



CONFIDENTIAL
WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # 34662
 Name: Tug Hill Operating, LLC
 Address 1: 550 BAILEY AVE, STE 510
 Address 2:
 City: FT. WORTH State: TX Zip: 76107 +
 Contact Person: Winnie Scott
 Phone: (817) 632-3400
 CONTRACTOR: License # 34670
 Name: Patterson-UTI Drilling Company LLC
 Wellsite Geologist: NA
 Purchaser:

Designate Type of Completion:
 New Well Re-Entry Workover
 Oil WSW SWD SIOW
 Gas D&A ENHR SIGW
 OG GSW Temp. Abd.
 CM (Coal Bed Methane)
 Cathodic Other (Core. Expl., etc.):

If Workover/Re-entry: Old Well Info as follows:
 Operator:

Well Name:
 Original Comp. Date: Original Total Depth:
 Deepening Re-perf. Conv. to ENHR Conv. to SWD
 Conv. to GSW
 Plug Back: Plug Back Total Depth
 Commingled Permit #:
 Dual Completion Permit #:
 SWD Permit #:
 ENHR Permit #:
 GSW Permit #:

10/26/2012	11/15/2012	12/08/2012
Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date

API No. 15 - 15-083-21831-01-00
 Spot Description:
 S2 S2 SE SE Sec. 20 Twp. 23 S. R. 22 East West
 200 Feet from North / South Line of Section
 660 Feet from East / West Line of Section
 Footages Calculated from Nearest Outside Section Corner:
 NE NW SE SW
 County: Hodgeman
 Lease Name: Gleason Unit Well #: 1-20H
 Field Name:
 Producing Formation: Mississippi
 Elevation: Ground: 2332 Kelly Bushing: 23
 Total Depth: 9144 Plug Back Total Depth: 9105
 Amount of Surface Pipe Set and Cemented at: 872 Feet
 Multiple Stage Cementing Collar Used? Yes No
 If yes, show depth set: Feet
 If Alternate II completion, cement circulated from:
 feet depth to: w/ sx cmt.

Drilling Fluid Management Plan
 (Data must be collected from the Reserve Pit)
 Chloride content: 18000 ppm Fluid volume: 1300 bbls
 Dewatering method used: Evaporated
 Location of fluid disposal if hauled offsite:
 Operator Name:
 Lease Name: License #:
 Quarter Sec. Twp. S. R. East West
 County: Permit #:

AFFIDAVIT

I am the affiant and I hereby certify that all requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Submitted Electronically

KCC Office Use ONLY

Letter of Confidentiality Received
 Date: 01/09/2013
 Confidential Release Date:
 Wireline Log Received
 Geologist Report Received
 UIC Distribution
 ALT I II III Approved by: NAOMI JAMES Date: 01/11/2013



Tug Hill Operating LLC
 Project: Hodgeman County, Kansas (NAD 83)
 Site: Sec 20, T23S, R22W
 Well: Gleason # 1-20H
 Wellbore: Original Wellbore
 Design: Plan #6
 Lat: 39°45' 47.468 N
 Long: 99°45' 18.188 W
 Pad GL: 2332.0
 KB: WELL @ 2355.0ustf (Original Well Elev)



