



Gyroscopic Survey Report
for
K.P. Kauffman

| | |
|--------------------|--|
| Well Location | Weld County, Colorado |
| Well Name | James S. Haley Trustee No.2 |
| Rig Number | KPK 7 |
| Survey Date | 5/1/2014 |
| Latitude | 40.0893720°N |
| Longitude | 104.8935920°W |
| North Reference | True North |
| Grid Correction | None |
| Depth Reference | Ground Level (5016.00 ft) |
| Calculation Method | Minimum Curvature |
| Section (VS) Ref | 0.00N (ft), 0.00E (ft), 258.33Azim (deg) |
| Definitive Survey | JAMES S HALEY TRUSTEE #2 |
| Operator(s) | Jon Valenzuela |

Well Notes

Survey Report

Well Name: James S. Haley Trustee No.2
Survey: JAMES S HALEY TRUSTEE #2
Survey Date: 5/1/2014

| MD ft | Inc deg | Azim deg | TVD ft | VS ft | +N/-S ft | +E/-W ft | DLS °/100ft | Closure Distance ft | Closure Direction deg |
|----------|------------|-------------|-----------|----------|-------------|-------------|----------------|---------------------------|-----------------------------|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | Invalid | 0.00 | 0.00 |
| 50.37 | 0.70 | 194.21 | 50.37 | 0.13 | -0.30 | -0.08 | 1.38 | 0.31 | 194.21 |
| 99.26 | 0.71 | 192.69 | 99.25 | 0.39 | -0.88 | -0.21 | 0.05 | 0.91 | 193.70 |
| 149.94 | 0.43 | 204.82 | 149.93 | 0.63 | -1.36 | -0.36 | 0.60 | 1.41 | 194.97 |
| 199.05 | 0.32 | 242.77 | 199.05 | 0.87 | -1.59 | -0.56 | 0.54 | 1.69 | 199.52 |
| 249.84 | 0.32 | 240.68 | 249.83 | 1.15 | -1.73 | -0.82 | 0.02 | 1.91 | 205.30 |
| 298.89 | 0.30 | 232.21 | 298.88 | 1.39 | -1.87 | -1.04 | 0.11 | 2.14 | 209.00 |
| 349.18 | 0.37 | 227.64 | 349.17 | 1.65 | -2.06 | -1.26 | 0.15 | 2.42 | 211.45 |
| 399.26 | 0.45 | 215.03 | 399.25 | 1.93 | -2.33 | -1.49 | 0.25 | 2.77 | 212.64 |
| 448.68 | 0.47 | 220.51 | 448.66 | 2.24 | -2.65 | -1.74 | 0.10 | 3.17 | 213.29 |
| 498.95 | 0.59 | 206.54 | 498.94 | 2.56 | -3.04 | -1.99 | 0.34 | 3.63 | 213.23 |
| 549.22 | 0.79 | 192.32 | 549.20 | 2.86 | -3.60 | -2.18 | 0.52 | 4.21 | 211.15 |
