

Job# 900034106
Rig: Nomac 102

Shell Exploration & Production Co. Inc.

Reno Co. KS (NAD-27) Sec 35-T23S-R09W (Grid)
API# 151552161301

Young Trust 2309 #35-1H (335 FSL, 800 FEL)

Wellbore #1

Design: Wellbore #1

Sperry Drilling Services

Combo Report With Grid North & True North

02 April, 2013

TD Date : 20th Feb, 2013

Well Coordinates: 38° 00' 00.63" N
098° 16' 22.40" W

NAD 1927 (NADCON CONUS)
Kansas South 1502
485,630.24 N
2,065,442.62 E

Ground Level: 1,698.00 ft

Local Coordinate Origin:

Centered on Well Young Trust 2309 #35-1H

Viewing Datum:

WELL @ 1729.70ft (Nomac 102 (31.7'))

TVDs to System:

N

North Reference:

Grid

Unit System:

API US New

Version: 2003.21 Build: 46

HALLIBURTON

Design Report for Young Trust 2309 #35-1H - Wellbore #1

Measured Depth (ft)	Inclination (°)	Grid Azimuth (°)	True Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates (ft)		Map Coordinates (ft)		Dogleg Rate (°/100ft)	Vertical Section (ft)	Comments
						Northing	Easting	Northing	Easting			
0.00	0.00	0.00	0.13	-1,729.70	0.00	0.00 N	0.00 E	485,630.24	2,065,442.62	0.00	0.00	
141.00	0.14	121.22	121.35	-1,588.70	141.00	0.09 S	0.15 E	485,630.15	2,065,442.77	0.10	-0.08	Start MWD @ 141.00 MD
171.00	0.28	79.43	79.56	-1,558.70	171.00	0.09 S	0.25 E	485,630.15	2,065,442.87	0.66	-0.08	
232.00	0.69	100.38	100.51	-1,497.70	232.00	0.13 S	0.76 E	485,630.11	2,065,443.38	0.72	-0.07	
286.00	0.71	119.06	119.19	-1,443.71	285.99	0.35 S	1.37 E	485,629.89	2,065,443.99	0.42	-0.25	
368.00	1.66	133.76	133.89	-1,361.72	367.98	1.42 S	2.67 E	485,628.82	2,065,445.29	1.21	-1.21	
432.00	3.90	119.74	119.87	-1,297.80	431.90	3.14 S	5.23 E	485,627.10	2,065,447.85	3.63	-2.73	
527.00	7.12	98.90	99.03	-1,203.25	526.45	5.66 S	13.86 E	485,624.58	2,065,456.48	3.94	-4.57	
622.00	9.63	93.09	93.22	-1,109.27	620.43	7.00 S	27.61 E	485,623.24	2,065,470.23	2.78	-4.85	
717.00	9.36	91.64	91.77	-1,015.57	714.13	7.65 S	43.27 E	485,622.59	2,065,485.89	0.38	-4.29	
812.00	8.81	91.67	91.80	-921.76	807.94	8.08 S	58.26 E	485,622.16	2,065,500.88	0.58	-3.57	
907.00	8.48	92.30	92.43	-827.84	901.86	8.57 S	72.53 E	485,621.67	2,065,515.15	0.36	-2.96	
1,002.00	8.80	93.41	93.54	-733.92	995.78	9.29 S	86.79 E	485,620.95	2,065,529.41	0.38	-2.57	