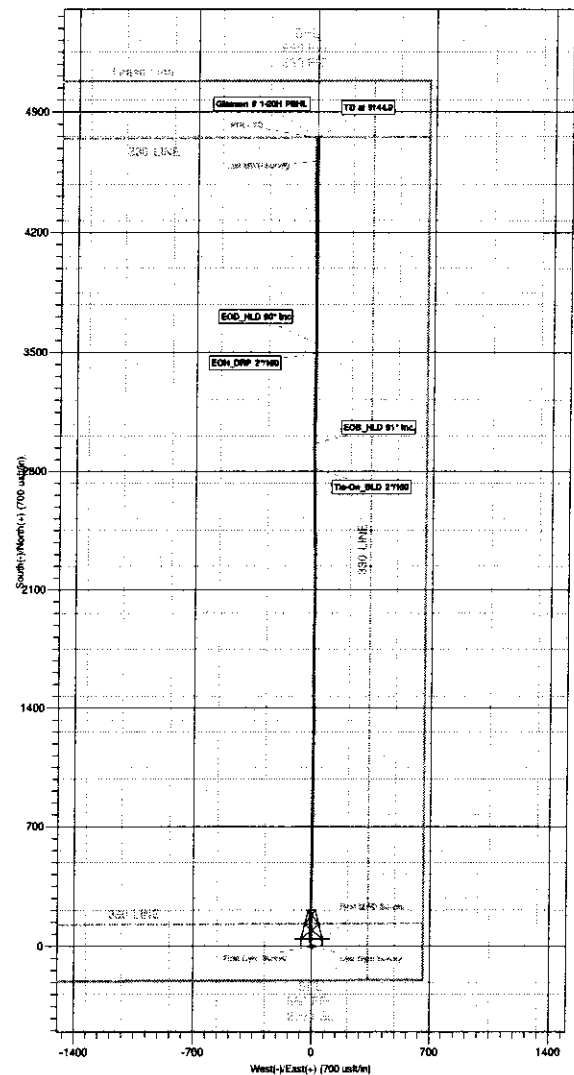
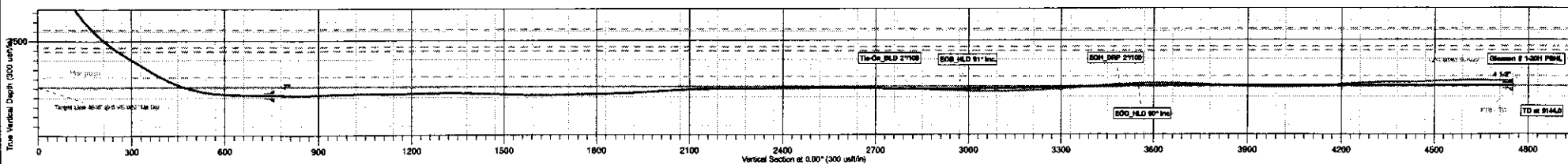
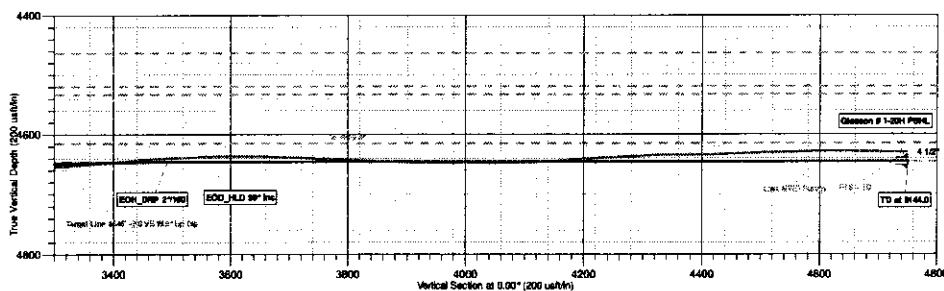
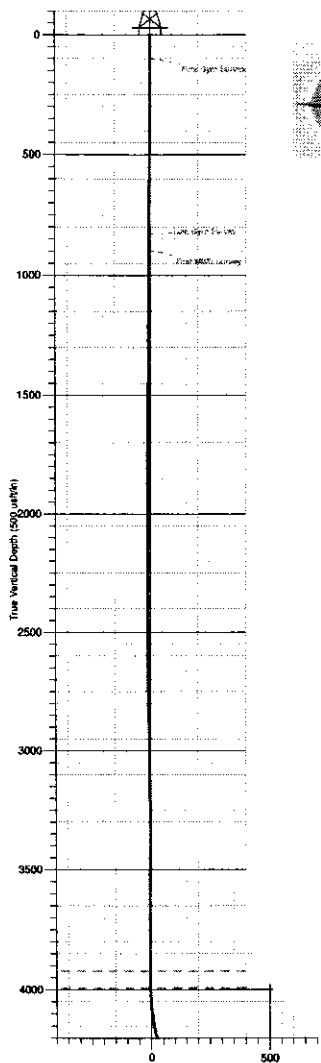
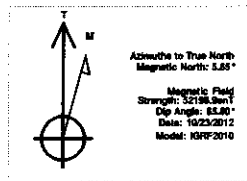
SECTION DETAILS										
MD	Inc	Azi	TVD	+N-S	+E-W	Dipg	TFace	VScal	Target	
7210.0	85.60	359.20	4455.0	2816.2	-5.3	0.00	0.00	2916.2		
7317.2	91.00	0.58	4552.7	2963.3	-4.8	2.00	27.96	2963.3		
7896.2	91.00	0.58	4548.5	3492.2	-0.2	0.00	0.00	3492.2		
7944.1	80.00	309.00	4646.0	3350.1	0.0	2.00	+149.71	3350.1	Gleason # 1-20H PBHL	
8144.0	80.00	340.00	4646.0	4790.0	0.0	0.00	0.00	4790.0	Gleason # 1-20H PBHL	

