	13,987,748.10	1,097,946.00	38.50429827	-112.89624303
4,975.00	1.61	152.88	4,974.14	-18.54	39.30	13,987,747.42	1,097,946.39	38.50429644	-112.89624164
5,000.00	1.74	163.36	4,999.13	-19.22	39.57	13,987,746.75	1,097,946.66	38.50429460	-112.89624065
5,025.00	0.86	165.60	5,024.12	-19.76	39.72	13,987,746.20	1,097,946.81	38.50429311	-112.89624007
5,050.00	0.90	154.12	5,049.12	-20.12	39.85	13,987,745.84	1,097,946.94	38.50429213	-112.89623958
5,075.00	1.00	174.59	5,074.11	-20.51	39.96	13,987,745.45	1,097,947.05	38.50429106	-112.89623918
5,100.00	0.75	166.03	5,099.11	-20.89	40.02	13,987,745.07	1,097,947.11	38.50429003	-112.89623894
5,125.00	0.71	143.03	5,124.11	-21.17	40.15	13,987,744.79	1,097,947.24	38.50428926	-112.89623846
5,150.00	0.71	138.33	5,149.11	-21.41	40.35	13,987,744.55	1,097,947.44	38.50428861	-112.89623775
5,175.00	1.17	131.70	5,174.10	-21.70	40.64	13,987,744.27	1,097,947.73	38.50428785	-112.89623671
5,200.00	1.63	128.59	5,199.10	-22.09	41.11	13,987,743.88	1,097,948.20	38.50428680	-112.89623504
5,225.00	1.63	130.30	5,224.09	-22.54	41.66	13,987,743.42	1,097,948.75	38.50428559	-112.89623309
5,250.00	1.64	134.48	5,249.08	-23.02	42.19	13,987,742.94	1,097,949.28	38.50428430	-112.89623122
5,275.00	2.18	141.42	5,274.06	-23.64	42.74	13,987,742.32	1,097,949.83	38.50428262	-112.89622925
5,300.00	2.05	146.12	5,299.05	-24.39	43.28	13,987,741.58	1,097,950.37	38.50428061	-112.89622729
5,325.00	1.61	158.24	5,324.03	-25.08	43.66	13,987,740.88	1,097,950.75	38.50427872	-112.89622591
5,350.00	1.29	175.24	5,349.03	-25.69	43.82	13,987,740.27	1,097,950.91	38.50427706	-112.89622533
5,375.00	0.96	199.55	5,374.02	-26.17	43.77	13,987,739.80	1,097,950.86	38.50427575	-112.89622546
5,400.00	1.10	231.33	5,399.02	-26.52	43.51	13,987,739.45	1,097,950.60	38.50427478	-112.89622633
5,425.00	1.39	228.65	5,424.01	-26.87	43.10	13,987,739.10	1,097,950.19	38.50427380	-112.89622776
5,450.00	1.21	228.97	5,449.00	-27.24	42.67	13,987,738.72	1,097,949.76	38.50427275	-112.89622922
5,475.00	0.58	243.49	5,474.00	-27.47	42.36	13,987,738.50	1,097,949.45	38.50427210	-112.89623030
5,500.00	0.43	165.75	5,499.00	-27.62	42.27	13,987,738.35	1,097,949.36	38.50427169	-112.89623060
5,525.00	1.50	134.22	5,524.00	-27.94	42.53	13,987,738.03	1,097,949.62	38.50427083	-112.89622968
5,550.00	2.96	126.35	5,548.98	-28.55	43.28	13,987,737.42	1,097,950.37	38.50426919	-112.89622700
5,575.00	4.84	121.77	5,573.92	-29.48	44.70	13,987,736.48	1,097,951.79	38.50426670	-112.89622198
5,600.00	6.56	122.66	5,598.79	-30.81	46.80	13,987,735.15	1,097,953.89	38.50426318	-112.89621455
5,625.00	7.83	125.08	5,623.60	-32.56	49.39	13,987,733.40	1,097,956.48	38.50425852	-112.89620536
5,650.00	9.35	127.99	5,648.32	-34.79	52.39	13,987,731.18	1,097,959.48	38.50425257	-112.89619473
5,675.00	11.11	130.02	5,672.92	-37.59	55.83	13,987,728.38	1,097,962.92	38.50424508	-112.89618249
5,700.00	12.62	132.49	5,697.38	-40.98	59.69	13,987,724.98	1,097,966.78	38.50423598	-112.89616877
