



KANSAS CORPORATION COMMISSION 1097019
OIL & GAS CONSERVATION DIVISION

Form ACO-1
June 2009

Form Must Be Typed
Form must be Signed
All blanks must be Filled

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 #: _____

<u>07/27/2012</u>	<u>08/21/2012</u>	<u>09/23/2012</u>
Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date

API No. 15 - 15-033-21621-01-00

Spot Description: _____

S2 S2 SE SE Sec. 18 Twp. 34 S. R. 18 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: Comanche

Lease Name: Hoffman Family Trust Well #: 1-18H

Field Name: _____

Producing Formation: Mississippian

Elevation: Ground: 1940 Kelly Bushing: 23

Total Depth: 5435 Plug Back Total Depth: 5435

Amount of Surface Pipe Set and Cemented at: 794 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 #: _____

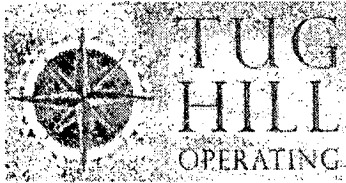
AFFIDAVIT

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: 10/11/2012
- Confidential Release Date: _____
- Wireline Log Received
- Geologist Report Received
- UIC Distribution
- ALT I II III Approved by: NAOMI JAMES Date: 10/11/2012



Tug Hill Operating LLC

Comanche County, Kansas

Sec 18, T34S, R18W

Hoffman Family Trust #1-18H

Original Wellbore

Design: Original Wellbore

Survey Report - Geographic

20 August, 2012





Survey Report - Geographic



Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Site Sec 18, T34S, R18W
Project:	Comanche County, Kansas	TVD Reference:	Well @ 1961.0usft
Site:	Sec 18, T34S, R18W	MD Reference:	Well @ 1961.0usft
Well:	Hoffman Family Trust #1-18H	North Reference:	Grid
Wellbore:	Original Wellbore	Survey Calculation Method:	Minimum Curvature
Design:	Original Wellbore	Database:	EDM 5000.1 Single User Db

Project:	Comanche County, Kansas		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Kansas South 1502		

Site:	Sec 18, T34S, R18W				
Site Position:		Northing:	150,552.88 usft	Latitude:	37° 4' 38.374 N
From:	Map	Easting:	1,764,027.77 usft	Longitude:	99° 18' 31.716 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.50 °

Well:	Hoffman Family Trust #1-18H					
Well Position	+N/-S	0.0 usft	Northing:	150,552.88 usft	Latitude:	37° 4' 38.374 N
	+E/-W	0.0 usft	Easting:	1,764,027.77 usft	Longitude:	99° 18' 31.716 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	1,938.0 usft	

Wellbore:	Original Wellbore				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	07/20/12	5.39	65.08	51,739

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 (°)	
	0.0	0.0	0.0	261.14	

Survey Program	Date	08/20/12			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	4,863.0	Gyro Surveys (Original Wellbore)	NS-GYRO-SS	NS Gyro single shots	
4,922.0	10,070.0	MWD Surveys (Original Wellbore)	MWD	MWD - Standard	

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	150,552.88	1,764,027.77	37° 4' 38.374 N	99° 18' 31.716 W
Hoffman F T #1									
100.0	0.56	285.23	100.0	0.1	-0.5	150,553.01	1,764,027.30	37° 4' 38.375 N	99° 18' 31.722 W
First Gyro Survey									
200.0	0.39	296.05	200.0	0.4	-1.2	150,553.29	1,764,028.52	37° 4' 38.377 N	99° 18' 31.731 W
300.0	0.36	266.09	300.0	0.5	-1.9	150,553.42	1,764,025.90	37° 4' 38.379 N	99° 18' 31.739 W
400.0	0.42	340.74	400.0	0.9	-2.3	150,553.74	1,764,025.47	37° 4' 38.382 N	99° 18' 31.744 W
500.0	0.11	318.09	500.0	1.3	-2.5	150,554.16	1,764,025.28	37° 4' 38.386 N	99° 18' 31.747 W
600.0	0.52	281.62	600.0	1.4	-3.0	150,554.32	1,764,024.77	37° 4' 38.388 N	99° 18' 31.753 W
700.0	0.37	327.58	700.0	1.8	-3.6	150,554.69	1,764,024.16	37° 4' 38.391 N	99° 18' 31.761 W
800.0	0.36	307.01	800.0	2.3	-4.0	150,555.15	1,764,023.73	37° 4' 38.396 N	99° 18' 31.766 W