1,093.00	7.98	89.13	89.26	-643.89	1,085.81	9.61 S	100.05 E	485,620.63	2,065,542.67	1.13	-1.87	
1,184.00	7.83	90.15	90.28	-553.75	1,175.95	9.53 S	112.56 E	485,620.71	2,065,555.18	0.23	-0.82	
1,275.00	8.44	91.18	91.31	-463.67	1,266.03	9.68 S	125.44 E	485,620.56	2,065,568.06	0.69	0.02	
1,366.00	8.90	90.85	90.98	-373.71	1,355.99	9.92 S	139.16 E	485,620.32	2,065,581.78	0.51	0.83	
1,457.00	8.28	80.61	80.74	-283.73	1,445.97	8.96 S	152.66 E	485,621.28	2,065,595.28	1.81	2.84	
1,548.00	8.08	82.10	82.23	-193.65	1,536.05	7.01 S	165.46 E	485,623.23	2,065,608.08	0.32	5.76	
1,640.00	8.35	81.55	81.68	-102.60	1,627.10	5.14 S	178.47 E	485,625.10	2,065,621.09	0.31	8.63	
1,733.00	8.59	80.48	80.61	-10.61	1,719.09	3.00 S	192.00 E	485,627.24	2,065,634.62	0.31	11.81	
1,833.00	8.04	88.11	88.24	88.34	1,818.04	1.53 S	206.36 E	485,628.71	2,065,648.98	1.23	14.38	
1,927.00	8.10	89.64	89.77	181.41	1,911.11	1.27 S	219.55 E	485,628.97	2,065,662.17	0.24	15.65	
2,022.00	8.23	88.57	88.70	275.45	2,005.15	1.06 S	233.04 E	485,629.18	2,065,675.66	0.21	16.90	
2,117.00	7.80	91.38	91.51	369.52	2,099.22	1.05 S	246.28 E	485,629.19	2,065,688.90	0.61	17.94	
2,212.00	7.87	92.96	93.09	463.63	2,193.33	1.54 S	259.22 E	485,628.70	2,065,701.84	0.24	18.44	
2,307.00	6.87	91.64	91.77	557.85	2,287.55	2.04 S	271.39 E	485,628.20	2,065,714.01	1.07	18.89	
2,402.00	6.40	90.75	90.88	652.21	2,381.91	2.27 S	282.37 E	485,627.97	2,065,724.99	0.51	19.50	
2,497.00	6.43	80.32	80.45	746.62	2,476.32	1.44 S	292.91 E	485,628.80	2,065,735.53	1.23	21.13	
2,592.00	7.74	80.94	81.07	840.89	2,570.59	0.46 N	304.47 E	485,630.70	2,065,747.09	1.38	23.92	
2,687.00	7.63	81.26	81.39	935.04	2,664.74	2.42 N	317.02 E	485,632.66	2,065,759.64	0.12	26.85	
2,782.00	7.83	81.73	81.86	1,029.17	2,758.87	4.31 N	329.66 E	485,634.55	2,065,772.28	0.22	29.71	
2,877.00	6.93	88.93	89.06	1,123.39	2,853.09	5.35 N	341.79 E	485,635.59	2,065,784.41	1.36	31.68	
2,972.00	5.22	100.37	100.50	1,217.85	2,947.55	4.68 N	351.77 E	485,634.92	2,065,794.39	2.20	31.78	
3,067.00	3.20	107.14	107.27	1,312.59	3,042.29	3.12 N	358.56 E	485,633.36	2,065,801.18	2.19	30.75	
3,162.00	1.02	107.98	108.11	1,407.52	3,137.22	2.08 N	361.90 E	485,632.32	2,065,804.52	2.29	29.96	
3,193.00	1.01	84.83	84.96	1,438.52	3,168.22	2.02 N	362.43 E	485,632.26	2,065,805.05	1.31	29.94	