5,725.00	13.02	132.67	5,721.76	-44.74	63.77	13,987,721.23	1,097,970.87	38.50422591	-112.89615423
5,750.00	12.94	131.97	5,746.12	-48.52	67.93	13,987,717.45	1,097,975.02	38.50421576	-112.89613945

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)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,775.00	13.32	131.34	5,770.47	-52.29	72.17	13,987,713.67	1,097,979.26	38.50420564	-112.89612435
5,800.00	13.57	131.01	5,794.78	-56.12	76.55	13,987,709.85	1,097,983.64	38.50419538	-112.89610879
5,825.00	14.14	130.26	5,819.05	-60.01	81.09	13,987,705.95	1,097,988.18	38.50418494	-112.89609264
5,850.00	15.03	129.35	5,843.25	-64.04	85.93	13,987,701.92	1,097,993.02	38.50417415	-112.89607545
5,875.00	16.43	127.94	5,867.31	-68.27	91.22	13,987,697.69	1,097,998.31	38.50416284	-112.89605664
5,900.00	17.59	126.76	5,891.22	-72.71	97.04	13,987,693.26	1,098,004.13	38.50415099	-112.89603601
5,925.00	19.51	125.12	5,914.92	-77.37	103.48	13,987,688.59	1,098,010.57	38.50413856	-112.89601316
5,950.00	21.32	123.21	5,938.35	-82.26	110.70	13,987,683.70	1,098,017.79	38.50412554	-112.89598760
5,975.00	22.24	121.77	5,961.56	-87.24	118.52	13,987,678.72	1,098,025.61	38.50411231	-112.89595990
6,000.00	22.68	120.17	5,984.67	-92.16	126.71	13,987,673.81	1,098,033.80	38.50409928	-112.89593093
6,025.00	23.51	117.92	6,007.66	-96.91	135.28	13,987,669.05	1,098,042.37	38.50408671	-112.89590064
6,050.00	24.17	115.17	6,030.53	-101.42	144.32	13,987,664.54	1,098,051.41	38.50407483	-112.89586873
6,075.00	24.86	114.22	6,053.28	-105.76	153.75	13,987,660.21	1,098,060.84	38.50406347	-112.89583549
6,100.00	25.39	113.55	6,075.91	-110.05	163.45	13,987,655.91	1,098,070.54	38.50405222	-112.89580127
6,125.00	26.00	112.81	6,098.44	-114.32	173.42	13,987,651.64	1,098,080.51	38.50404107	-112.89576615
6,150.00	26.44	112.75	6,120.87	-118.60	183.60	13,987,647.37	1,098,090.69	38.50402991	-112.89573027
6,175.00	26.83	112.51	6,143.21	-122.91	193.95	13,987,643.06	1,098,101.04	38.50401865	-112.89569381
6,200.00	27.64	112.69	6,165.44	-127.31	204.51	13,987,638.66	1,098,111.60	38.50400718	-112.89565659
6,225.00	28.43	112.24	6,187.51	-131.80	215.37	13,987,634.17	1,098,122.46	38.50399547	-112.89561833
6,250.00	29.28	112.36	6,209.40	-136.37	226.53	13,987,629.59	1,098,133.62	38.50398353	-112.89557900
6,275.00	30.50	112.61	6,231.08	-141.14	238.04	13,987,624.83	1,098,145.13	38.50397110	-112.89553844
6,300.00	31.74	112.75	6,252.48	-146.12	249.96	13,987,619.84	1,098,157.05	38.50395810	-112.89549644
6,325.00	33.33	112.67	6,273.56	-151.31	262.36	13,987,614.65	1,098,169.45	38.50394455	-112.89545273
6,350.00	34.45	112.70	6,294.31	-156.69	275.22	13,987,609.28	1,098,182.32	38.50393052	-112.89540741
6,375.00	35.95	112.89	6,314.74	-162.27	288.51	13,987,603.69	1,098,195.60	38.50391594	-112.89536059
6,400.00	37.34	113.25	6,334.79	-168.12	302.24	13,987,597.85	1,098,209.33	38.50390066	-112.89531221