| 599.33 | 0.81 | 186.80 | 599.31 | 3.11 | -4.29 | -2.29 | 0.16 | 4.87 | 208.12 |
| 649.73 | 0.81 | 184.97 | 649.70 | 3.33 | -5.00 | -2.37 | 0.05 | 5.53 | 205.32 |
| 699.31 | 0.77 | 187.67 | 699.28 | 3.54 | -5.68 | -2.44 | 0.11 | 6.18 | 203.26 |
| 748.87 | 0.76 | 193.42 | 748.83 | 3.79 | -6.33 | -2.56 | 0.16 | 6.83 | 202.03 |
| 799.80 | 0.83 | 195.87 | 799.76 | 4.10 | -7.02 | -2.74 | 0.14 | 7.53 | 201.35 |
| 849.93 | 0.83 | 193.62 | 849.88 | 4.43 | -7.72 | -2.93 | 0.07 | 8.25 | 200.77 |
| 899.53 | 0.83 | 185.06 | 899.47 | 4.68 | -8.42 | -3.04 | 0.25 | 8.96 | 199.86 |
| 949.05 | 0.63 | 182.76 | 948.99 | 4.85 | -9.05 | -3.09 | 0.41 | 9.56 | 198.84 |
| 999.94 | 0.50 | 183.30 | 999.88 | 4.98 | -9.55 | -3.11 | 0.26 | 10.04 | 198.06 |
| 1049.98 | 0.50 | 184.68 | 1049.92 | 5.10 | -9.98 | -3.14 | 0.03 | 10.47 | 197.48 |
| 1099.93 | 0.52 | 194.82 | 1099.87 | 5.26 | -10.42 | -3.22 | 0.18 | 10.91 | 197.17 |
| 1148.52 | 0.54 | 209.52 | 1148.45 | 5.51 | -10.83 | -3.39 | 0.28 | 11.35 | 197.37 |
| 1198.93 | 0.51 | 194.35 | 1198.86 | 5.76 | -11.25 | -3.56 | 0.28 | 11.80 | 197.55 |
| 1248.95 | 0.40 | 237.27 | 1248.88 | 6.02 | -11.56 | -3.76 | 0.69 | 12.16 | 198.02 |
| 1298.83 | 0.32 | 243.95 | 1298.76 | 6.32 | -11.72 | -4.03 | 0.19 | 12.39 | 198.99 |
| 1348.83 | 0.37 | 258.54 | 1348.75 | 6.61 | -11.81 | -4.31 | 0.21 | 12.57 | 200.07 |
| 1398.67 | 0.39 | 262.35 | 1398.60 | 6.95 | -11.86 | -4.64 | 0.06 | 12.74 | 201.37 |
| 1449.92 | 0.48 | 265.38 | 1449.85 | 7.33 | -11.90 | -5.03 | 0.17 | 12.92 | 202.89 |
| 1498.47 | 0.53 | 268.81 | 1498.39 | 7.75 | -11.92 | -5.45 | 0.13 | 13.11 | 204.57 |
| 1548.74 | 0.49 | 253.63 | 1548.66 | 8.19 | -11.99 | -5.89 | 0.28 | 13.36 | 206.16 |
| 1599.90 | 0.48 | 260.47 | 1599.82 | 8.63 | -12.09 | -6.31 | 0.12 | 13.64 | 207.57 |
| 1649.65 | 0.54 | 270.06 | 1649.57 | 9.06 | -12.12 | -6.75 | 0.22 | 13.87 | 209.12 |
| 1699.25 | 0.57 | 272.45 | 1699.16 | 9.53 | -12.11 | -7.23 | 0.07 | 14.11 | 210.85 |
| 1749.60 | 0.76 | 271.87 | 1749.51 | 10.10 | -12.09 | -7.81 | 0.37 | 14.39 | 212.88 |