Design Report for Young Trust 2309 #35-1H - Wellbore #1

Measured Depth (ft)	Inclination (°)	Grid Azimuth (°)	True Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates (ft)		Map Coordinates (ft)		Dogleg Rate (°/100ft)	Vertical Section (ft)	Comments
						Northing	Easting	Northing	Easting			
3,225.00	0.95	78.61	78.74	1,470.51	3,200.21	2.10 N	362.97 E	485,632.34	2,065,805.59	0.38	30.06	
3,257.00	2.01	31.06	31.19	1,502.50	3,232.20	2.63 N	363.52 E	485,632.87	2,065,806.14	4.81	30.64	
3,289.00	3.87	13.24	13.37	1,534.46	3,264.16	4.16 N	364.06 E	485,634.40	2,065,806.68	6.41	32.21	
3,320.00	5.90	2.33	2.46	1,565.35	3,295.05	6.77 N	364.36 E	485,637.01	2,065,806.98	7.17	34.83	
3,352.00	8.35	0.13	0.26	1,597.10	3,326.80	10.74 N	364.44 E	485,640.98	2,065,807.06	7.70	38.79	
3,384.00	11.91	358.67	358.80	1,628.59	3,358.29	16.37 N	364.37 E	485,646.61	2,065,806.98	11.15	44.40	
3,415.00	15.32	357.30	357.43	1,658.72	3,388.42	23.66 N	364.10 E	485,653.90	2,065,806.72	11.05	51.65	
3,447.00	18.63	356.33	356.46	1,689.32	3,419.02	32.98 N	363.57 E	485,663.22	2,065,806.19	10.38	60.90	
3,479.00	22.32	355.37	355.50	1,719.29	3,448.99	44.14 N	362.75 E	485,674.38	2,065,805.37	11.58	71.97	
3,510.00	25.87	353.84	353.97	1,747.59	3,477.29	56.74 N	361.55 E	485,686.98	2,065,804.17	11.63	84.43	
3,542.00	28.57	353.43	353.56	1,776.04	3,505.74	71.28 N	359.93 E	485,701.52	2,065,802.55	8.46	98.81	
3,574.00	31.73	353.68	353.81	1,803.71	3,533.41	87.25 N	358.13 E	485,717.49	2,065,800.74	9.88	114.59	
3,605.00	35.16	355.08	355.21	1,829.57	3,559.27	104.25 N	356.46 E	485,734.49	2,065,799.08	11.34	131.42	
3,637.00	38.61	357.38	357.51	1,855.17	3,584.87	123.41 N	355.21 E	485,753.65	2,065,797.83	11.61	150.42	
3,669.00	41.44	358.65	358.78	1,879.67	3,609.37	143.98 N	354.51 E	485,774.22	2,065,797.13	9.20	170.87	
3,700.00	44.22	359.53	359.66	1,902.40	3,632.10	165.05 N	354.18 E	485,795.29	2,065,796.80	9.17	191.85	
3,732.00	47.15	0.40	0.53	1,924.75	3,654.45	187.94 N	354.17 E	485,818.18	2,065,796.79	9.36	214.68	
3,764.00	50.85	0.93	1.06	1,945.74	3,675.44	212.09 N	354.45 E	485,842.33	2,065,797.07	11.63	238.77	
3,795.00	53.77	0.09	0.22	1,964.69	3,694.39	236.61 N	354.67 E	485,866.85	2,065,797.29	9.66	263.24	
3,827.00	57.13	359.57	359.70	1,982.84	3,712.54	262.97 N	354.59 E	485,893.21	2,065,797.21	10.58	289.51	
3,859.00	60.26	359.02	359.15	1,999.47	3,729.17	290.30 N	354.25 E	485,920.54	2,065,796.87	9.89	316.74	
3,891.00	63.37	358.79	358.92	2,014.58	3,744.28	318.50 N	353.71 E	485,948.74	2,065,796.33	9.74	344.81	
3,922.00	66.41	358.94	359.07	2,027.73	3,757.43	346.56 N	353.15 E	485,976.80	2,065,795.77	9.82	372.75	
3,954.00	69.26	359.46	359.59	2,039.80	3,769.50	376.19 N	352.74 E	486,006.43	2,065,795.36	9.03	402.26	
3,986.00	71.69	359.49	359.62	2,050.50	3,780.20	406.35 N	352.46 E	486,036.59	2,065,795.08	7.59	432.30	
4,017.00	74.05	359.72	359.85	2,059.63	3,789.33	435.97 N	352.26 E	486,066.21	2,065,794.88	7.65	461.82	
4,049.00	75.20	0.79	0.92	2,068.11	3,797.81	466.82 N	352.40 E	486,097.06	2,065,795.02	4.83	492.59	
4,081.00	77.06	1.25	1.38	2,075.78	3,805.48	497.88 N	352.95 E	486,128.12	2,065,795.57	5.98	523.60	
4,112.00	80.59	1.13	1.26	2,081.79	3,811.49	528.28 N	353.58 E	486,158.52	2,065,796.20	11.39	553.96	
4,179.11	85.71	0.51	0.64	2,089.79	3,819.49	594.89 N	354.54 E	486,225.13	2,065,797.16	7.68	620.44	Shell Young Trust 2309 #35-1H LP Rev 4
4,208.00	87.91	0.25	0.38	2,091.40	3,821.10	623.73 N	354.73 E	486,253.97	2,065,797.35	7.68	649.21	
4,293.00	89.17	359.69	359.82	2,093.57	3,823.27	708.70 N	354.68 E	486,338.94	2,065,797.30	1.62	733.92	
4,325.00	89.08	359.38	359.51	2,094.06	3,823.76	740.69 N	354.42 E	486,370.93	2,065,797.04	1.01	765.80	
4,420.00	91.08	0.25	0.38	2,093.92	3,823.62	835.69 N	354.12 E	486,465.92	2,065,796.74	2.30	860.49	
4,515.00	91.79	0.98	1.11	2,091.54	3,821.24	930.65 N	355.14 E	486,560.89	2,065,797.76	1.07	955.25	
4,609.00	90.15	1.27	1.40	2,089.95	3,819.65	1,024.61 N	356.98 E	486,654.85	2,065,799.60	1.77	1,049.08	
4,704.00	90.40	1.00	1.13	2,089.50	3,819.20	1,119.59 N	358.86 E	486,749.83	2,065,801.48	0.39	1,143.92	