Survey Report - Geographic



Company: Tug Hill Operating LLC
 Project: Comanche County, Kansas
 Site: Sec 18, T34S, R18W
 Well: Hoffman Family Trust #1-18H
 Wellbore: Original Wellbore
 Design: Original Wellbore

Local Co-ordinate Reference: Site Sec 18, T34S, R18W
 TVD Reference: Well @ 1961.0usft
 MD Reference: Well @ 1961.0usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 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
900.0	0.38	305.92	900.0	2.6	-4.6	150,555.53	1,764,023.21	37° 4' 38.399 N	99° 18' 31.773 W
1,000.0	0.40	300.48	1,000.0	3.0	-5.1	150,555.90	1,764,022.64	37° 4' 38.403 N	99° 18' 31.780 W
1,100.0	0.54	278.45	1,100.0	3.3	-5.9	150,556.15	1,764,021.88	37° 4' 38.405 N	99° 18' 31.789 W
1,200.0	0.53	309.89	1,200.0	3.6	-6.7	150,556.52	1,764,021.06	37° 4' 38.409 N	99° 18' 31.799 W
1,300.0	0.51	294.04	1,300.0	4.1	-7.5	150,556.99	1,764,020.29	37° 4' 38.414 N	99° 18' 31.809 W
1,400.0	0.63	283.39	1,400.0	4.4	-8.4	150,557.30	1,764,019.35	37° 4' 38.417 N	99° 18' 31.820 W
1,500.0	0.71	280.70	1,500.0	4.7	-9.6	150,557.55	1,764,018.21	37° 4' 38.419 N	99° 18' 31.834 W
1,600.0	0.73	279.19	1,599.9	4.9	-10.8	150,557.76	1,764,016.97	37° 4' 38.421 N	99° 18' 31.850 W
1,700.0	0.85	263.27	1,699.9	4.9	-12.2	150,557.78	1,764,015.61	37° 4' 38.421 N	99° 18' 31.867 W
1,800.0	0.88	252.41	1,799.9	4.6	-13.8	150,557.46	1,764,014.14	37° 4' 38.418 N	99° 18' 31.885 W
1,900.0	0.91	252.30	1,899.9	4.1	-15.1	150,556.98	1,764,012.65	37° 4' 38.413 N	99° 18' 31.903 W
2,000.0	0.98	249.97	1,999.9	3.6	-16.7	150,556.45	1,764,011.09	37° 4' 38.407 N	99° 18' 31.922 W
2,100.0	1.30	246.69	2,099.9	2.8	-18.5	150,555.71	1,764,009.24	37° 4' 38.400 N	99° 18' 31.945 W
2,200.0	1.57	246.03	2,199.9	1.8	-20.8	150,554.70	1,764,006.95	37° 4' 38.390 N	99° 18' 31.973 W
2,300.0	2.00	243.87	2,299.8	0.5	-23.6	150,553.38	1,764,004.13	37° 4' 38.376 N	99° 18' 32.008 W
2,400.0	2.13	246.15	2,399.7	-1.0	-26.9	150,551.86	1,764,000.87	37° 4' 38.361 N	99° 18' 32.048 W
2,500.0	2.30	247.94	2,499.7	-2.5	-30.5	150,550.35	1,763,997.31	37° 4' 38.346 N	99° 18' 32.092 W
2,600.0	2.19	252.71	2,599.6	-3.9	-34.1	150,549.03	1,763,993.62	37° 4' 38.333 N	99° 18' 32.137 W
2,700.0	1.99	256.72	2,699.5	-4.8	-37.7	150,548.06	1,763,990.11	37° 4' 38.323 N	99° 18' 32.180 W
2,800.0	1.69	258.48	2,799.5	-5.5	-40.8	150,547.37	1,763,986.97	37° 4' 38.316 N	99° 18' 32.219 W
2,900.0	1.65	257.09	2,899.4	-6.1	-43.6	150,546.76	1,763,984.13	37° 4' 38.309 N	99° 18' 32.254 W
3,000.0	1.67	258.79	2,999.4	-6.7	-46.5	150,546.15	1,763,981.29	37° 4' 38.303 N	99° 18' 32.289 W
3,100.0	1.77	259.36	3,099.3	-7.3	-49.4	150,545.58	1,763,978.35	37° 4' 38.297 N	99° 18' 32.325 W
3,200.0	1.90	259.23	3,199.3	-7.9	-52.6	150,544.99	1,763,975.20	37° 4' 38.291 N	99° 18' 32.364 W
3,300.0	1.94	258.41	3,299.2	-8.5	-55.9	150,544.34	1,763,971.91	37° 4' 38.284 N	99° 18' 32.404 W