Well Name: James S. Haley Trustee No.2
Survey: JAMES S HALEY TRUSTEE #2
Survey Date: 5/1/2014

| MD ft | Inc deg | Azim deg | TVD ft | VS ft | +N/-S ft | +E/-W ft | DLS °/100ft | Closure Distance ft | Closure Direction deg |
|----------|------------|-------------|-----------|----------|-------------|-------------|----------------|---------------------------|-----------------------------|
| 1799.07 | 0.78 | 265.56 | 1798.98 | 10.75 | -12.10 | -8.48 | 0.18 | 14.78 | 215.00 |
| 1848.37 | 0.72 | 267.54 | 1848.27 | 11.39 | -12.14 | -9.12 | 0.13 | 15.19 | 216.92 |
| 1899.53 | 0.74 | 275.50 | 1899.43 | 12.03 | -12.13 | -9.77 | 0.20 | 15.58 | 218.87 |
| 1948.80 | 0.94 | 280.22 | 1948.70 | 12.71 | -12.02 | -10.49 | 0.43 | 15.96 | 221.10 |
| 1999.35 | 1.12 | 275.44 | 1999.24 | 13.56 | -11.90 | -11.39 | 0.40 | 16.48 | 223.74 |
| 2049.82 | 1.01 | 274.24 | 2049.70 | 14.46 | -11.82 | -12.33 | 0.23 | 17.08 | 226.19 |
| 2099.42 | 1.03 | 276.55 | 2099.29 | 15.31 | -11.74 | -13.21 | 0.10 | 17.67 | 228.36 |
| 2149.90 | 0.97 | 276.68 | 2149.76 | 16.15 | -11.64 | -14.09 | 0.12 | 18.27 | 230.43 |
| 2198.90 | 0.97 | 278.24 | 2198.76 | 16.93 | -11.53 | -14.91 | 0.05 | 18.85 | 232.28 |
| 2249.42 | 0.99 | 279.16 | 2249.26 | 17.74 | -11.40 | -15.77 | 0.05 | 19.45 | 234.13 |
| 2298.55 | 0.91 | 275.04 | 2298.39 | 18.52 | -11.30 | -16.57 | 0.21 | 20.06 | 235.72 |
| 2349.38 | 0.86 | 269.05 | 2349.21 | 19.28 | -11.27 | -17.36 | 0.21 | 20.70 | 237.01 |
| 2399.88 | 0.84 | 268.06 | 2399.71 | 20.02 | -11.29 | -18.11 | 0.06 | 21.34 | 238.07 |
| 2449.02 | 0.79 | 264.78 | 2448.85 | 20.71 | -11.33 | -18.80 | 0.14 | 21.95 | 238.93 |
| 2499.41 | 0.84 | 270.03 | 2499.23 | 21.41 | -11.36 | -19.52 | 0.19 | 22.58 | 239.80 |
| 2549.33 | 0.82 | 272.96 | 2549.14 | 22.12 | -11.34 | -20.24 | 0.10 | 23.20 | 240.74 |
| 2599.57 | 1.03 | 272.02 | 2599.37 | 22.91 | -11.31 | -21.05 | 0.42 | 23.90 | 241.76 |
| 2649.34 | 0.95 | 271.84 | 2649.14 | 23.74 | -11.28 | -21.91 | 0.16 | 24.65 | 242.77 |
| 2699.31 | 1.06 | 263.11 | 2699.11 | 24.60 | -11.32 | -22.79 | 0.38 | 25.44 | 243.58 |
| 2749.01 | 1.15 | 257.84 | 2748.80 | 25.56 | -11.48 | -23.73 | 0.27 | 26.36 | 244.18 |
| 2798.89 | 1.27 | 252.91 | 2798.66 | 26.61 | -11.75 | -24.74 | 0.33 | 27.39 | 244.60 |
| 2848.60 | 1.27 | 251.38 | 2848.36 | 27.71 | -12.09 | -25.80 | 0.07 | 28.49 | 244.89 |
| 2898.83 | 1.39 | 254.40 | 2898.58 | 28.87 | -12.43 | -26.91 | 0.26 | 29.64 | 245.21 |
| 2949.93 | 1.43 | 254.22 | 2949.66 | 30.12 | -12.77 | -28.12 | 0.09 | 30.88 | 245.58 |
| 2999.68 | 1.40 | 260.80 | 2999.39 | 31.34 | -13.03 | -29.31 | 0.33 | 32.08 | 246.03 |
| 3049.41 | 1.16 | 268.31 | 3049.11 | 32.45 | -13.15 | -30.42 | 0.59 | 33.14 | 246.63 |
| 3099.07 | 1.29 | 278.60 | 3098.76 | 33.47 | -13.08 | -31.47 | 0.51 | 34.08 | 247.44 |
| 3148.77 | 1.41 | 277.99 | 3148.45 | 34.57 | -12.91 | -32.63 | 0.25 | 35.09 | 248.42 |
| 3198.86 | 1.53 | 277.07 | 3198.52 | 35.78 | -12.74 | -33.90 | 0.23 | 36.22 | 249.40 |
| 3249.76 | 1.39 | 275.42 | 3249.40 | 37.01 | -12.60 | -35.19 | 0.29 | 37.38 | 250.30 |
| 3299.61 | 1.34 | 274.80 | 3299.24 | 38.14 | -12.49 | -36.37 | 0.10 | 38.45 | 251.04 |
| 3349.20 | 1.26 | 273.25 | 3348.82 | 39.23 | -12.41 | -37.49 | 0.17 | 39.49 | 251.68 |
| 3399.38 | 1.28 | 271.06 | 3398.99 | 40.31 | -12.37 | -38.61 | 0.10 | 40.54 | 252.23 |
| 3449.47 | 1.26 | 271.38 | 3449.06 | 41.39 | -12.35 | -39.71 | 0.05 | 41.59 | 252.73 |
| 3499.87 | 1.05 | 283.04 | 3499.46 | 42.35 | -12.23 | -40.72 | 0.62 | 42.52 | 253.28 |
| 3549.63 | 1.07 | 283.02 | 3549.21 | 43.19 | -12.02 | -41.62 | 0.04 | 43.32 | 253.89 |