6,425.00	38.33	113.65	6,354.54	-174.22	316.30	13,987,591.74	1,098,223.40	38.50388470	-112.89526262
6,450.00	39.22	114.66	6,374.03	-180.63	330.59	13,987,585.34	1,098,237.68	38.50386792	-112.89521225
6,475.00	40.08	115.86	6,393.28	-187.44	345.01	13,987,578.53	1,098,252.11	38.50385004	-112.89516136
6,500.00	41.96	116.75	6,412.14	-194.71	359.72	13,987,571.25	1,098,266.81	38.50383091	-112.89510946
6,525.00	43.71	117.49	6,430.47	-202.46	374.85	13,987,563.50	1,098,281.94	38.50381049	-112.89505605
6,550.00	44.97	117.96	6,448.35	-210.59	390.31	13,987,555.38	1,098,297.41	38.50378904	-112.89500143
6,575.00	45.99	117.69	6,465.88	-218.91	406.08	13,987,547.06	1,098,313.17	38.50376709	-112.89494576
6,600.00	47.03	117.17	6,483.09	-227.26	422.18	13,987,538.70	1,098,329.27	38.50374507	-112.89488891
6,625.00	47.18	116.36	6,500.10	-235.51	438.53	13,987,530.45	1,098,345.62	38.50372335	-112.89483119
6,650.00	46.87	114.80	6,517.14	-243.41	455.03	13,987,522.56	1,098,362.12	38.50370260	-112.89477298
6,675.00	46.72	113.29	6,534.26	-250.83	471.67	13,987,515.13	1,098,378.76	38.50368316	-112.89471431
6,700.00	47.29	112.19	6,551.31	-257.90	488.53	13,987,508.06	1,098,395.62	38.50366471	-112.89465488
6,725.00	48.37	111.94	6,568.09	-264.86	505.70	13,987,501.10	1,098,412.79	38.50364657	-112.89459439
6,750.00	49.80	112.00	6,584.47	-271.93	523.22	13,987,494.04	1,098,430.31	38.50362816	-112.89453267
6,775.00	52.04	111.64	6,600.22	-279.14	541.24	13,987,486.82	1,098,448.33	38.50360938	-112.89446921
6,800.00	54.52	109.48	6,615.17	-286.17	560.00	13,987,479.79	1,098,467.09	38.50359114	-112.89440315
6,825.00	56.63	107.12	6,629.31	-292.64	579.58	13,987,473.32	1,098,486.67	38.50357448	-112.89433429
6,850.00	59.80	105.25	6,642.47	-298.56	599.98	13,987,467.41	1,098,507.07	38.50355939	-112.89426257
6,875.00	61.70	103.64	6,654.69	-303.99	621.10	13,987,461.97	1,098,528.19	38.50354566	-112.89418839
6,900.00	62.50	102.69	6,666.39	-309.03	642.62	13,987,456.94	1,098,549.71	38.50353306	-112.89411286
6,925.00	63.76	102.36	6,677.69	-313.86	664.39	13,987,452.10	1,098,571.48	38.50352102	-112.89403646
6,950.00	64.35	102.72	6,688.62	-318.74	686.33	13,987,447.22	1,098,593.42	38.50350886	-112.89395944
6,975.00	66.98	102.80	6,698.92	-323.77	708.54	13,987,442.19	1,098,615.64	38.50349630	-112.89388147
7,000.00	67.60	102.74	6,708.58	-328.87	731.04	13,987,437.09	1,098,638.13	38.50348358	-112.89380252
7,025.00	68.06	102.68	6,718.01	-333.96	753.62	13,987,432.00	1,098,660.71	38.50347087	-112.89372325
7,050.00	67.92	102.56	6,727.38	-339.03	776.24	13,987,426.94	1,098,683.33	38.50345824	-112.89364386
7,075.00	67.88	102.68	6,736.78	-344.09	798.84	13,987,421.87	1,098,705.93	38.50344563	-112.89356453
7,100.00	68.05	102.94	6,746.16	-349.23	821.44	13,987,416.74	1,098,728.53	38.50343280	-112.89348521
7,125.00	67.80	102.88	6,755.56	-354.40	844.02	13,987,411.56	1,098,751.11	38.50341986	-112.89340594