WELL DETAILS: Gleason # 1-20H						
Ground Level: 2332.0						
+N-S	+E-W	Northing	Easting	Latitude	Longitude	
0.0	0.0	181154.24	350602.94	39° 45' 47.468 N	99° 45' 18.188 W	

WELLBORE TARGET DETAILS (LAT/LONG)						
Name	TVD	+N-S	+E-W	Latitude	Longitude	
Gleason # 1-20H PBHL	4646.0	0.0	30° 2' 34.438 N	89° 45' 18.188 W		

FORMATION TOP DETAILS						
TVDPATH	MDPATH	Formation	DipAngle	DipDir		
3922.0	3922.2	Hardwater	0.00	0.00		
3994.0	3994.3	Lansing	0.00	0.00		
4484.0	4508.3	Pawnee	0.00	0.00		
4520.0	4595.7	Fort Scott	0.00	0.00		
4833.0	4818.5	Cherokee	0.00	0.00		
4915.0	4780.2	Missourian	0.00	0.00		
4846.0	4981.3	Target Line 4646 @ 0 VS W0° Up Dip	0.00	0.00		

CASING DETAILS				
TVD	MD	Name	Size	
4673.7	5150.0	" 7	7	
4646.0	8143.2	4 1/2"	4-1/2	





Tug Hill Operating LLC

Hodgeman County, Kansas (NAD 83)

Sec 20, T23S, R22W

Gleason # 1-20H

Original Wellbore

Survey: MWD Survey

Survey Report - Geographic

14 November, 2012



Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Site Sec 20, T23S, R22W
Project:	Hodgeman County, Kansas (NAD 83)	TVD Reference:	WELL @ 2355.0usft (Original Well Elev)
Site:	Sec 20, T23S, R22W	MD Reference:	WELL @ 2355.0usft (Original Well Elev)
Well:	Gleason # 1-20H	North Reference:	True
Wellbore:	Original Wellbore	Survey Calculation Method:	Minimum Curvature
Design:	Original Wellbore	Database:	EDM 5000.1 Single User Db

Project	Hodgeman County, Kansas (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Kansas Southern Zone		

Site	Sec 20, T23S, R22W				
Site Position:		Northing:	1,811,134.42 usft	Latitude:	38° 1' 47.468 N
From:	Map	Easting:	950,852.94 usft	Longitude:	99° 45' 18.188 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.77 °

Well	Gleason # 1-20H					
Well Position	+N/-S	0.0 usft	Northing:	1,811,134.42 usft	Latitude:	38° 1' 47.468 N
	+E/-W	0.0 usft	Easting:	950,852.94 usft	Longitude:	99° 45' 18.188 W
Position Uncertainty	0.0 usft		Wellhead Elevation:	23.0 usft	Ground Level:	2,332.0 usft

Wellbore	Original Wellbore				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/23/2012	5.65	65.80	52,199

Design	Original Wellbore				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	0.00
	0.0	0.0	0.0		

Survey Program	Date	11/14/2012			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	830.0	Gyro Survey (Original Wellbore)	NS-GYRO-SS	NS Gyro single shots	
897.0	9,144.0	MWD Survey (Original Wellbore)	MWD	MWD - Standard	