3,400.0	1.74	250.23	3,399.2	-9.4	-58.9	150,543.48	1,763,968.83	37° 4' 38.276 N	99° 18' 32.442 W
3,500.0	1.85	246.19	3,499.1	-10.6	-61.8	150,542.32	1,763,965.92	37° 4' 38.264 N	99° 18' 32.478 W
3,600.0	1.97	248.52	3,599.1	-11.8	-64.9	150,541.04	1,763,962.84	37° 4' 38.251 N	99° 18' 32.516 W
3,700.0	2.11	255.18	3,699.0	-12.9	-68.3	150,539.94	1,763,959.47	37° 4' 38.240 N	99° 18' 32.557 W
3,800.0	2.23	259.56	3,798.9	-13.8	-72.0	150,539.11	1,763,955.77	37° 4' 38.231 N	99° 18' 32.603 W
3,900.0	2.29	267.37	3,898.9	-14.2	-75.9	150,538.67	1,763,951.86	37° 4' 38.226 N	99° 18' 32.651 W
4,000.0	2.04	272.99	3,998.8	-14.2	-79.7	150,538.67	1,763,948.09	37° 4' 38.226 N	99° 18' 32.698 W
4,100.0	1.32	286.51	4,098.7	-13.8	-82.6	150,539.09	1,763,945.21	37° 4' 38.230 N	99° 18' 32.733 W
4,200.0	0.78	295.38	4,198.7	-13.2	-84.3	150,539.71	1,763,943.49	37° 4' 38.236 N	99° 18' 32.755 W
4,300.0	0.41	315.94	4,298.7	-12.6	-85.1	150,540.26	1,763,942.63	37° 4' 38.241 N	99° 18' 32.765 W
4,400.0	0.38	16.68	4,398.7	-12.1	-85.3	150,540.83	1,763,942.47	37° 4' 38.247 N	99° 18' 32.767 W
4,500.0	0.45	72.55	4,498.7	-11.6	-84.8	150,541.27	1,763,942.94	37° 4' 38.251 N	99° 18' 32.761 W
4,600.0	1.14	106.57	4,598.7	-11.8	-83.5	150,541.10	1,763,944.27	37° 4' 38.250 N	99° 18' 32.745 W
4,700.0	1.24	88.89	4,698.7	-12.0	-81.5	150,540.84	1,763,946.30	37° 4' 38.247 N	99° 18' 32.720 W
4,800.0	1.59	85.70	4,798.7	-11.9	-79.0	150,540.97	1,763,948.77	37° 4' 38.249 N	99° 18' 32.689 W
4,863.0	1.68	101.35	4,861.6	-12.0	-77.2	150,540.85	1,763,950.55	37° 4' 38.248 N	99° 18' 32.668 W
Last Gyro Survey									
4,922.0	1.80	124.90	4,920.6	-12.7	-75.6	150,540.15	1,763,952.15	37° 4' 38.241 N	99° 18' 32.648 W
First MWD Survey									
4,953.0	1.40	44.00	4,951.6	-12.7	-75.0	150,540.14	1,763,952.82	37° 4' 38.241 N	99° 18' 32.639 W
4,985.0	4.70	13.10	4,983.5	-11.2	-74.4	150,541.70	1,763,953.39	37° 4' 38.257 N	99° 18' 32.633 W
5,017.0	8.10	4.10	5,015.3	-7.7	-73.9	150,545.23	1,763,953.84	37° 4' 38.292 N	99° 18' 32.627 W
5,048.0	10.90	358.10	5,045.9	-2.5	-73.9	150,550.34	1,763,953.90	37° 4' 38.342 N	99° 18' 32.627 W
5,079.0	13.70	358.20	5,076.2	4.0	-74.2	150,556.93	1,763,953.56	37° 4' 38.407 N	99° 18' 32.632 W
5,111.0	17.10	356.60	5,107.1	12.5	-74.7	150,565.41	1,763,953.03	37° 4' 38.491 N	99° 18' 32.639 W
5,143.0	20.60	353.60	5,137.3	22.8	-75.6	150,575.70	1,763,952.13	37° 4' 38.593 N	99° 18' 32.652 W
5,174.0	23.20	355.00	5,166.1	34.3	-76.8	150,587.21	1,763,950.99	37° 4' 38.706 N	99° 18' 32.667 W
5,206.0	26.20	355.50	5,195.2	47.6	-77.9	150,600.53	1,763,949.88	37° 4' 38.838 N	99° 18' 32.682 W
5,238.0	30.40	356.70	5,223.3	62.8	-78.9	150,615.67	1,763,948.86	37° 4' 38.987 N	99° 18' 32.696 W
5,270.0	35.30	355.00	5,250.2	80.1	-80.2	150,632.97	1,763,947.59	37° 4' 39.158 N	99° 18' 32.714 W