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)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
7,150.00	68.12	102.52	6,764.94	-359.50	866.63	13,987,406.47	1,098,773.72	38.50340715	-112.89332660
7,175.00	67.88	102.55	6,774.31	-364.53	889.25	13,987,401.44	1,098,796.34	38.50339462	-112.89324718
7,200.00	67.35	102.18	6,783.83	-369.48	911.83	13,987,396.49	1,098,818.92	38.50338231	-112.89316794
7,225.00	66.47	102.16	6,793.63	-374.33	934.31	13,987,391.64	1,098,841.40	38.50337027	-112.89308905
7,250.00	66.03	102.55	6,803.70	-379.22	956.67	13,987,386.74	1,098,863.76	38.50335809	-112.89301060
7,275.00	65.66	102.97	6,813.93	-384.26	978.91	13,987,381.70	1,098,886.00	38.50334551	-112.89293251
7,300.00	66.58	103.11	6,824.05	-389.42	1,001.18	13,987,376.55	1,098,908.27	38.50333261	-112.89285433
7,325.00	66.87	102.76	6,833.93	-394.56	1,023.57	13,987,371.40	1,098,930.66	38.50331976	-112.89277577
7,350.00	66.65	102.48	6,843.79	-399.58	1,045.98	13,987,366.39	1,098,953.07	38.50330725	-112.89269709
7,375.00	66.57	102.48	6,853.72	-404.54	1,068.39	13,987,361.43	1,098,975.48	38.50329490	-112.89261846
7,400.00	66.12	102.77	6,863.75	-409.54	1,090.73	13,987,356.42	1,098,997.82	38.50328242	-112.89254003
7,425.00	66.07	103.34	6,873.88	-414.70	1,113.00	13,987,351.26	1,099,020.09	38.50326951	-112.89246187
7,450.00	65.57	103.89	6,884.12	-420.07	1,135.16	13,987,345.89	1,099,042.25	38.50325602	-112.89238404
7,475.00	65.39	104.20	6,894.50	-425.59	1,157.23	13,987,340.37	1,099,064.32	38.50324211	-112.89230656
7,500.00	65.17	103.95	6,904.95	-431.12	1,179.26	13,987,334.85	1,099,086.35	38.50322819	-112.89222920
7,525.00	65.49	103.50	6,915.38	-436.51	1,201.32	13,987,329.46	1,099,108.42	38.50321464	-112.89215171
7,550.00	65.70	103.44	6,925.71	-441.81	1,223.46	13,987,324.16	1,099,130.56	38.50320133	-112.89207398
7,575.00	65.58	103.96	6,936.03	-447.20	1,245.59	13,987,318.76	1,099,152.68	38.50318777	-112.89199629
7,600.00	65.87	104.18	6,946.30	-452.74	1,267.70	13,987,313.22	1,099,174.79	38.50317381	-112.89191866
7,625.00	66.57	104.35	6,956.38	-458.38	1,289.87	13,987,307.58	1,099,196.96	38.50315959	-112.89184079
7,650.00	67.21	104.31	6,966.20	-464.07	1,312.15	13,987,301.89	1,099,219.24	38.50314522	-112.89176254
7,675.00	67.56	104.30	6,975.81	-469.77	1,334.51	13,987,296.19	1,099,241.60	38.50313083	-112.89168401
7,700.00	69.65	104.16	6,984.93	-475.49	1,357.07	13,987,290.47	1,099,264.16	38.50311639	-112.89160477
7,725.00	69.76	103.84	6,993.60	-481.17	1,379.82	13,987,284.80	1,099,286.91	38.50310211	-112.89152487
7,750.00	70.67	103.53	7,002.06	-486.73	1,402.68	13,987,279.23	1,099,309.77	38.50308812	-112.89144462
7,775.00	71.05	103.28	7,010.26	-492.21	1,425.65	13,987,273.76	1,099,332.74	38.50307438	-112.89136396
7,800.00	69.78	103.19	7,018.64	-497.60	1,448.58	13,987,268.36	1,099,355.67	38.50306087	-112.89128347
7,825.00	68.87	103.32	7,027.47	-502.96	1,471.35	13,987,263.00	1,099,378.44	38.50304743	-112.89120354