Design Report for Young Trust 2309 #35-1H - Wellbore #1

Measured Depth (ft)	Inclination (°)	Grid Azimuth (°)	True Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates (ft)		Map Coordinates (ft)		Dogleg Rate (°/100ft)	Vertical Section (ft)	Comments
						Northing	Easting	Northing	Easting			
4,798.00	89.20	0.40	0.53	2,089.82	3,819.52	1,213.59 N	360.01 E	486,843.82	2,065,802.63	1.43	1,237.72	
4,893.00	88.46	0.33	0.46	2,091.76	3,821.46	1,308.56 N	360.62 E	486,938.80	2,065,803.24	0.78	1,332.46	
4,988.00	89.63	0.22	0.35	2,093.35	3,823.05	1,403.55 N	361.07 E	487,033.78	2,065,803.69	1.24	1,427.20	
5,079.00	90.06	359.56	359.69	2,093.59	3,823.29	1,494.55 N	360.90 E	487,124.78	2,065,803.52	0.87	1,517.91	
5,170.00	88.37	358.84	358.97	2,094.84	3,824.54	1,585.52 N	359.63 E	487,215.76	2,065,802.25	2.02	1,608.52	
5,261.00	88.25	358.22	358.35	2,097.52	3,827.22	1,676.45 N	357.29 E	487,306.69	2,065,799.91	0.69	1,699.00	
5,299.68	88.39	358.52	358.65	2,098.66	3,828.36	1,715.10 N	356.19 E	487,345.34	2,065,798.81	0.85	1,737.45	Shell Young Trust 2309 #35-1H IP Rev 4
5,352.00	88.58	358.92	359.05	2,100.04	3,829.74	1,767.39 N	355.02 E	487,397.63	2,065,797.64	0.85	1,789.49	
5,442.00	89.26	0.21	0.34	2,101.74	3,831.44	1,857.37 N	354.34 E	487,487.61	2,065,796.96	1.62	1,879.15	
5,533.00	90.55	1.19	1.32	2,101.89	3,831.59	1,948.36 N	355.45 E	487,578.60	2,065,798.07	1.78	1,969.96	
5,625.00	90.18	0.36	0.49	2,101.30	3,831.00	2,040.35 N	356.70 E	487,670.58	2,065,799.32	0.99	2,061.77	
5,717.00	90.46	0.46	0.59	2,100.79	3,830.49	2,132.34 N	357.36 E	487,762.58	2,065,799.97	0.32	2,153.54	
5,811.00	90.98	359.67	359.80	2,099.61	3,829.31	2,226.34 N	357.46 E	487,856.57	2,065,800.08	1.01	2,247.26	
5,905.00	90.99	359.55	359.68	2,097.99	3,827.69	2,320.32 N	356.82 E	487,950.56	2,065,799.44	0.13	2,340.92	
6,000.00	90.09	0.36	0.49	2,097.10	3,826.80	2,415.31 N	356.75 E	488,045.55	2,065,799.37	1.27	2,435.62	
6,095.00	89.60	0.53	0.66	2,097.35	3,827.05	2,510.31 N	357.49 E	488,140.55	2,065,800.10	0.55	2,530.39	
6,190.00	89.85	0.10	0.23	2,097.81	3,827.51	2,605.31 N	358.01 E	488,235.54	2,065,800.63	0.52	2,625.15	