Survey Report - Geographic



Company: Tug Hill Operating LLC
 Project: Comanche County, Kansas
 Site: Sec 18, T34S, R18W
 Well: Hoffman Family Trust #1-18H
 Wellbore: Original Wellbore
 Design: Original Wellbore

Local Co-ordinate Reference: Site Sec 18, T34S, R18W
 TVD Reference: Well @ 1961.0usft
 MD Reference: Well @ 1961.0usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 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
5,301.0	40.10	355.30	5,274.7	99.0	-81.8	150,651.85	1,763,945.99	37° 4' 39.345 N	99° 18' 32.736 W
5,332.0	44.90	356.20	5,297.6	119.8	-83.3	150,672.73	1,763,944.44	37° 4' 39.551 N	99° 18' 32.757 W
5,364.0	49.20	358.70	5,319.4	143.2	-84.3	150,696.12	1,763,943.42	37° 4' 39.782 N	99° 18' 32.772 W
5,396.0	53.90	1.50	5,339.3	168.3	-84.3	150,721.17	1,763,943.48	37° 4' 40.030 N	99° 18' 32.774 W
5,428.0	58.90	2.50	5,357.0	194.9	-83.3	150,747.80	1,763,944.42	37° 4' 40.293 N	99° 18' 32.765 W
5,459.0	61.30	3.40	5,372.4	221.8	-82.0	150,774.64	1,763,945.81	37° 4' 40.559 N	99° 18' 32.751 W
5,491.0	62.20	4.50	5,387.6	249.9	-80.0	150,802.76	1,763,947.75	37° 4' 40.837 N	99° 18' 32.730 W
5,523.0	62.20	3.80	5,402.5	278.1	-78.0	150,830.99	1,763,949.80	37° 4' 41.116 N	99° 18' 32.708 W
5,554.0	62.30	3.90	5,416.9	305.5	-76.1	150,858.36	1,763,951.64	37° 4' 41.387 N	99° 18' 32.688 W
5,588.0	66.30	3.80	5,430.8	334.2	-74.2	150,887.13	1,763,953.58	37° 4' 41.672 N	99° 18' 32.667 W
5,617.0	70.10	3.10	5,442.3	363.0	-72.5	150,915.85	1,763,955.30	37° 4' 41.956 N	99° 18' 32.649 W
5,649.0	73.50	1.70	5,452.3	393.3	-71.2	150,946.22	1,763,956.57	37° 4' 42.256 N	99° 18' 32.637 W
5,680.0	75.70	1.10	5,460.5	423.2	-70.5	150,976.10	1,763,957.30	37° 4' 42.552 N	99° 18' 32.631 W
5,712.0	76.70	1.70	5,468.2	454.3	-69.7	151,007.16	1,763,958.06	37° 4' 42.859 N	99° 18' 32.625 W
5,743.0	75.90	3.10	5,475.5	484.4	-68.4	151,037.25	1,763,959.32	37° 4' 43.156 N	99° 18' 32.612 W
5,777.0	72.00	2.40	5,484.9	517.0	-66.9	151,069.88	1,763,960.89	37° 4' 43.479 N	99° 18' 32.597 W
5,808.0	65.80	354.50	5,496.1	545.9	-67.6	151,098.75	1,763,960.15	37° 4' 43.765 N	99° 18' 32.609 W
5,839.0	70.80	352.70	5,507.5	574.5	-70.8	151,127.36	1,763,958.94	37° 4' 44.047 N	99° 18' 32.652 W
5,871.0	77.40	352.00	5,516.3	605.0	-74.9	151,157.85	1,763,952.84	37° 4' 44.348 N	99° 18' 32.705 W
5,902.0	83.40	351.80	5,521.5	635.2	-79.3	151,188.09	1,763,948.48	37° 4' 44.647 N	99° 18' 32.762 W
5,934.0	87.80	353.80	5,523.9	666.8	-83.4	151,219.72	1,763,944.37	37° 4' 44.959 N	99° 18' 32.818 W
5,966.0	88.50	354.50	5,525.0	698.6	-86.7	151,251.53	1,763,941.06	37° 4' 45.273 N	99° 18' 32.861 W
6,005.0	88.90	354.60	5,525.8	737.5	-90.4	151,290.34	1,763,937.35	37° 4' 45.657 N	99° 18' 32.911 W
6,087.0	90.20	354.40	5,526.5	819.1	-98.3	151,371.96	1,763,929.50	37° 4' 46.463 N	99° 18' 33.016 W
6,179.0	94.20	354.90	5,523.0	910.6	-106.8	151,463.47	1,763,920.93	37° 4' 47.387 N	99° 18' 33.132 W
6,271.0	92.20	354.80	5,517.8	1,002.1	-115.1	151,554.95	1,763,912.68	37° 4' 48.271 N	99° 18' 33.243 W
