

**WOOLSEY OPERATING COMPANY, LLC**  
 125 North Market, Suite 1000, Wichita, Kansas 67202  
 Phone: 316-267-4379 Fax 316-267-4383

**TUCKER B-5 H**  
 Harbaugh East Prospect  
 Survey: 250' FNL, 425' FEL  
 Apx W2 E2 NE NE Section 11-34-11W  
 Barber County, Kansas

API: 15-007-23787-01-00  
 Spud: 10/16/2011  
 Elev: 1400' GL 1416' KB  
 Field: Schubach  
 Acctg code: KDWT12

**DRILLING REPORT**

**Deviation surveys:** Please refer to Pan American report below

**Pan American Drilling Services**

Reference : TRUENORTH      KB Elevation : 15      Gr Elevation : 1400.00  
 Vertical Section Calculated Along Azimuth 180.48°

MD	Inc	Azi	TVD	North	East	V'Sect	D'Leg	Build	Turn
ft	deg	deg	ft	ft	ft	ft	%/100	%/100	%/100
3620.00	0.60	314.70	3619.94	4.92	-9.85	-4.84	0.00	0.00	0.00
3649.00	0.50	303.40	3648.94	5.10	-10.06	-5.01	0.51	-0.34	-38.97
3681.00	0.40	281.60	3680.93	5.20	-10.29	-5.11	0.61	-0.31	-68.12
3712.00	1.80	193.60	3711.93	4.74	-10.51	-4.66	5.90	4.52	-283.87
3744.00	5.30	189.80	3743.86	2.80	-10.88	-2.71	10.96	10.94	-11.87
3775.00	8.40	188.80	3774.64	-0.85	-11.47	0.95	10.01	10.00	-3.23
3806.00	11.00	188.80	3805.19	-6.01	-12.27	6.11	8.39	8.39	0.00
3838.00	13.00	188.90	3836.49	-12.59	-13.29	12.70	6.25	6.25	0.31
3870.00	14.80	185.80	3867.55	-20.21	-14.26	20.33	6.09	5.62	-9.69
3900.00	17.10	182.90	3896.40	-28.43	-14.87	28.55	8.11	7.67	-9.67
3931.00	19.50	178.80	3925.83	-38.15	-14.99	38.28	8.78	7.74	-13.23
3963.00	21.60	178.10	3955.79	-49.38	-14.69	49.50	6.61	6.56	-2.19
3995.00	22.90	180.60	3985.41	-61.49	-14.56	61.61	5.02	4.06	7.81
4026.00	24.90	183.80	4013.75	-74.04	-15.05	74.16	7.69	6.45	10.32
4058.00	27.10	185.40	4042.51	-88.02	-16.18	88.15	7.22	6.87	5.00
4089.00	29.10	184.60	4069.85	-102.56	-17.45	102.71	6.56	6.45	-2.58
4121.00	31.50	183.30	4097.48	-118.67	-18.56	118.82	7.77	7.50	-4.06
4153.00	34.30	182.60	4124.35	-136.03	-19.45	136.18	8.83	8.75	-2.19
4184.00	37.00	181.30	4149.53	-154.08	-20.06	154.24	9.05	8.71	-4.19
4215.00	39.90	180.80	4173.81	-173.35	-20.41	173.52	9.41	9.35	-1.61
4246.00	43.50	179.80	4196.95	-193.97	-20.51	194.14	11.81	11.61	-3.23
4278.00	47.30	178.60	4219.42	-216.75	-20.18	216.91	12.17	11.88	-3.75
4310.00	50.90	179.10	4240.37	-240.93	-19.70	241.08	11.31	11.25	1.56
4341.00	53.30	179.80	4259.41	-265.38	-19.47	265.54	7.94	7.74	2.26
4372.00	55.50	180.10	4277.45	-290.59	-19.45	290.74	7.14	7.10	0.97
4404.00	58.20	180.10	4294.95	-317.38	-19.49	317.53	8.44	8.44	0.00
4436.00	60.40	179.90	4311.29	-344.89	-19.49	345.04	6.90	6.87	-0.62
4468.00	62.30	179.90	4326.63	-372.97	-19.44	373.12	5.94	5.94	0.00
4499.00	64.80	179.40	4340.43	-400.72	-19.27	400.87	8.19	8.06	-1.61
4531.00	67.10	179.40	4353.47	-429.94	-18.97	430.09	7.19	7.19	0.00
4562.00	67.40	179.90	4365.46	-458.53	-18.79	458.67	1.77	0.97	1.61
4594.00	69.40	178.60	4377.24	-488.28	-18.40	488.42	7.30	6.25	-4.06
4626.00	69.70	178.80	4388.42	-518.25	-17.72	518.38	1.11	0.94	0.63
4658.00	69.40	178.80	4399.60	-548.23	-17.09	548.35	0.94	-0.94	0.00
4690.00	68.90	178.60	4410.99	-578.13	-16.41	578.24	1.67	-1.56	-0.63
4721.00	69.50	178.80	4422.00	-607.10	-15.76	607.21	2.03	1.94	0.65
4752.00	68.70	178.60	4433.06	-636.05	-15.10	636.16	2.65	-2.58	-0.65
4784.00	68.20	178.80	4444.81	-665.81	-14.42	665.90	1.67	-1.56	0.63
4816.00	68.80	179.10	4456.54	-695.58	-13.88	695.67	2.07	1.88	0.94
4847.00	68.60	178.80	4467.80	-724.45	-13.35	724.54	1.11	-0.65	-0.97
4879.00	68.30	178.60	4479.56	-754.21	-12.68	754.29	1.10	-0.94	-0.63
4911.00	68.30	178.80	4491.39	-783.93	-12.00	784.01	0.58	0.00	0.63
4941.00	67.90	179.10	4502.58	-811.76	-11.49	811.83	1.62	-1.33	1.00
4973.00	67.70	179.30	4514.67	-841.39	-11.08	841.45	0.85	-0.63	0.63