Well Name: James S. Haley Trustee No.2
Survey: JAMES S HALEY TRUSTEE #2
Survey Date: 5/1/2014

| MD ft | Inc deg | Azim deg | TVD ft | VS ft | +N/-S ft | +E/-W ft | DLS °/100ft | Closure Distance ft | Closure Direction deg |
|----------|------------|-------------|-----------|----------|-------------|-------------|----------------|---------------------------|-----------------------------|
| 3599.33 | 1.06 | 278.18 | 3598.90 | 44.04 | -11.85 | -42.53 | 0.18 | 44.15 | 254.43 |
| 3649.01 | 0.99 | 275.76 | 3648.57 | 44.89 | -11.74 | -43.41 | 0.17 | 44.97 | 254.86 |
| 3698.71 | 1.05 | 276.52 | 3698.26 | 45.73 | -11.65 | -44.29 | 0.12 | 45.79 | 255.26 |
| 3748.90 | 0.85 | 267.26 | 3748.45 | 46.53 | -11.62 | -45.11 | 0.49 | 46.59 | 255.56 |
| 3799.17 | 0.82 | 268.85 | 3798.71 | 47.25 | -11.64 | -45.85 | 0.08 | 47.30 | 255.75 |
| 3849.93 | 0.81 | 257.30 | 3849.47 | 47.97 | -11.73 | -46.56 | 0.32 | 48.01 | 255.86 |
| 3898.20 | 0.52 | 232.53 | 3897.73 | 48.50 | -11.93 | -47.06 | 0.83 | 48.55 | 255.77 |
| 3948.41 | 0.71 | 249.56 | 3947.94 | 49.02 | -12.18 | -47.54 | 0.53 | 49.07 | 255.63 |
| 3998.60 | 0.79 | 250.28 | 3998.12 | 49.67 | -12.41 | -48.16 | 0.16 | 49.73 | 255.55 |
| 4049.62 | 0.83 | 253.17 | 4049.14 | 50.39 | -12.63 | -48.84 | 0.10 | 50.45 | 255.50 |
| 4099.84 | 1.00 | 249.51 | 4099.35 | 51.18 | -12.89 | -49.60 | 0.37 | 51.25 | 255.43 |
| 4149.55 | 0.97 | 253.59 | 4149.06 | 52.03 | -13.16 | -50.41 | 0.15 | 52.10 | 255.37 |
| 4198.81 | 0.98 | 265.77 | 4198.31 | 52.87 | -13.31 | -51.23 | 0.42 | 52.93 | 255.43 |
| 4249.25 | 0.88 | 271.45 | 4248.74 | 53.67 | -13.33 | -52.05 | 0.27 | 53.73 | 255.63 |
| 4298.58 | 1.09 | 268.83 | 4298.07 | 54.50 | -13.33 | -52.90 | 0.45 | 54.55 | 255.85 |
| 4349.34 | 0.91 | 267.41 | 4348.82 | 55.37 | -13.36 | -53.78 | 0.37 | 55.42 | 256.05 |
| 4399.89 | 1.07 | 279.93 | 4399.36 | 56.21 | -13.30 | -54.65 | 0.54 | 56.24 | 256.32 |
| 4448.93 | 1.06 | 279.77 | 4448.39 | 57.05 | -13.14 | -55.54 | 0.03 | 57.08 | 256.69 |
| 4499.32 | 1.02 | 286.07 | 4498.77 | 57.89 | -12.94 | -56.44 | 0.24 | 57.90 | 257.09 |
| 4549.68 | 0.89 | 279.48 | 4549.12 | 58.65 | -12.75 | -57.25 | 0.34 | 58.66 | 257.44 |
| 4599.86 | 0.78 | 291.44 | 4599.30 | 59.30 | -12.56 | -57.96 | 0.41 | 59.30 | 257.77 |
| 4649.16 | 0.86 | 279.39 | 4648.59 | 59.92 | -12.38 | -58.63 | 0.38 | 59.92 | 258.08 |
| 4699.47 | 0.85 | 270.91 | 4698.90 | 60.64 | -12.31 | -59.38 | 0.25 | 60.64 | 258.29 |
| 4731.80 | 0.92 | 257.16 | 4731.22 | 61.14 | -12.37 | -59.87 | 0.68 | 61.14 | 258.33 |