6,363.0	94.40	356.00	5,512.5	1,093.6	-122.5	151,646.50	1,763,905.31	37° 4' 49.175 N	99° 18' 33.344 W
6,456.0	94.70	357.30	5,505.1	1,186.2	-127.9	151,739.05	1,763,899.90	37° 4' 50.090 N	99° 18' 33.421 W
6,548.0	96.70	357.40	5,496.0	1,277.6	-132.1	151,830.49	1,763,895.66	37° 4' 50.994 N	99° 18' 33.483 W
6,640.0	92.70	355.60	5,488.5	1,369.1	-137.7	151,921.99	1,763,890.06	37° 4' 51.898 N	99° 18' 33.562 W
6,732.0	93.00	354.30	5,483.9	1,460.6	-145.8	152,013.51	1,763,881.98	37° 4' 52.802 N	99° 18' 33.671 W
6,824.0	91.60	353.90	5,480.2	1,552.1	-155.2	152,104.95	1,763,872.53	37° 4' 53.705 N	99° 18' 33.798 W
6,916.0	91.80	355.20	5,477.5	1,643.6	-164.0	152,196.49	1,763,863.79	37° 4' 54.609 N	99° 18' 33.915 W
7,008.0	88.80	357.90	5,477.0	1,735.4	-169.5	152,288.30	1,763,858.26	37° 4' 55.517 N	99° 18' 33.993 W
7,100.0	90.90	0.20	5,477.2	1,827.4	-171.0	152,380.28	1,763,856.73	37° 4' 56.426 N	99° 18' 34.022 W
7,195.0	92.20	0.30	5,474.7	1,922.4	-170.6	152,475.24	1,763,857.15	37° 4' 57.365 N	99° 18' 34.027 W
7,291.0	91.30	1.80	5,471.7	2,018.3	-168.9	152,571.18	1,763,858.91	37° 4' 58.313 N	99° 18' 34.016 W
7,386.0	91.80	3.90	5,469.2	2,113.1	-164.1	152,666.02	1,763,863.63	37° 4' 59.251 N	99° 18' 33.968 W
7,480.0	91.90	4.90	5,466.1	2,206.8	-156.9	152,759.69	1,763,870.83	37° 5' 0.178 N	99° 18' 33.889 W
7,575.0	90.60	4.10	5,464.1	2,301.5	-149.5	152,854.37	1,763,876.29	37° 5' 1.115 N	99° 18' 33.807 W
7,670.0	91.20	4.60	5,462.6	2,396.2	-142.3	152,949.09	1,763,885.49	37° 5' 2.052 N	99° 18' 33.728 W
7,765.0	90.20	3.90	5,461.4	2,490.9	-135.2	153,043.82	1,763,892.53	37° 5' 2.989 N	99° 18' 33.651 W
7,860.0	89.10	5.20	5,462.0	2,585.6	-127.7	153,138.51	1,763,900.07	37° 5' 3.926 N	99° 18' 33.569 W
7,955.0	90.30	5.40	5,462.5	2,680.2	-118.9	153,233.10	1,763,908.84	37° 5' 4.862 N	99° 18' 33.470 W
8,050.0	89.40	5.80	5,462.7	2,774.8	-109.7	153,327.65	1,763,918.11	37° 5' 5.797 N	99° 18' 33.366 W
8,144.0	89.80	5.50	5,463.4	2,868.3	-100.4	153,421.19	1,763,927.37	37° 5' 6.723 N	99° 18' 33.262 W
8,239.0	91.10	5.00	5,462.6	2,962.9	-91.7	153,515.79	1,763,936.06	37° 5' 7.659 N	99° 18' 33.165 W
8,334.0	92.00	4.80	5,460.1	3,057.5	-83.6	153,610.40	1,763,944.17	37° 5' 8.595 N	99° 18' 33.075 W
8,427.0	91.00	4.70	5,457.6	3,150.2	-75.9	153,703.05	1,763,951.87	37° 5' 9.512 N	99° 18' 32.990 W
8,522.0	90.30	4.80	5,456.6	3,244.8	-68.0	153,797.72	1,763,959.73	37° 5' 10.448 N	99° 18' 32.903 W
8,617.0	91.00	5.00	5,455.5	3,339.5	-59.9	153,892.36	1,763,967.85	37° 5' 11.385 N	99° 18' 32.813 W
8,712.0	91.80	5.40	5,453.2	3,434.1	-51.3	153,986.94	1,763,976.46	37° 5' 12.321 N	99° 18' 32.717 W
8,806.0	89.90	3.90	5,451.8	3,527.7	-43.7	154,080.62	1,763,984.07	37° 5' 13.248 N	99° 18' 32.633 W
8,901.0	88.30	3.60	5,453.3	3,622.5	-37.5	154,175.40	1,763,990.29	37° 5' 14.185 N	99° 18' 32.566 W
8,997.0	90.80	5.10	5,454.0	3,718.2	-30.2	154,271.11	1,763,997.57	37° 5' 15.132 N	99° 18' 32.487 W