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**DRILLING REPORT**

5005.00	68.10	179.90	4526.71	-871.04	-10.87	871.10	2.14	1.25	1.88
5037.00	68.80	180.60	4538.46	-900.80	-11.00	900.86	2.99	2.19	2.19
5068.00	68.30	180.60	4549.80	-929.65	-11.30	929.71	1.61	-1.61	0.00
5100.00	69.10	180.30	4561.42	-959.46	-11.54	959.53	2.65	2.50	-0.94
5132.00	71.30	180.40	4572.26	-989.57	-11.72	989.63	6.88	6.88	0.31
5163.00	73.10	180.60	4581.74	-1019.08	-11.98	1019.15	5.84	5.81	0.65
5208.00	73.60	180.60	4594.63	-1062.19	-12.43	1062.26	1.11	1.11	0.00
5240.00	75.70	179.80	4603.10	-1093.05	-12.54	1093.12	6.99	6.56	-2.50
5271.00	79.40	178.30	4609.78	-1123.31	-12.03	1123.37	12.84	11.94	-4.84
5302.00	82.00	178.10	4614.79	-1153.88	-11.07	1153.94	8.41	8.39	-0.65
5334.00	86.10	178.10	4618.11	-1185.69	-10.02	1185.73	12.81	12.81	0.00
5366.00	89.30	179.30	4619.39	-1217.65	-9.29	1217.68	10.68	10.00	3.75
5397.00	90.10	179.30	4619.56	-1248.65	-8.91	1248.68	2.58	2.58	0.00
5429.00	91.20	178.90	4619.19	-1280.64	-8.41	1280.67	3.66	3.44	-1.25
5460.00	92.10	178.80	4618.30	-1311.62	-7.79	1311.64	2.92	2.90	-0.32
5492.00	91.90	179.80	4617.18	-1343.60	-7.40	1343.61	3.19	-0.63	3.12
5524.00	92.30	180.30	4616.01	-1375.58	-7.42	1375.59	2.00	1.25	1.56
5555.00	92.40	181.30	4614.74	-1406.55	-7.86	1406.56	3.24	0.32	3.23
5587.00	92.50	181.40	4613.37	-1438.51	-8.61	1438.53	0.44	0.31	0.31
5619.00	91.70	181.30	4612.20	-1470.48	-9.36	1470.50	2.52	-2.50	-0.31
5651.00	90.30	181.30	4611.64	-1502.46	-10.09	1502.50	4.38	-4.38	0.00
5683.00	89.90	181.30	4611.59	-1534.46	-10.82	1534.49	1.25	-1.25	0.00
5715.00	89.80	181.80	4611.67	-1566.44	-11.68	1566.49	1.59	-0.31	1.56
5746.00	89.60	181.80	4611.83	-1597.43	-12.65	1597.48	0.65	-0.65	0.00
5778.00	89.30	181.90	4612.14	-1629.41	-13.69	1629.47	0.99	-0.94	0.31