Survey										
Measured Depth (usft)	Inclination	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
830.0	0.95	192.80	830.0	-5.4	1.1	1,811,128.96	950,854.01	38° 1' 47.414 N	99° 45' 18.174 W	
897.0	0.40	223.20	897.0	-6.2	0.9	1,811,128.25	950,853.72	38° 1' 47.407 N	99° 45' 18.177 W	
First MWD Survey										
991.0	0.30	226.10	991.0	-6.6	0.5	1,811,127.85	950,853.31	38° 1' 47.403 N	99° 45' 18.182 W	
1,086.0	0.40	218.10	1,086.0	-7.0	0.1	1,811,127.42	950,852.92	38° 1' 47.398 N	99° 45' 18.187 W	
1,180.0	0.20	218.60	1,180.0	-7.4	-0.2	1,811,127.04	950,852.61	38° 1' 47.395 N	99° 45' 18.191 W	
1,274.0	0.40	193.30	1,274.0	-7.8	-0.4	1,811,126.59	950,852.42	38° 1' 47.390 N	99° 45' 18.193 W	
1,366.0	0.50	179.20	1,366.0	-8.5	-0.5	1,811,125.88	950,852.35	38° 1' 47.383 N	99° 45' 18.194 W	
1,459.0	0.60	173.10	1,459.0	-9.4	-0.4	1,811,124.99	950,852.40	38° 1' 47.374 N	99° 45' 18.193 W	
1,551.0	0.40	170.10	1,551.0	-10.2	-0.3	1,811,124.19	950,852.50	38° 1' 47.367 N	99° 45' 18.192 W	
1,643.0	0.40	181.70	1,643.0	-10.9	-0.3	1,811,123.55	950,852.54	38° 1' 47.360 N	99° 45' 18.191 W	