Survey Report - Geographic



Company: Tug Hill Operating LLC
 Project: Comanche County, Kansas
 Site: Sec 18, T34S, R18W
 Well: Hoffman Family Trust #1-18H
 Wellbore: Original Wellbore
 Design: Original Wellbore

Local Co-ordinate Reference: Site Sec 18, T34S, R18W
 TVD Reference: Well @ 1961.0usft
 MD Reference: Well @ 1961.0usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 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
9,092.0	90.70	4.80	5,452.8	3,812.9	-22.0	154,365.75	1,764,005.76	37° 5' 16.068 N	99° 18' 32.396 W
9,187.0	90.70	4.80	5,451.6	3,907.5	-14.1	154,460.41	1,764,013.71	37° 5' 17.005 N	99° 18' 32.308 W
9,282.0	91.60	5.00	5,449.7	4,002.2	-5.9	154,555.04	1,764,021.83	37° 5' 17.941 N	99° 18' 32.218 W
9,376.0	92.70	5.40	5,446.2	4,095.7	2.6	154,648.58	1,764,030.34	37° 5' 18.867 N	99° 18' 32.123 W
9,470.0	90.40	4.60	5,443.6	4,189.3	10.8	154,742.19	1,764,038.53	37° 5' 19.793 N	99° 18' 32.032 W
9,566.0	90.20	4.40	5,443.1	4,285.0	18.3	154,837.89	1,764,046.06	37° 5' 20.740 N	99° 18' 31.949 W
9,660.0	90.60	4.40	5,442.5	4,378.7	25.5	154,931.61	1,764,053.27	37° 5' 21.667 N	99° 18' 31.870 W
9,756.0	91.90	5.50	5,440.4	4,474.3	33.8	155,027.22	1,764,061.55	37° 5' 22.613 N	99° 18' 31.778 W
9,851.0	90.40	5.20	5,438.5	4,568.9	42.6	155,121.79	1,764,070.41	37° 5' 23.549 N	99° 18' 31.679 W
9,945.0	90.70	4.30	5,437.6	4,662.6	50.4	155,215.46	1,764,078.19	37° 5' 24.476 N	99° 18' 31.593 W
10,019.0	91.50	4.50	5,436.2	4,736.3	56.1	155,289.23	1,764,083.87	37° 5' 25.205 N	99° 18' 31.531 W
Last MWD Survey 10019 MD/5436.2 TVD 4736.3 N 66.1 E N: 155289.22 E: 1764083.87									
10,029.6	91.50	4.50	5,435.9	4,746.9	56.9	155,299.80	1,764,084.70	37° 5' 25.310 N	99° 18' 31.522 W