5810.00	89.80	181.80	4612.39	-1661.39	-14.72	1661.46	1.59	1.56	-0.31
5841.00	90.20	181.80	4612.39	-1692.38	-15.69	1692.45	1.29	1.29	0.00
5873.00	90.20	181.60	4612.28	-1724.36	-16.64	1724.44	0.62	0.00	-0.63
5904.00	90.50	181.60	4612.09	-1755.35	-17.51	1755.43	0.97	0.97	0.00
5936.00	91.20	181.30	4611.61	-1787.34	-18.32	1787.43	2.38	2.19	-0.94
5968.00	90.70	181.10	4611.08	-1819.32	-18.99	1819.42	1.68	-1.56	-0.63
6000.00	89.20	180.80	4611.11	-1851.32	-19.52	1851.42	4.78	-4.69	-0.94
6031.00	89.00	180.80	4611.60	-1882.31	-19.95	1882.41	0.65	-0.65	0.00
6063.00	88.40	180.80	4612.32	-1914.30	-20.40	1914.40	1.88	-1.88	0.00
6095.00	88.40	181.10	4613.22	-1946.28	-20.93	1946.39	0.94	0.00	0.94
6127.00	88.30	181.10	4614.14	-1978.26	-21.54	1978.38	0.31	-0.31	0.00
6159.00	89.40	180.80	4614.78	-2010.25	-22.07	2010.37	3.56	3.44	-0.94
6191.00	90.80	180.30	4614.73	-2042.25	-22.38	2042.37	4.65	4.38	-1.56
6222.00	89.80	180.30	4614.56	-2073.25	-22.54	2073.37	3.23	-3.23	0.00
6254.00	88.90	180.10	4614.93	-2105.25	-22.66	2105.36	2.88	-2.81	-0.63
6286.00	89.20	181.10	4615.46	-2137.24	-22.99	2137.36	3.26	0.94	3.13
6318.00	88.80	181.10	4616.02	-2169.23	-23.60	2169.35	1.25	-1.25	0.00
6349.00	89.70	181.40	4616.42	-2200.22	-24.28	2200.35	3.06	2.90	0.97
6381.00	90.70	182.10	4616.31	-2232.20	-25.26	2232.34	3.81	3.12	2.19
6413.00	90.60	181.90	4615.95	-2264.18	-26.37	2264.32	0.70	-0.31	-0.63
6444.00	88.80	182.10	4616.11	-2295.16	-27.46	2295.31	5.84	-5.81	0.65
6476.00	87.50	181.30	4617.14	-2327.13	-28.41	2327.29	4.77	-4.06	-2.50
6507.00	87.60	181.10	4618.47	-2358.09	-29.05	2358.26	0.72	0.32	-0.65
6539.00	87.80	180.60	4619.75	-2390.06	-29.53	2390.23	1.68	0.63	-1.56
6570.00	89.40	180.30	4620.51	-2421.05	-29.77	2421.22	5.25	5.16	-0.97
6602.00	89.30	180.10	4620.87	-2453.05	-29.88	2453.22	0.70	-0.31	-0.63

