



## **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



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

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

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

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

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

<b>Design</b>	Original Wellbore				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	261.14	

<b>Survey Program</b>	<b>Date</b>	08/20/12			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
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
<b>Hoffman F T #1</b>									
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
<b>First Gyro Survey</b>									
200.0	0.39	296.05	200.0	0.4	-1.2	150,553.29	1,764,026.52	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



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<b>Site:</b>	Sec 18, T34S, R18W	<b>MD Reference:</b>	Well @ 1961.0usft
<b>Well:</b>	Hoffman Family Trust #1-18H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellbore	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Original Wellbore	<b>Database:</b>	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	-13.6	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
<b>Last Gyro Survey</b>									
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
<b>First MWD Survey</b>									
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	356.20	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



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<b>Site:</b>	Sec 18, T34S, R18W	<b>MD Reference:</b>	Well @ 1961.0usft
<b>Well:</b>	Hoffman Family Trust #1-18H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellbore	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Original Wellbore	<b>Database:</b>	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	
5,586.0	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	1,763,956.94	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	351.60	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	353.60	5,523.9	666.8	-83.4	151,219.72	1,763,944.37	37° 4' 44.959 N	99° 18' 32.816 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' 47.367 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	1,763,878.29	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



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

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
<b>Last MWD Survey 10019 MD/5436.2 TVD 4736.3 N 56.1 E N: 155289.22 E: 1764083.87</b>									
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
<b>CONT HLD 90.5° Inc.</b>									
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
<b>Cross 330' 10032 MD/4749.3 TVD 4749.3 N 57.1 E N: 155302.18 E: 1764084.89</b>									
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
<b>Hoffman F T #1-18H PBHL</b>									
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
<b>PTD 10070 MD/4787.2 TVD 4787.2 N 60.1 E N: 155340.05 E: 1764087.87</b>									

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 56.1 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		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