

# Suncor Energy

Meadow Creek East(NAD83)

4-85-9W4(2019 Program\_5 Wells)

SUNCOR ETAL 7-4SL HANGSTN 3-4-85-9

1AA/3-4 Lic #0492236

Design: 1AA/3-4 - Final Survey

## Sperry Drilling Services Combo Report

06 February, 2019

BH UWI : 1AA030408509W400

Well Coordinates: 6,243,692.52 N, 477,742.07 E (56° 20' 14.70" N, 111° 21' 36.09" W)

Ground Level: 726.90 m

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Centered on Well SUNCOR ETAL 7-4SL HANGSTN 3-4-85-9

Actual RKB @ 731.25m (Precision #171)

N

True

SI

Version: 5000.15 Build: 91

**HALLIBURTON**

## Design Report for SUNCOR ETAL 7-4SL HANGSTN 3-4-85-9 - 1AA/3-4 - Final Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	TVD below System	Vertical Depth (m)	Local Coordinates		Map Coordinates		Dogleg Rate (°/30m)	Vertical Section (m)	Comments
					Northing (m)	Easting (m)	Northing (m)	Easting (m)			
0.00	45.00	212.78	-731.25	0.00	3.66 N	2.36 E	6,243,696.17	477,744.45	0.000	-4.35	
6.15	45.00	212.78	-726.90	4.35	0.00 N	0.01 E	6,243,692.52	477,742.08	0.000	-0.01	RKB to GL
33.48	44.06	211.75	-707.42	23.83	16.20 S	10.23 W	6,243,676.37	477,731.76	1.301	19.16	
43.02	43.31	213.02	-700.52	30.73	21.77 S	13.76 W	6,243,670.83	477,728.20	3.629	25.75	
52.53	42.91	214.43	-693.58	37.67	27.17 S	17.36 W	6,243,665.44	477,724.56	3.291	32.25	
62.11	44.24	214.94	-686.64	44.61	32.60 S	21.12 W	6,243,660.03	477,720.78	4.308	38.84	
71.65	44.18	215.42	-679.80	51.45	38.04 S	24.95 W	6,243,654.61	477,716.92	1.069	45.49	
81.18	43.84	214.84	-672.94	58.31	43.45 S	28.76 W	6,243,649.22	477,713.08	1.660	52.11	
90.68	43.69	214.90	-666.08	65.17	48.84 S	32.52 W	6,243,643.85	477,709.29	0.491	58.67	
100.35	43.82	214.23	-659.10	72.15	54.35 S	36.31 W	6,243,638.36	477,705.47	1.493	65.36	
109.84	44.05	212.89	-652.26	78.99	59.84 S	39.95 W	6,243,632.89	477,701.80	3.028	71.94	
119.36	44.25	212.29	-645.43	85.82	65.43 S	43.53 W	6,243,627.32	477,698.20	1.460	78.57	
128.71	44.35	212.18	-638.74	92.51	70.95 S	47.01 W	6,243,621.82	477,694.69	0.405	85.10	
138.05	44.81	212.65	-632.09	99.16	76.48 S	50.52 W	6,243,616.30	477,691.15	1.818	91.66	
147.62	45.44	212.51	-625.34	105.91	82.20 S	54.18 W	6,243,610.61	477,687.47	1.999	98.44	
157.18	45.83	212.85	-618.65	112.60	87.95 S	57.87 W	6,243,604.87	477,683.75	1.442	105.27	
166.69	46.06	212.95	-612.04	119.21	93.69 S	61.58 W	6,243,599.15	477,680.00	0.760	112.11	
176.09	46.20	213.05	-605.52	125.73	99.37 S	65.27 W	6,243,593.49	477,676.28	0.503	118.88	
185.58	46.02	212.61	-598.95	132.30	105.12 S	68.98 W	6,243,587.76	477,672.54	1.153	125.72	
195.13	45.37	211.72	-592.28	138.97	110.90 S	72.62 W	6,243,582.00	477,668.88	2.859	132.56	
204.47	45.83	211.81	-585.74	145.51	116.58 S	76.13 W	6,243,576.34	477,665.33	1.492	139.23	
214.03	45.44	211.41	-579.06	152.19	122.40 S	79.71 W	6,243,570.54	477,661.72	1.518	146.06	
227.74	45.09	211.20	-569.41	161.84	130.72 S	84.77 W	6,243,562.25	477,656.62	0.833	155.80	
241.42	44.99	211.09	-559.74	171.51	139.00 S	89.78 W	6,243,553.99	477,651.57	0.278	165.47	
255.13	44.03	210.89	-549.96	181.29	147.24 S	94.73 W	6,243,545.77	477,646.58	2.123	175.08	
268.85	44.64	211.94	-540.15	191.10	155.42 S	99.72 W	6,243,537.62	477,641.53	2.086	184.67	
282.55	44.63	212.87	-530.40	200.85	163.55 S	104.88 W	6,243,529.52	477,636.33	1.431	194.29	
296.22	45.52	212.91	-520.75	210.50	171.68 S	110.14 W	6,243,521.42	477,631.04	1.954	203.97	
309.90	45.92	213.14	-511.20	220.05	179.89 S	115.48 W	6,243,513.24	477,625.65	0.949	213.76	
323.00	45.02	212.59	-502.01	229.24	187.73 S	120.54 W	6,243,505.42	477,620.55	2.248	223.10	
342.00	45.05	212.13	-488.58	242.67	199.09 S	127.74 W	6,243,494.10	477,613.29	0.516	236.55	Interpolation @ Surface Casing
350.24	45.07	211.93	-482.76	248.49	204.03 S	130.83 W	6,243,489.17	477,610.17	0.521	242.38	
363.94	45.54	211.81	-473.13	258.12	212.30 S	135.97 W	6,243,480.93	477,604.99	1.046	252.12	
377.60	46.88	212.39	-463.67	267.58	220.66 S	141.21 W	6,243,472.60	477,599.70	3.083	261.98	
391.33	49.97	211.35	-454.56	276.69	229.38 S	146.64 W	6,243,463.91	477,594.24	6.962	272.24	
404.98	52.40	211.11	-446.01	285.24	238.47 S	152.15 W	6,243,454.84	477,588.68	5.356	282.88	
418.65	55.17	213.05	-437.93	293.32	247.82 S	158.01 W	6,243,445.53	477,582.77	6.982	293.90	
432.45	53.08	214.00	-429.85	301.40	257.14 S	164.18 W	6,243,436.24	477,576.54	4.842	305.08	
446.15	53.60	213.10	-421.67	309.58	266.30 S	170.26 W	6,243,427.12	477,570.42	1.948	316.07	