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6634.00	89.80	180.30	4621.12	-2485.05	-30.00	2485.21	1.68	1.56	0.63
6665.00	89.50	180.30	4621.31	-2516.05	-30.16	2516.21	0.97	-0.97	0.00
6697.00	89.30	180.10	4621.65	-2548.05	-30.27	2548.21	0.88	-0.63	-0.63
6729.00	89.10	180.10	4622.09	-2580.04	-30.32	2580.21	0.62	-0.63	0.00
6761.00	88.40	180.80	4622.79	-2612.03	-30.58	2612.20	3.09	-2.19	2.19
6792.00	88.20	181.10	4623.71	-2643.02	-31.09	2643.18	1.16	-0.65	0.97
6824.00	88.60	181.40	4624.61	-2675.00	-31.79	2675.17	1.56	1.25	0.94
6856.00	89.20	182.10	4625.22	-2706.98	-32.76	2707.16	2.88	1.87	2.19
6888.00	90.00	181.60	4625.44	-2738.96	-33.80	2739.14	2.95	2.50	-1.56
6919.00	90.00	181.30	4625.44	-2769.95	-34.58	2770.14	0.97	0.00	-0.97
6951.00	90.20	181.60	4625.39	-2801.94	-35.39	2802.14	1.13	0.63	0.94
6983.00	89.70	181.60	4625.42	-2833.92	-36.29	2834.13	1.56	-1.56	0.00
7015.00	89.10	180.80	4625.75	-2865.92	-36.96	2866.12	3.12	-1.88	-2.50
7046.00	88.70	180.30	4626.35	-2896.91	-37.25	2897.12	2.07	-1.29	-1.61
7078.00	88.50	180.10	4627.13	-2928.90	-37.36	2929.11	0.88	-0.63	-0.63
7110.00	89.00	180.10	4627.83	-2960.89	-37.42	2961.10	1.56	1.56	0.00
7142.00	89.10	180.10	4628.36	-2992.89	-37.48	2993.10	0.31	0.31	0.00
7173.00	88.30	180.10	4629.06	-3023.88	-37.53	3024.09	2.58	-2.58	0.00
7205.00	87.80	179.80	4630.15	-3055.86	-37.50	3056.07	1.82	-1.56	-0.94
7237.00	87.60	180.30	4631.43	-3087.83	-37.53	3088.04	1.68	-0.63	1.56
7269.00	88.10	180.90	4632.63	-3119.81	-37.87	3120.02	2.44	1.56	1.88
7301.00	89.00	181.40	4633.44	-3151.79	-38.51	3152.00	3.22	2.81	1.56
7332.00	91.00	182.10	4633.44	-3182.78	-39.45	3182.99	6.84	6.45	2.26
7364.00	92.20	182.60	4632.55	-3214.74	-40.77	3214.96	4.06	3.75	1.56
7396.00	92.20	181.60	4631.32	-3246.69	-41.94	3246.93	3.12	0.00	-3.13
7428.00	91.60	180.60	4630.26	-3278.67	-42.55	3278.91	3.64	-1.88	-3.12
7459.00	91.60	179.80	4629.39	-3309.65	-42.66	3309.89	2.58	0.00	-2.58
7491.00	91.40	179.60	4628.56	-3341.64	-42.49	3341.88	0.88	-0.63	-0.63
7522.00	91.90	179.30	4627.66	-3372.63	-42.19	3372.86	1.88	1.61	-0.97
7554.00	91.30	179.40	4626.77	-3404.61	-41.83	3404.84	1.90	-1.87	0.31
7586.00	89.50	178.60	4626.55	-3436.61	-41.27	3436.83	6.16	-5.62	-2.50
7618.00	88.40	177.90	4627.13	-3468.58	-40.30	3468.80	4.07	-3.44	-2.19
7650.00	88.60	178.30	4627.97	-3500.56	-39.24	3500.76	1.40	0.63	1.25
7681.00	88.50	177.90	4628.76	-3531.53	-38.21	3531.73	1.33	-0.32	-1.29
7713.00	89.20	177.80	4629.40	-3563.50	-37.01	3563.68	2.21	2.19	-0.31
7745.00	89.50	178.10	4629.76	-3595.48	-35.86	3595.65	1.33	0.94	0.94
7777.00	89.60	178.30	4630.01	-3627.46	-34.86	3627.63	0.70	0.31	0.62
7808.00	89.80	178.10	4630.17	-3658.44	-33.88	3658.60	0.91	0.65	-0.65
7838.00	89.80	178.10	4630.28	-3688.43	-32.89	3688.57	0.00	0.00	0.00
7870.00	89.80	177.80	4630.39	-3720.41	-31.75	3720.54	0.94	0.00	-0.94
7902.00	88.00	177.80	4631.01	-3752.38	-30.52	3752.50	5.62	-5.62	0.00
7933.00	86.20	177.10	4632.57	-3783.30	-29.14	3783.42	6.23	-5.81	-2.26
7965.00	86.00	176.90	4634.75	-3815.19	-27.47	3815.28	0.88	-0.63	-0.63
7996.00	85.90	177.10	4636.94	-3846.07	-25.85	3846.15	0.72	-0.32	0.65
8028.00	86.20	177.40	4639.14	-3877.95	-24.32	3878.02	1.32	0.94	0.94
8060.00	86.90	177.30	4641.07	-3909.86	-22.84	3909.92	2.21	2.19	-0.31
8092.00	87.70	177.60	4642.58	-3941.79	-21.42	3941.84	2.67	2.50	0.94
8123.00	87.60	178.30	4643.85	-3972.75	-20.31	3972.78	2.28	-0.32	2.26
8155.00	88.10	178.30	4645.05	-4004.71	-19.36	4004.73	1.56	1.56	0.00
8186.00	88.90	178.60	4645.86	-4035.69	-18.53	4035.70	2.76	2.58	0.97