CONT HLD 90.5° Inc.									
10,032.0	91.50	4.50	5,435.8	4,749.3	57.1	155,302.18	1,764,084.89	37° 5' 25.333 N	99° 18' 31.520 W
Cross 330° 10032 MD/4749.3 TVD 4749.3 N 57.1 E N: 155302.18 E: 1764084.89									
10,069.5	91.50	4.50	5,434.8	4,786.7	60.1	155,339.61	1,764,087.83	37° 5' 25.704 N	99° 18' 31.487 W
Hoffman F T #1-18H PBHL									
10,070.0	91.50	4.50	5,434.8	4,787.2	60.1	155,340.05	1,764,087.87	37° 5' 25.708 N	99° 18' 31.487 W
PTD 10070 MD/4787.2 TVD 4787.2 N 60.1 E N: 155340.05 E: 1764087.87									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N-S (usft)	+E-W (usft)	
100.0	100.0	0.1	-0.5	First Gyro Survey
4,863.0	4,861.6	-12.0	-77.2	Last Gyro Survey
4,922.0	4,920.6	-12.7	-75.6	First MWD Survey
10,019.0	5,436.2	4,736.3	56.1	Last MWD Survey 10019 MD/5436.2 TVD 4736.3 N 66.1 E N: 155289.22 E: 1764083.87
10,032.0	5,435.8	4,749.3	57.1	Cross 330° 10032 MD/4749.3 TVD 4749.3 N 57.1 E N: 155302.18 E: 1764084.89
10,070.0	5,434.8	4,787.2	60.1	PTD 10070 MD/4787.2 TVD 4787.2 N 60.1 E N: 155340.05 E: 1764087.87

Checked By: _____ Approved By: _____ Date: _____

interp

Survey Interpolation Results

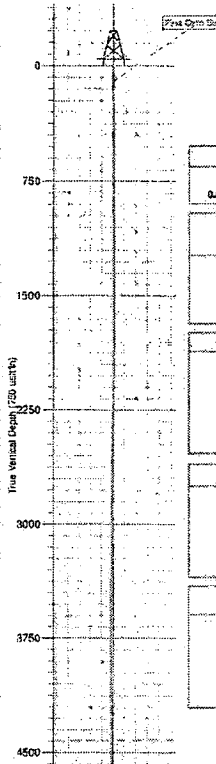
Well Name : Hoffman Family Trust #1-18H

wellbore Name : Original wellbore

MD	INC	AZI	TVD	NS	EW	DLS	VS	MAPN	MAPE	LAT	LONG
10019.0	91.50	4.50	5436.2	4736.3	56.1	1.11	-784.8	155289.22		1764083.87	37° 5' 25.205 N 99° 18' 31.531 W
10032.0	91.50	4.50	5435.8	4749.3	57.1	0.00	-787.8	155302.18		1764084.89	37° 5' 25.333 N 99° 18' 31.520 W
10070.0	91.50	4.50	5434.8	4787.2	60.1	0.00	-796.6	155340.05		1764087.87	37° 5' 25.708 N 99° 18' 31.487 W