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Site:	Sec 20, T23S, R22W	MD Reference:	WELL @ 2355.0usft (Original Well Elev)
Well:	Gleason # 1-20H	North Reference:	True
Wellbore:	Original Wellbore	Survey Calculation Method:	Minimum Curvature
Design:	Original Wellbore	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
1,734.0	0.40	199.80	1,734.0	-11.5	-0.4	1,811,122.94	950,852.41	38° 1' 47.354 N	99° 45' 18.193 W	
1,826.0	0.40	186.90	1,825.9	-12.1	-0.5	1,811,122.32	950,852.26	38° 1' 47.348 N	99° 45' 18.194 W	
1,918.0	0.30	209.10	1,917.9	-12.6	-0.7	1,811,121.79	950,852.09	38° 1' 47.343 N	99° 45' 18.196 W	
2,011.0	0.20	212.40	2,010.9	-13.0	-0.9	1,811,121.45	950,851.88	38° 1' 47.339 N	99° 45' 18.199 W	
2,103.0	0.40	235.30	2,102.9	-13.3	-1.2	1,811,121.13	950,851.53	38° 1' 47.336 N	99° 45' 18.203 W	
2,195.0	0.30	293.80	2,194.9	-13.4	-1.7	1,811,121.05	950,851.04	38° 1' 47.335 N	99° 45' 18.209 W	
2,287.0	0.30	296.50	2,286.9	-13.2	-2.2	1,811,121.26	950,850.61	38° 1' 47.337 N	99° 45' 18.215 W	
2,380.0	0.40	281.50	2,379.9	-13.0	-2.7	1,811,121.44	950,850.08	38° 1' 47.339 N	99° 45' 18.221 W	
2,472.0	0.20	283.10	2,471.9	-12.9	-3.2	1,811,121.55	950,849.61	38° 1' 47.340 N	99° 45' 18.227 W	
2,564.0	0.70	9.60	2,563.9	-12.3	-3.2	1,811,122.14	950,849.55	38° 1' 47.346 N	99° 45' 18.228 W	
2,656.0	1.00	4.80	2,655.9	-11.0	-3.1	1,811,123.49	950,849.73	38° 1' 47.359 N	99° 45' 18.226 W	
2,748.0	0.80	5.50	2,747.9	-9.5	-2.9	1,811,124.93	950,849.88	38° 1' 47.374 N	99° 45' 18.225 W	
2,841.0	0.80	356.40	2,840.9	-8.2	-2.9	1,811,126.23	950,849.92	38° 1' 47.386 N	99° 45' 18.224 W	
2,932.0	1.00	355.30	2,931.9	-6.8	-3.0	1,811,127.65	950,849.83	38° 1' 47.400 N	99° 45' 18.226 W	
3,025.0	0.90	354.10	3,024.9	-5.3	-3.2	1,811,129.19	950,849.71	38° 1' 47.416 N	99° 45' 18.227 W	
3,118.0	0.90	3.80	3,117.9	-3.8	-3.2	1,811,130.64	950,849.71	38° 1' 47.430 N	99° 45' 18.228 W	
3,213.0	0.70	40.90	3,212.9	-2.6	-2.8	1,811,131.82	950,850.15	38° 1' 47.442 N	99° 45' 18.222 W	
3,307.0	0.40	46.50	3,306.9	-2.0	-2.1	1,811,132.47	950,850.77	38° 1' 47.448 N	99° 45' 18.215 W	
3,402.0	0.60	181.30	3,401.9	-2.2	-1.9	1,811,132.20	950,851.00	38° 1' 47.446 N	99° 45' 18.212 W	
3,497.0	0.40	180.30	3,496.9	-3.1	-1.9	1,811,131.37	950,850.98	38° 1' 47.437 N	99° 45' 18.212 W	
3,591.0	0.40	190.50	3,590.8	-3.7	-2.0	1,811,130.72	950,850.91	38° 1' 47.431 N	99° 45' 18.213 W	
3,685.0	0.40	221.00	3,684.8	-4.3	-2.3	1,811,130.16	950,850.62	38° 1' 47.425 N	99° 45' 18.216 W	
3,780.0	0.40	195.60	3,779.8	-4.9	-2.6	1,811,129.59	950,850.31	38° 1' 47.420 N	99° 45' 18.220 W	
3,875.0	0.50	310.90	3,874.8	-4.9	-3.0	1,811,129.55	950,849.91	38° 1' 47.419 N	99° 45' 18.225 W	
3,969.0	0.80	324.60	3,968.8	-4.1	-3.7	1,811,130.36	950,849.23	38° 1' 47.427 N	99° 45' 18.234 W	
4,064.0	4.10	349.50	4,063.7	-0.2	-4.7	1,811,134.26	950,848.27	38° 1' 47.465 N	99° 45' 18.246 W	