7,850.00	67.82	103.50	7,036.69	-508.35	1,493.95	13,987,257.61	1,099,401.04	38.50303391	-112.89112419
7,875.00	67.40	103.52	7,046.21	-513.75	1,516.42	13,987,252.21	1,099,423.52	38.50302036	-112.89104528
7,900.00	66.47	103.33	7,056.01	-519.09	1,538.80	13,987,246.87	1,099,445.89	38.50300696	-112.89096673
7,925.00	65.25	103.06	7,066.23	-524.30	1,561.01	13,987,241.66	1,099,468.10	38.50299391	-112.89088876
7,950.00	64.87	102.95	7,076.77	-529.40	1,583.10	13,987,236.56	1,099,490.19	38.50298116	-112.89081123
7,975.00	64.58	102.83	7,087.45	-534.44	1,605.13	13,987,231.52	1,099,512.22	38.50296855	-112.89073387
8,000.00	63.91	102.62	7,098.31	-539.40	1,627.10	13,987,226.56	1,099,534.19	38.50295618	-112.89065678
8,025.00	63.76	102.48	7,109.34	-544.28	1,649.00	13,987,221.68	1,099,556.09	38.50294403	-112.89057991
8,050.00	63.38	102.43	7,120.46	-549.11	1,670.86	13,987,216.86	1,099,577.95	38.50293200	-112.89050319
8,075.00	62.78	102.54	7,131.78	-553.93	1,692.62	13,987,212.04	1,099,599.71	38.50292000	-112.89042681
8,100.00	62.36	102.54	7,143.30	-558.74	1,714.28	13,987,207.22	1,099,621.37	38.50290800	-112.89035079
8,125.00	64.09	102.34	7,154.56	-563.55	1,736.08	13,987,202.41	1,099,643.17	38.50289603	-112.89027430
8,150.00	64.60	102.20	7,165.38	-568.34	1,758.10	13,987,197.62	1,099,665.19	38.50288412	-112.89019702
8,175.00	65.84	102.30	7,175.86	-573.16	1,780.28	13,987,192.81	1,099,687.37	38.50287215	-112.89011918
8,200.00	65.28	102.56	7,186.21	-578.06	1,802.50	13,987,187.91	1,099,709.59	38.50285996	-112.89004118
8,225.00	66.06	103.04	7,196.51	-583.10	1,824.72	13,987,182.86	1,099,731.81	38.50284735	-112.88996321
8,250.00	66.08	103.49	7,206.65	-588.35	1,846.96	13,987,177.62	1,099,754.05	38.50283421	-112.88988513
8,275.00	65.69	103.84	7,216.86	-593.74	1,869.13	13,987,172.23	1,099,776.22	38.50282066	-112.88980728
8,300.00	64.17	104.30	7,227.45	-599.24	1,891.10	13,987,166.72	1,099,798.19	38.50280679	-112.88973014
8,325.00	63.76	104.85	7,238.43	-604.89	1,912.84	13,987,161.07	1,099,819.93	38.50279250	-112.88965378
8,350.00	63.18	105.10	7,249.59	-610.67	1,934.44	13,987,155.29	1,099,841.53	38.50277785	-112.88957787
8,375.00	62.53	105.27	7,261.00	-616.50	1,955.91	13,987,149.46	1,099,863.00	38.50276306	-112.88950245
8,400.00	61.70	105.28	7,272.69	-622.32	1,977.23	13,987,143.64	1,099,884.32	38.50274828	-112.88942756
8,425.00	60.13	105.42	7,284.84	-628.11	1,998.30	13,987,137.86	1,099,905.39	38.50273359	-112.88935354
8,450.00	60.12	105.26	7,297.30	-633.84	2,019.20	13,987,132.12	1,099,926.29	38.50271903	-112.88928009
8,475.00	60.10	105.09	7,309.75	-639.51	2,040.12	13,987,126.45	1,099,947.21	38.50270463	-112.88920660
8,500.00	60.03	104.89	7,322.23	-645.12	2,061.05	13,987,120.85	1,099,968.14	38.50269043	-112.88913308

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)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