Tug Hill Operating LLC
 Project: Comanche County, Kansas
 Site: Sec 18, T34S, R13W
 Well: Hoffman Family Trust #1-18H
 Wellbore: Original Wellbore
 Design: Plan #5
 Lat: 37° 4' 38.374 N
 Long: 99° 18' 31.716 W
 Pad GL: 1938.0
 KB: Well @ 1961.0ust



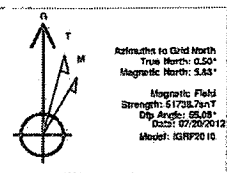
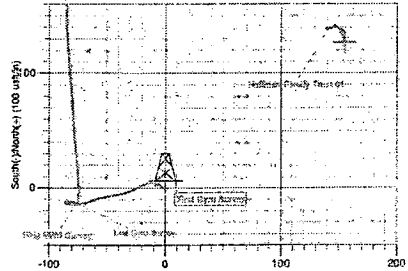
WELL DETAILS: Hoffman Family Trust #1-18H					
+	N	-	E	+	W
0.0					
Northing		Easting		Longitude	
150632.88		1764027.77		37° 4' 38.374 N	
				99° 18' 31.716 W	

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N	-E	+W	Longitude
Hoffman F T #1	0.0	127.0	154.5	37° 4' 38.374 N	99° 18' 31.716 W
Hoffman F T #1-18H PPHL	5443.5	4787.5	48.8	37° 5' 25.713 N	99° 18' 31.814 W
CONT HLD 90.5° Inc.	5443.5	4787.3	48.8	37° 5' 25.316 N	99° 18' 31.823 W

SECTION DETAILS									
MD	Inc	Ad	TVD	+N	-E	Dip	TFace	VSec	Target
8025.0	83.80	354.60	5223.0	737.5	-28.4	0.00	0.00	738.4	
8085.0	90.00	334.20	5328.4	784.2	-45.0	1.93	0.00	730.1	
8185.3	94.00	351.50	5531.7	126.8	-109.3	3.50	0.00	825.0	
8755.3	94.00	354.60	5482.7	1483.0	-183.0	0.50	0.00	1481.3	
7594.7	90.50	4.17	5403.3	1821.5	-184.5	3.00	0.00	1819.7	
10028.7	90.00	4.17	5443.6	4747.8	48.8	0.00	0.00	4728.0	CONT HLD 90.5° Inc.
10068.7	90.50	4.17	5443.3	4787.7	51.7	0.00	0.00	4707.8	

FORMATION TOP DETAILS					
TVDPath	MDPath	Formation	DipAngle	DipDir	
4420.1	4421.4	Bas Heebner	-0.50	0.60	
4617.1	4618.4	Lansing	-0.50	0.80	
5185.6	5186.4	Marmaton	-0.50	0.80	
5278.1	5308.8	Cherokee	-0.50	0.60	
5389.8	5385.8	Miscellaneous	-0.60	0.60	
5480.5	5763.4	Target Line 5485 @ 0 VS 90.5° Up Dip	-0.50	0.60	

ANNOTATIONS									
TVD	MD	Inc	Ad	+N	-E	VSec	Departure	Appellation	
102.0	100.0	0.50	285.22	0.7	-0.5	0.4	0.8	First Cycle Survey	
4881.6	4863.0	1.68	101.35	-12.0	-77.2	78.2	89.5	Last Cycle Survey	
4930.6	4922.0	1.80	104.00	-12.7	-75.8	78.7	101.9	Real MWD Survey	
5438.2	10019.0	91.50	4.80	4738.3	88.1	-704.8	4808.3	Last MWD Survey 10/19 MID/5438.4 TVD 4738.3 M 88.1 E N: 155289.22 E: 1784033.87	
5433.0	10032.0	91.50	4.50	4749.3	87.1	-787.8	4879.5	Cross 300' 10032 MID/4749.3 TVD 4749.3 M 87.1 E N: 155302.18 E: 1782864.89	
5434.3	10070.0	91.00	4.50	4767.2	80.1	-786.6	4917.0	PTD 10070 MID/4767.2 TVD 4767.2 M 80.1 E N: 155340.28 E: 1784907.87	



Vertical Section at 0.00° (750 unit/h)