4,096.0	6.90	351.50	4,095.6	2.8	-5.2	1,811,137.29	950,847.82	38° 1' 47.495 N	99° 45' 18.252 W	
4,127.0	9.20	353.80	4,126.3	7.1	-5.7	1,811,141.60	950,847.34	38° 1' 47.538 N	99° 45' 18.259 W	
4,159.0	11.70	353.90	4,157.7	12.9	-6.3	1,811,147.38	950,846.79	38° 1' 47.595 N	99° 45' 18.267 W	
4,191.0	14.20	355.70	4,188.9	20.0	-7.0	1,811,154.53	950,846.25	38° 1' 47.666 N	99° 45' 18.275 W	
4,222.0	16.80	356.20	4,218.8	28.3	-7.5	1,811,162.80	950,845.78	38° 1' 47.747 N	99° 45' 18.282 W	
4,253.0	19.70	358.00	4,248.2	38.0	-8.0	1,811,172.50	950,845.43	38° 1' 47.843 N	99° 45' 18.288 W	
4,284.0	22.70	0.10	4,277.1	49.2	-8.2	1,811,183.71	950,845.41	38° 1' 47.954 N	99° 45' 18.290 W	
4,316.0	25.30	1.10	4,306.4	62.2	-8.1	1,811,196.72	950,845.73	38° 1' 48.083 N	99° 45' 18.289 W	
4,348.0	28.50	0.80	4,334.9	76.7	-7.8	1,811,211.19	950,846.16	38° 1' 48.226 N	99° 45' 18.286 W	
4,379.0	31.70	359.40	4,361.7	92.2	-7.8	1,811,226.73	950,846.39	38° 1' 48.379 N	99° 45' 18.285 W	
4,411.0	34.70	359.00	4,388.5	109.7	-8.0	1,811,244.25	950,846.38	38° 1' 48.553 N	99° 45' 18.288 W	
4,442.0	37.70	359.90	4,413.5	128.0	-8.2	1,811,262.55	950,846.45	38° 1' 48.734 N	99° 45' 18.291 W	
4,474.0	41.20	0.40	4,438.2	148.4	-8.2	1,811,282.88	950,846.78	38° 1' 48.934 N	99° 45' 18.290 W	
4,505.0	44.60	0.80	4,460.9	169.5	-7.9	1,811,303.97	950,847.29	38° 1' 49.143 N	99° 45' 18.287 W	
4,537.0	47.80	0.80	4,483.1	192.6	-7.6	1,811,327.06	950,847.92	38° 1' 49.371 N	99° 45' 18.283 W	
4,568.0	51.30	0.60	4,503.2	216.1	-7.3	1,811,350.64	950,848.53	38° 1' 49.605 N	99° 45' 18.279 W	
4,600.0	54.40	0.60	4,522.5	241.6	-7.1	1,811,376.13	950,849.14	38° 1' 49.857 N	99° 45' 18.276 W	
4,631.0	57.60	1.00	4,539.8	267.3	-6.7	1,811,401.82	950,849.84	38° 1' 50.111 N	99° 45' 18.272 W	
4,663.0	59.00	0.80	4,556.6	294.6	-6.3	1,811,429.03	950,850.64	38° 1' 50.380 N	99° 45' 18.266 W	
4,694.0	59.30	0.60	4,572.5	321.2	-5.9	1,811,455.64	950,851.32	38° 1' 50.643 N	99° 45' 18.262 W	
4,726.0	59.70	0.30	4,588.8	348.7	-5.7	1,811,483.20	950,851.91	38° 1' 50.915 N	99° 45' 18.259 W	
4,757.0	60.90	0.30	4,604.1	375.7	-5.6	1,811,510.13	950,852.41	38° 1' 51.182 N	99° 45' 18.258 W	
4,789.0	64.20	0.60	4,618.9	404.1	-5.4	1,811,538.51	950,853.02	38° 1' 51.462 N	99° 45' 18.255 W	
4,820.0	67.50	1.00	4,631.6	432.3	-5.0	1,811,566.79	950,853.80	38° 1' 51.742 N	99° 45' 18.250 W	
4,852.0	70.60	1.30	4,643.0	462.2	-4.4	1,811,596.65	950,854.80	38° 1' 52.037 N	99° 45' 18.242 W	
4,883.0	74.30	1.30	4,652.4	491.8	-3.7	1,811,626.18	950,855.87	38° 1' 52.329 N	99° 45' 18.234 W	
4,914.0	77.90	1.30	4,659.8	521.8	-3.0	1,811,656.25	950,856.95	38° 1' 52.627 N	99° 45' 18.226 W	
4,946.0	81.70	0.60	4,665.5	553.3	-2.5	1,811,687.72	950,857.90	38° 1' 52.938 N	99° 45' 18.219 W	
4,978.0	85.60	0.10	4,669.0	585.1	-2.3	1,811,719.51	950,858.52	38° 1' 53.252 N	99° 45' 18.217 W	