8,525.00	60.48	104.64	7,334.63	-650.65	2,082.04	13,987,115.32	1,099,989.13	38.50267642	-112.88905935
8,550.00	60.60	104.54	7,346.93	-656.13	2,103.10	13,987,109.83	1,100,010.19	38.50266256	-112.88898536
8,575.00	60.56	104.60	7,359.21	-661.61	2,124.18	13,987,104.35	1,100,031.27	38.50264870	-112.88891133
8,600.00	61.05	104.59	7,371.40	-667.11	2,145.30	13,987,098.85	1,100,052.39	38.50263480	-112.88883715
8,625.00	61.72	104.51	7,383.38	-672.62	2,166.54	13,987,093.34	1,100,073.63	38.50262086	-112.88876254
8,650.00	62.37	104.34	7,395.10	-678.12	2,187.93	13,987,087.84	1,100,095.02	38.50260696	-112.88868743
8,675.00	62.87	104.06	7,406.59	-683.57	2,209.45	13,987,082.39	1,100,116.54	38.50259322	-112.88861185
8,700.00	63.56	103.92	7,417.86	-688.96	2,231.11	13,987,077.00	1,100,138.20	38.50257963	-112.88853580
8,725.00	64.43	103.66	7,428.82	-694.32	2,252.93	13,987,071.64	1,100,160.02	38.50256616	-112.88845918
8,750.00	64.59	103.34	7,439.58	-699.59	2,274.87	13,987,066.38	1,100,181.96	38.50255293	-112.88838214
8,775.00	63.15	103.21	7,450.59	-704.74	2,296.71	13,987,061.22	1,100,203.80	38.50254001	-112.88830545
8,800.00	63.67	102.97	7,461.78	-709.81	2,318.49	13,987,056.16	1,100,225.58	38.50252734	-112.88822902
8,825.00	63.64	102.82	7,472.87	-714.80	2,340.33	13,987,051.16	1,100,247.42	38.50251484	-112.88815236
8,850.00	63.45	102.60	7,484.01	-719.73	2,362.16	13,987,046.23	1,100,269.25	38.50250255	-112.88807573
8,875.00	63.44	102.54	7,495.19	-724.60	2,383.99	13,987,041.37	1,100,291.08	38.50249042	-112.88799912
8,900.00	62.61	102.56	7,506.53	-729.44	2,405.73	13,987,036.53	1,100,312.83	38.50247836	-112.88792279
8,925.00	62.31	102.67	7,518.09	-734.28	2,427.37	13,987,031.69	1,100,334.46	38.50246628	-112.88784687
8,950.00	61.88	102.73	7,529.79	-739.14	2,448.92	13,987,026.83	1,100,356.01	38.50245416	-112.88777122
8,975.00	61.85	102.92	7,541.58	-744.03	2,470.42	13,987,021.93	1,100,377.51	38.50244194	-112.88769577
9,000.00	61.88	102.95	7,553.36	-748.96	2,491.90	13,987,017.00	1,100,398.99	38.50242960	-112.88762035
9,025.00	61.97	102.96	7,565.13	-753.91	2,513.40	13,987,012.05	1,100,420.49	38.50241724	-112.88754489
9,050.00	61.87	102.88	7,576.90	-758.84	2,534.90	13,987,007.12	1,100,441.99	38.50240491	-112.88746943
9,075.00	61.94	102.89	7,588.67	-763.76	2,556.40	13,987,002.21	1,100,463.49	38.50239262	-112.88739396
9,100.00	61.59	102.95	7,600.50	-768.68	2,577.86	13,986,997.28	1,100,484.95	38.50238031	-112.88731861
9,125.00	61.40	103.16	7,612.43	-773.65	2,599.27	13,986,992.32	1,100,506.36	38.50236789	-112.88724348
9,150.00	61.01	103.43	7,624.47	-778.68	2,620.59	13,986,987.28	1,100,527.68	38.50235526	-112.88716863
9,175.00	60.67	103.55	7,636.65	-783.78	2,641.82	13,986,982.19	1,100,548.91	38.50234247	-112.88709410
9,200.00	60.77	103.54	7,648.88	-788.88	2,663.02	13,986,977.08	1,100,570.11	38.50232964	-112.88701966
9,225.00	60.74	103.74	7,661.09	-794.03	2,684.21	13,986,971.94	1,100,591.30	38.50231671	-112.88694523