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8218.00	89.30	178.60	4646.36	-4067.68	-17.74	4067.68	1.25	1.25	0.00
8250.00	89.40	178.60	4646.73	-4099.66	-16.96	4099.66	0.31	0.31	0.00
8282.00	89.20	178.90	4647.12	-4131.65	-16.26	4131.65	1.13	-0.63	0.94
8313.00	89.50	178.80	4647.47	-4162.65	-15.64	4162.63	1.02	0.97	-0.32
8345.00	89.70	178.40	4647.69	-4194.64	-14.86	4194.61	1.40	0.63	-1.25
8377.00	89.40	178.60	4647.94	-4226.62	-14.02	4226.59	1.13	-0.94	0.63
8408.00	88.90	178.90	4648.40	-4257.61	-13.35	4257.57	1.88	-1.61	0.97
8440.00	89.30	179.10	4648.91	-4289.60	-12.79	4289.56	1.40	1.25	0.63
8471.00	89.50	178.80	4649.23	-4320.60	-12.22	4320.55	1.16	0.65	-0.97
8503.00	89.10	179.30	4649.62	-4352.59	-11.69	4352.53	2.00	-1.25	1.56
8535.00	89.30	179.10	4650.07	-4384.58	-11.24	4384.52	0.88	0.63	-0.63
8567.00	89.60	179.30	4650.38	-4416.58	-10.80	4416.51	1.13	0.94	0.63
8598.00	89.30	179.10	4650.67	-4447.57	-10.36	4447.51	1.16	-0.97	-0.65
8630.00	89.50	179.40	4651.01	-4479.57	-9.94	4479.50	1.13	0.63	0.94
8662.00	89.00	179.90	4651.43	-4511.57	-9.75	4511.49	2.21	-1.56	1.56
8694.00	89.10	179.90	4651.96	-4543.56	-9.69	4543.48	0.31	0.31	0.00
8725.00	89.30	179.90	4652.39	-4574.56	-9.64	4574.48	0.65	0.65	0.00

Bottom Hole Closure 4574.57ft Along Azimuth 180.12°