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Wellbore:	Original Wellbore	Survey Calculation Method:	Minimum Curvature
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Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
5,013.0	88.00	0.10	4,671.0	620.1	-2.2	1,811,754.45	950,859.05	38° 1' 53.598 N	99° 45' 18.216 W	
5,045.0	88.70	359.70	4,671.9	652.0	-2.3	1,811,786.44	950,859.43	38° 1' 53.914 N	99° 45' 18.217 W	
5,077.0	88.50	359.70	4,672.7	684.0	-2.5	1,811,818.43	950,859.69	38° 1' 54.230 N	99° 45' 18.219 W	
5,108.0	89.30	0.30	4,673.3	715.0	-2.5	1,811,849.42	950,860.11	38° 1' 54.537 N	99° 45' 18.219 W	
5,174.0	89.70	0.60	4,673.8	781.0	-1.9	1,811,915.40	950,861.51	38° 1' 55.189 N	99° 45' 18.212 W	
5,267.0	90.80	0.30	4,673.4	874.0	-1.2	1,812,008.38	950,863.49	38° 1' 56.109 N	99° 45' 18.203 W	
5,359.0	92.20	1.50	4,671.0	966.0	0.2	1,812,100.30	950,866.18	38° 1' 57.018 N	99° 45' 18.185 W	
5,451.0	89.10	359.90	4,670.0	1,057.9	1.4	1,812,192.25	950,868.54	38° 1' 57.927 N	99° 45' 18.171 W	
5,543.0	90.20	359.70	4,670.5	1,149.9	1.0	1,812,284.24	950,869.46	38° 1' 58.836 N	99° 45' 18.175 W	
5,635.0	92.90	0.40	4,668.1	1,241.9	1.1	1,812,376.19	950,870.77	38° 1' 59.746 N	99° 45' 18.174 W	
5,727.0	88.50	0.10	4,666.9	1,333.9	1.5	1,812,468.15	950,872.41	38° 2' 0.655 N	99° 45' 18.169 W	
5,818.0	88.50	359.60	4,669.3	1,424.8	1.3	1,812,559.11	950,873.40	38° 2' 1.554 N	99° 45' 18.172 W	
5,911.0	88.50	0.10	4,671.7	1,517.8	1.0	1,812,652.07	950,874.41	38° 2' 2.473 N	99° 45' 18.175 W	
6,003.0	89.60	359.40	4,673.3	1,609.8	0.6	1,812,744.06	950,875.24	38° 2' 3.383 N	99° 45' 18.180 W	
6,095.0	90.80	0.40	4,672.9	1,701.8	0.5	1,812,836.05	950,876.32	38° 2' 4.292 N	99° 45' 18.182 W	
6,187.0	92.00	0.60	4,670.7	1,793.8	1.3	1,812,927.99	950,878.36	38° 2' 5.201 N	99° 45' 18.172 W	
6,280.0	91.80	359.60	4,667.6	1,886.7	1.4	1,813,020.93	950,879.77	38° 2' 6.120 N	99° 45' 18.170 W	
6,373.0	93.50	0.60	4,663.3	1,979.6	1.6	1,813,113.82	950,881.19	38° 2' 7.039 N	99° 45' 18.168 W	
6,464.0	93.80	0.60	4,657.5	2,070.4	2.5	1,813,204.61	950,883.36	38° 2' 7.936 N	99° 45' 18.156 W	
6,557.0	90.70	0.10	4,653.9	2,163.3	3.1	1,813,297.50	950,885.18	38° 2' 8.855 N	99° 45' 18.149 W	
6,650.0	89.70	359.60	4,653.5	2,256.3	2.9	1,813,390.50	950,886.19	38° 2' 9.774 N	99° 45' 18.152 W	
6,740.0	90.20	359.60	4,653.6	2,346.3	2.2	1,813,480.49	950,886.77	38° 2' 10.664 N	99° 45' 18.160 W	
6,833.0	91.30	359.40	4,652.4	2,439.3	1.4	1,813,573.48	950,887.21	38° 2' 11.583 N	99° 45' 18.170 W	
6,927.0	90.30	359.40	4,651.1	2,533.3	0.4	1,813,667.47	950,887.49	38° 2' 12.513 N	99° 45' 18.182 W	
7,021.0	89.10	359.00	4,651.6	2,627.3	-0.9	1,813,761.47	950,887.44	38° 2' 13.442 N	99° 45' 18.199 W	
7,116.0	89.20	358.20	4,653.0	2,722.2	-3.2	1,813,856.45	950,886.40	38° 2' 14.381 N	99° 45' 18.228 W	