9,250.00	60.16	104.04	7,673.42	-799.25	2,705.33	13,986,966.72	1,100,612.42	38.50230357	-112.88687110
9,275.00	60.11	104.28	7,685.87	-804.55	2,726.35	13,986,961.41	1,100,633.44	38.50229019	-112.88679728
9,300.00	60.92	104.21	7,698.18	-809.91	2,747.44	13,986,956.06	1,100,654.53	38.50227668	-112.88672320
9,325.00	61.82	104.07	7,710.15	-815.27	2,768.72	13,986,950.70	1,100,675.81	38.50226316	-112.88664848
9,350.00	62.40	103.82	7,721.85	-820.59	2,790.16	13,986,945.37	1,100,697.25	38.50224975	-112.88657317
9,375.00	63.03	103.63	7,733.31	-825.86	2,811.75	13,986,940.10	1,100,718.84	38.50223649	-112.88649739
9,400.00	63.55	103.44	7,744.55	-831.09	2,833.46	13,986,934.87	1,100,740.55	38.50222336	-112.88642116
9,425.00	64.19	103.16	7,755.56	-836.25	2,855.30	13,986,929.71	1,100,762.39	38.50221042	-112.88634448
9,450.00	65.00	102.72	7,766.28	-841.31	2,877.31	13,986,924.65	1,100,784.40	38.50219778	-112.88626722
9,475.00	65.55	102.47	7,776.74	-846.26	2,899.47	13,986,919.70	1,100,806.56	38.50218543	-112.88618944
9,500.00	66.15	102.35	7,786.97	-851.16	2,921.75	13,986,914.80	1,100,828.84	38.50217322	-112.88611125
9,525.00	66.70	102.36	7,796.97	-856.07	2,944.13	13,986,909.90	1,100,851.22	38.50216102	-112.88603270
9,550.00	67.05	103.05	7,806.78	-861.12	2,966.56	13,986,904.84	1,100,873.65	38.50214840	-112.88595399
9,575.00	67.06	103.89	7,816.53	-866.49	2,988.95	13,986,899.48	1,100,896.04	38.50213494	-112.88587538
9,600.00	66.91	104.58	7,826.30	-872.14	3,011.25	13,986,893.82	1,100,918.34	38.50212066	-112.88579706
9,625.00	67.18	104.66	7,836.05	-877.95	3,033.53	13,986,888.01	1,100,940.62	38.50210596	-112.88571882
9,650.00	66.34	104.50	7,845.92	-883.74	3,055.76	13,986,882.23	1,100,962.85	38.50209134	-112.88564073
9,675.00	64.43	104.51	7,856.33	-889.43	3,077.76	13,986,876.53	1,100,984.85	38.50207695	-112.88556345
9,700.00	64.34	104.42	7,867.14	-895.06	3,099.59	13,986,870.90	1,101,006.68	38.50206272	-112.88548679
9,725.00	64.36	104.41	7,877.96	-900.67	3,121.42	13,986,865.29	1,101,028.51	38.50204854	-112.88541013
9,750.00	64.57	104.24	7,888.74	-906.25	3,143.28	13,986,859.71	1,101,050.37	38.50203445	-112.88533337
9,775.00	65.60	103.44	7,899.27	-911.68	3,165.29	13,986,854.29	1,101,072.38	38.50202080	-112.88525607
9,800.00	66.22	102.90	7,909.47	-916.88	3,187.51	13,986,849.09	1,101,094.60	38.50200778	-112.88517806
9,825.00	66.54	102.64	7,919.49	-921.94	3,209.85	13,986,844.03	1,101,116.94	38.50199513	-112.88509965
9,850.00	66.27	102.53	7,929.50	-926.93	3,232.21	13,986,839.03	1,101,139.30	38.50198269	-112.88502118
9,875.00	66.40	102.35	7,939.53	-931.86	3,254.57	13,986,834.10	1,101,161.66	38.50197040	-112.88494270

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)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,900.00	66.63	102.61	7,949.50	-936.82	3,276.96	13,986,829.15	1,101,184.05	38.50195806	-112.88486413
9,925.00	67.16	102.62	7,959.31	-941.84	3,299.40	13,986,824.12	1,101,206.49	38.50194553	-112.88478538