## Design Report for SUNCOR ETAL 7-4SL HANGSTN 3-4-85-9 - 1AA/3-4 - Final Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	TVD below System	Vertical Depth (m)	Local Coordinates		Map Coordinates		Dogleg Rate (°/30m)	Vertical Section (m)	Comments
					Northing (m)	Easting (m)	Northing (m)	Easting (m)			
459.84	51.98	212.67	-413.39	317.86	275.45 S	176.18 W	6,243,417.99	477,564.46	3.628	326.97	
473.53	52.47	212.18	-405.00	326.25	284.59 S	181.98 W	6,243,408.89	477,558.61	1.369	337.79	
487.20	51.55	212.22	-396.59	334.66	293.70 S	187.72 W	6,243,399.80	477,552.82	2.020	348.57	
500.89	50.78	212.58	-388.00	343.25	302.71 S	193.43 W	6,243,390.83	477,547.06	1.796	359.23	
514.57	51.18	212.62	-379.39	351.86	311.66 S	199.16 W	6,243,381.91	477,541.28	0.880	369.86	
528.24	51.16	212.35	-370.82	360.43	320.64 S	204.88 W	6,243,372.95	477,535.52	0.464	380.51	
541.90	49.80	213.29	-362.13	369.12	329.50 S	210.59 W	6,243,364.13	477,529.76	3.385	391.04	
555.57	49.88	213.39	-353.31	377.94	338.23 S	216.33 W	6,243,355.43	477,523.97	0.243	401.49	
569.26	50.29	212.77	-344.53	386.72	347.02 S	222.06 W	6,243,346.66	477,518.20	1.376	411.99	
582.92	49.68	212.57	-335.74	395.51	355.83 S	227.71 W	6,243,337.88	477,512.50	1.381	422.45	
596.60	48.27	212.90	-326.76	404.49	364.51 S	233.29 W	6,243,329.23	477,506.88	3.140	432.77	
610.28	47.89	212.55	-317.62	413.63	373.08 S	238.79 W	6,243,320.70	477,501.33	1.010	442.95	
623.97	47.37	212.44	-308.40	422.85	381.61 S	244.23 W	6,243,312.20	477,495.85	1.153	453.07	
637.76	50.14	214.15	-299.31	431.94	390.27 S	249.92 W	6,243,303.56	477,490.11	6.643	463.43	
651.51	50.19	214.11	-290.50	440.75	399.01 S	255.84 W	6,243,294.85	477,484.14	0.128	473.99	
665.21	51.85	213.95	-281.88	449.37	407.84 S	261.80 W	6,243,286.06	477,478.14	3.645	484.63	
678.89	51.99	213.21	-273.44	457.81	416.81 S	267.76 W	6,243,277.12	477,472.13	1.314	495.40	
692.57	52.22	212.72	-265.04	466.21	425.86 S	273.63 W	6,243,268.09	477,466.21	0.987	506.20	
706.25	52.62	212.60	-256.70	474.55	434.99 S	279.48 W	6,243,259.00	477,460.32	0.902	517.04	
721.00	53.32	212.32	-247.82	483.43	444.93 S	285.80 W	6,243,249.09	477,453.94	1.495	528.81	
739.00	53.30	212.30	-237.06	494.19	457.13 S	293.52 W	6,243,236.94	477,446.17	0.043	543.25	Extrapolation to FTD @739.00mMD