6,285.00	89.94	359.92	360.05	2,097.98	3,827.68	2,700.31 N	358.02 E	488,330.54	2,065,800.64	0.21	2,719.87	
6,380.00	91.51	359.96	360.09	2,096.78	3,826.48	2,795.30 N	357.92 E	488,425.53	2,065,800.54	1.65	2,814.57	
6,475.00	91.45	359.71	359.84	2,094.33	3,824.03	2,890.26 N	357.65 E	488,520.50	2,065,800.27	0.27	2,909.23	
6,570.00	92.22	359.25	359.38	2,091.29	3,820.99	2,985.21 N	356.79 E	488,615.44	2,065,799.41	0.94	3,003.83	
6,665.00	91.91	359.37	359.50	2,087.86	3,817.56	3,080.14 N	355.65 E	488,710.38	2,065,798.27	0.35	3,098.39	
6,760.00	91.17	359.35	359.48	2,085.31	3,815.01	3,175.10 N	354.59 E	488,805.33	2,065,797.20	0.78	3,192.98	
6,855.00	89.97	0.11	0.24	2,084.36	3,814.06	3,270.09 N	354.14 E	488,900.33	2,065,796.76	1.50	3,287.66	
6,950.00	90.68	359.96	360.09	2,083.83	3,813.53	3,365.09 N	354.20 E	488,995.32	2,065,796.82	0.76	3,382.38	
7,045.00	90.03	0.94	1.07	2,083.24	3,812.94	3,460.08 N	354.94 E	489,090.32	2,065,797.56	1.24	3,477.15	
7,140.00	89.29	0.18	0.31	2,083.80	3,813.50	3,555.08 N	355.87 E	489,185.31	2,065,798.49	1.12	3,571.93	
7,236.00	89.75	0.48	0.61	2,084.60	3,814.30	3,651.07 N	356.42 E	489,281.30	2,065,799.04	0.57	3,667.68	
7,331.00	90.06	0.14	0.27	2,084.76	3,814.46	3,746.07 N	356.94 E	489,376.30	2,065,799.56	0.48	3,762.44	
7,426.00	89.85	0.49	0.62	2,084.84	3,814.54	3,841.07 N	357.46 E	489,471.30	2,065,800.08	0.43	3,857.19	
7,521.00	90.37	0.04	0.17	2,084.65	3,814.35	3,936.07 N	357.90 E	489,566.30	2,065,800.52	0.72	3,951.94	
7,616.00	89.63	359.87	360.00	2,084.65	3,814.35	4,031.07 N	357.82 E	489,661.30	2,065,800.44	0.80	4,046.65	
7,711.00	91.14	359.31	359.44	2,084.02	3,813.72	4,126.06 N	357.14 E	489,756.29	2,065,799.76	1.70	4,141.31	
7,806.00	92.24	359.84	359.97	2,081.21	3,810.91	4,221.01 N	356.44 E	489,851.24	2,065,799.06	1.29	4,235.93	
7,901.00	90.61	0.13	0.26	2,078.85	3,808.55	4,315.98 N	356.42 E	489,946.21	2,065,799.03	1.74	4,330.61	
7,996.00	90.18	359.62	359.75	2,078.20	3,807.90	4,410.98 N	356.21 E	490,041.21	2,065,798.83	0.70	4,425.31	
8,076.00	90.46	359.22	359.35	2,077.75	3,807.45	4,490.97 N	355.40 E	490,121.20	2,065,798.02	0.61	4,505.00	End MWD @ 8076.00 MD