9,950.00	67.03	102.45	7,969.04	-946.84	3,321.88	13,986,819.13	1,101,228.97	38.50193307	-112.88470648
9,975.00	67.29	102.55	7,978.74	-951.82	3,344.37	13,986,814.14	1,101,251.46	38.50192065	-112.88462754
10,000.00	67.15	102.71	7,988.42	-956.86	3,366.86	13,986,809.10	1,101,273.95	38.50190808	-112.88454860
10,025.00	66.74	102.64	7,998.21	-961.91	3,389.31	13,986,804.05	1,101,296.40	38.50189548	-112.88446983
10,050.00	66.27	102.67	8,008.18	-966.93	3,411.68	13,986,799.03	1,101,318.77	38.50188295	-112.88439131
10,075.00	66.32	102.31	8,018.23	-971.88	3,434.02	13,986,794.08	1,101,341.12	38.50187061	-112.88431288
10,100.00	66.19	101.72	8,028.29	-976.65	3,456.41	13,986,789.32	1,101,363.50	38.50185880	-112.88423434
10,125.00	66.92	101.69	8,038.24	-981.30	3,478.87	13,986,784.66	1,101,385.96	38.50184728	-112.88415554
10,150.00	66.97	101.68	8,048.03	-985.96	3,501.39	13,986,780.00	1,101,408.48	38.50183576	-112.88407651
10,175.00	66.45	101.20	8,057.92	-990.52	3,523.90	13,986,775.45	1,101,430.99	38.50182452	-112.88399755
10,200.00	66.00	101.05	8,067.99	-994.93	3,546.35	13,986,771.03	1,101,453.44	38.50181366	-112.88391881
10,225.00	65.46	100.56	8,078.27	-999.20	3,568.73	13,986,766.76	1,101,475.82	38.50180319	-112.88384029
10,250.00	64.76	100.36	8,088.79	-1,003.32	3,591.03	13,986,762.64	1,101,498.13	38.50179314	-112.88376209
10,275.00	64.50	99.98	8,099.50	-1,007.31	3,613.27	13,986,758.66	1,101,520.36	38.50178344	-112.88368412
10,300.00	64.14	100.05	8,110.34	-1,011.23	3,635.46	13,986,754.74	1,101,542.55	38.50177393	-112.88360633
10,325.00	63.60	100.10	8,121.35	-1,015.15	3,657.55	13,986,750.81	1,101,564.65	38.50176439	-112.88352884
10,350.00	64.38	100.13	8,132.31	-1,019.10	3,679.67	13,986,746.87	1,101,586.76	38.50175480	-112.88345128
10,375.00	64.42	99.90	8,143.11	-1,023.02	3,701.88	13,986,742.94	1,101,608.97	38.50174529	-112.88337343
10,400.00	64.85	99.61	8,153.82	-1,026.85	3,724.14	13,986,739.12	1,101,631.23	38.50173603	-112.88329538
Tie onto Gyro Surveys									
10,417.00	64.36	102.52	8,161.11	-1,029.79	3,739.21	13,986,736.17	1,101,646.30	38.50172879	-112.88324252
10,512.00	63.47	102.65	8,202.89	-1,048.38	3,822.48	13,986,717.58	1,101,729.57	38.50168243	-112.88295026
10,607.00	63.06	105.22	8,245.63	-1,068.81	3,904.82	13,986,697.15	1,101,811.91	38.50163098	-112.88266113
10,703.00	64.72	103.54	8,287.88	-1,090.21	3,988.32	13,986,675.76	1,101,895.41	38.50157692	-112.88236789
10,798.00	65.03	103.34	8,328.22	-1,110.20	4,071.97	13,986,655.76	1,101,979.06	38.50152673	-112.88207419
10,862.00	64.90	102.17	8,355.30	-1,123.00	4,128.53	13,986,642.96	1,102,035.62	38.50149476	-112.88187569
Last MWD Surveys									
10,947.00	64.90	102.17	8,391.36	-1,139.23	4,203.77	13,986,626.74	1,102,110.86	38.50145444	-112.88161166
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: _____
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