### Design Annotations

Measured Depth (m)	Vertical Depth (m)	Local Coordinates		Comment
		+N/-S (m)	+E/-W (m)	
6.15	4.35	0.00	0.01	RKB to GL
342.00	242.67	-199.09	-127.74	Interpolation @ Surface Casing
739.00	494.19	-457.13	-293.52	Extrapolation to FTD @739.00mMD

### Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (m)
				+N/-S (m)	+E/-W (m)	
TD	No Target (Freehand)	212.70	Slot	0.00	0.00	0.00

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### Survey tool program

From (m)	To (m)	Survey/Plan	Survey Tool
6.15	323.00	3-4 Surface Job #905395230	MWD (fd2)
323.00	739.00	3-4 Main Job #905395230	MWD (fd2)

### Casing Details

Measured Depth (m)	Vertical Depth (m)	Name	Casing Diameter (mm)	Hole Diameter (mm)
342.00	242.67	Open Hole	0.00	251.00
739.00	494.19	Open Hole	0.00	156.00

### Design Targets

Target Name - hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (m)	+N/-S (m)	+E/-W (m)	Northing (m)	Easting (m)	Latitude	Longitude
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### Directional Difficulty Index

Average Dogleg over Survey:	1.978 °/30m	Maximum Dogleg over Survey:	6.982 °/30m at 418.65 m
Net Tortousity applicable to Plans:	1.724 °/30m	Directional Difficulty Index:	5.117

### Audit Info

**North Reference Sheet for 4-85-9W4(2019 Program\_5 Wells) - SUNCOR ETAL 7-4SL HANGSTN 3-4-85-9 -  
1AA/3-4 Lic #0492236**

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

Vertical Depths are relative to Actual RKB @ 731.25m (Precision #171). Northing and Easting are relative to SUNCOR ETAL 7-4SL HANGSTN 3-4-85-9

Coordinate System is Universal Transverse Mercator , Zone 12N (114 W to 108 W) using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Transverse Mercator (Gauss-Kruger)

Central Meridian is 111° 0' 0.000 W°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:0° 0' 0.000 N°

False Easting: 500,000.00m, False Northing: 0.00m, Scale Reduction: 0.99960608

Grid Coordinates of Well: 6,243,692.52 m N, 477,742.07 m E

Geographical Coordinates of Well: 56° 20' 14.70" N, 111° 21' 36.09" W

Grid Convergence at Surface is: -0.30°

Based upon Minimum Curvature type calculations, at a Measured Depth of 739.00m

the Bottom Hole Displacement is 543.25m in the Direction of 212.70° ( True).

Magnetic Convergence at surface is: -17.62° (31 December 2004, , IGRF2000)