Design Report for Young Trust 2309 #35-1H - Wellbore #1

Measured Depth (ft)	Inclination (°)	Grid Azimuth (°)	True Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates (ft)		Map Coordinates (ft)		Dogleg Rate (°/100ft)	Vertical Section (ft)	Comments
						Northing	Easting	Northing	Easting			
8,130.00	90.46	359.22	359.35	2,077.32	3,807.02	4,544.96 N	354.66 E	490,175.19	2,065,797.28	0.00	4,558.78	Projection to TD @ 8130.00 MD - Shell Young Trust 2309 #35-1H PBHL Rev 4

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates (ft)		Comment
		+N/-S	+E/-W	
141.00	141.00	-0.09	0.15	Start MWD @ 141.00 MD
8,076.00	3,807.45	4,490.97	355.40	End MWD @ 8076.00 MD
8,130.00	3,807.02	4,544.96	354.66	Projection to TD @ 8130.00 MD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin (ft)		Start TVD (ft)
				+N/_S	+E/-W	
User	No Target (Freehand)	4.42	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
141.00	286.00	Run 0100	MWD+SC
368.00	4,208.00	Run 0200	MWD+SC
4,293.00	7,521.00	Run 0300	MWD+SC
7,616.00	8,130.00	Run 0400	MWD+SC

Design Targets

Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target									
- Shape	()	()	()	()	()	()	()		

Design Report for Young Trust 2309 #35-1H - Wellbore #1

Directional Difficulty Index

Average Dogleg over Survey: 1.97 °/100ft

Maximum Dogleg over Survey: 11.63 °/100ft at 3,764.00 ft

Net Tortosity applicable to Plans: 0.79 °/100ft

Directional Difficulty Index: 6.222

Audit Info

North Reference Sheet for Sec 35-T23S-R09W (Grid) - Young Trust 2309 #35-1H - Wellbore #1

All data is in Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to WELL @ 1729.70ft (Nomac 102 (31.7')). Northing and Easting are relative to Young Trust 2309 #35-1H

Coordinate System is US State Plane 1927 (Exact solution), Kansas South 1502 using datum NAD 1927 (NADCON CONUS), ellipsoid Clarke 1866

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is 98° 30' 0.000 W°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:37° 16' 0.000 N°

False Easting: 2,000,000.00ft, False Northing: 0.00ft, Scale Reduction: 0.99993695

Grid Coordinates of Well: 485,630.24 ft N, 2,065,442.62 ft E

Geographical Coordinates of Well: 38° 00' 00.63" N, 098° 16' 22.40" W

Grid Convergence at Surface is: 0.14°

Based upon Minimum Curvature type calculations, at a Measured Depth of 8,130.00ft the Bottom Hole Displacement is 4,558.78ft in the Direction of 4.46° (Grid).

Magnetic Convergence at surface is: -4.62° (24 January 2013, , BGGM2012)