7,210.0	88.40	359.20	4,655.0	2,816.2	-5.3	1,813,950.43	950,885.53	38° 2' 15.309 N	99° 45' 18.254 W	
7,305.0	87.60	358.90	4,658.3	2,911.1	-6.9	1,814,045.37	950,885.24	38° 2' 16.248 N	99° 45' 18.274 W	
7,400.0	88.30	359.20	4,661.7	3,006.0	-8.5	1,814,140.31	950,884.94	38° 2' 17.186 N	99° 45' 18.294 W	
7,494.0	91.20	0.60	4,662.1	3,100.0	-8.6	1,814,234.29	950,886.04	38° 2' 18.116 N	99° 45' 18.296 W	
7,589.0	91.50	0.40	4,659.9	3,195.0	-7.8	1,814,329.24	950,888.15	38° 2' 19.054 N	99° 45' 18.285 W	
7,682.0	93.60	2.00	4,655.7	3,287.9	-5.9	1,814,422.08	950,891.34	38° 2' 19.973 N	99° 45' 18.261 W	
7,777.0	95.20	1.80	4,648.4	3,382.5	-2.7	1,814,516.69	950,895.76	38° 2' 20.909 N	99° 45' 18.222 W	
7,871.0	93.40	0.40	4,641.4	3,476.3	-0.9	1,814,610.37	950,898.82	38° 2' 21.835 N	99° 45' 18.199 W	
7,966.0	91.50	359.90	4,637.3	3,571.2	-0.7	1,814,705.27	950,900.34	38° 2' 22.773 N	99° 45' 18.196 W	
8,061.0	87.80	359.70	4,637.9	3,666.1	-1.0	1,814,800.25	950,901.29	38° 2' 23.712 N	99° 45' 18.200 W	
8,155.0	87.70	359.40	4,641.6	3,760.1	-1.7	1,814,894.17	950,901.82	38° 2' 24.641 N	99° 45' 18.210 W	
8,250.0	87.50	358.30	4,645.6	3,855.0	-3.6	1,814,989.09	950,901.19	38° 2' 25.579 N	99° 45' 18.233 W	
8,344.0	88.90	359.20	4,648.5	3,948.9	-5.7	1,815,083.03	950,900.41	38° 2' 26.508 N	99° 45' 18.259 W	
8,439.0	90.80	359.60	4,648.8	4,043.9	-6.7	1,815,178.03	950,900.69	38° 2' 27.447 N	99° 45' 18.271 W	
8,533.0	92.50	359.40	4,646.1	4,137.8	-7.5	1,815,271.98	950,901.13	38° 2' 28.376 N	99° 45' 18.282 W	
8,627.0	95.70	359.60	4,639.3	4,231.6	-8.3	1,815,365.73	950,901.58	38° 2' 29.302 N	99° 45' 18.292 W	
8,722.0	89.40	359.00	4,635.1	4,326.4	-9.5	1,815,460.59	950,901.69	38° 2' 30.240 N	99° 45' 18.306 W	
8,817.0	91.60	359.60	4,634.3	4,421.4	-10.6	1,815,555.58	950,901.81	38° 2' 31.179 N	99° 45' 18.321 W	
8,911.0	92.80	359.00	4,630.7	4,515.3	-11.8	1,815,649.51	950,901.93	38° 2' 32.108 N	99° 45' 18.335 W	
9,006.0	89.40	1.70	4,628.9	4,610.3	-11.2	1,815,744.45	950,903.79	38° 2' 33.046 N	99° 45' 18.328 W	
Last MWD Survey										
9,144.0	89.40	1.70	4,630.3	4,748.2	-7.1	1,815,882.31	950,909.74	38° 2' 34.410 N	99° 45' 18.277 W	
PTB - TD										

Company: Tug Hill Operating LLC
Project: Hodgeman County, Kansas (NAD 83)
Site: Sec 20, T23S, R22W
Well: Gleason # 1-20H
Wellbore: Original Wellbore
Design: Original Wellbore

Local Co-ordinate Reference: Site Sec 20, T23S, R22W
TVD Reference: WELL @ 2355.0usft (Original Well Elev)
MD Reference: WELL @ 2355.0usft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N-S (usft)	+E-W (usft)	
897.0	897.0	-6.2	0.9	First MWD Survey
9,006.0	4,628.9	4,610.3	-11.2	Last MWD Survey
9,144.0	4,630.3	4,748.2	-7.1	PTB - TD

Checked By: _____ Approved By: _____ Date: _____