

## **Position Uncertainty Bibliography**

**2010**

The following papers all relate to the subject of wellbore position uncertainty. They are organized by lead author in alphabetical order. The Collision Avoidance Work Group has also produced a bibliography on the related subject of collision avoidance. Although extensive, the lists are not exhaustive.

Both documents are available from the ISCWSA web site. They were first published April 2007 and are subject to annual revision.

Collision Avoidance Work Group

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**SPE Publications - Peer Reviewed**

Bordakov, G.A. et al. "Improving LWD Image and Formation Evaluation by Using Dynamically Corrected Drilling-Derived LWD Depth and Continuous Inclination and Azimuth Measurements", paper SPE 109972 *SPEREE* (February 2009) 137-148.

Chia, C.R., Phillips, W.J., and Aklestad, D.L. "A New Wellbore Position Calculation Method," *SPEDE* (September 2003) 209-213.

Dashevskiy, D. et al.: "Dynamic Depth Correction To Reduce Depth Uncertainty and Improve MWD/LWD Log Quality," *SPEDE* (March 2008) 13-22.

Dubrule, O. and Nelson, P.H.: "Evaluation of Directional Survey Errors at Prudhoe Bay," *SPEDE* (September 1987) 257-267.

Harvey, R.P., Walstrom, J.E. and Eddy, H.D.: "A Mathematical Analysis of Errors in Directional Survey Calculations," *JPT* (November 1971) 1368-1374.

Mitrou, T.J. at al.: "Comparison of Magnetic Single-Shot Instruments with a Directional MWD System," *SPEDE* (April 1986) 163-168

Stephenson, M.A. and Wilson, H.: "Improving Quality Control of Directional Survey Data with Continuous Inertial Navigation," *SPEDE* (June 1992) 100-106.

Taylor, H.L. and Mason, M.C.: "A Systematic Approach to Well Surveying Calculations," *SPEJ* (December 1972) 474-488.

Thorogood, J.L.: "Directional Survey Operations Management," *JPT* (December 1989) 1250-1252.

Thorogood, J.L. and Knott, D.R.: "Surveying Techniques with a Solid-State Magnetic Multishot Device," *SPEDE* (September 1990) 209-214.

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Walstrom, J.E., Mueller, T.D. and McFarlane, R.C.: "Evaluating Uncertainty in Engineering Calculations," *JPT* (December 1967) 1595-1603.

Walstrom, J.E., Brown, A.A., and Harvey, R.P.: "An Analysis of Uncertainty in Directional Surveying," *JPT* (April 1969) 515-523.

Walstrom, J.E., Harvey, R.P. and Eddy, H.D.: "A Comparison of Various Directional Survey Models and an Approach To Model Error Analysis," *JPT* (August 1972) 935-943

Williamson, H.S. and Wilson, H.F.: "Directional Drilling and Earth Curvature," *SPEDE* (March 2000) 37-43.

Williamson, H.S.: "Accuracy Prediction for Directional Measurement While Drilling," *SPEDE* (December 2000) 221-233.

Wilson, G.J.: "An Improved Method for Computing Directional Surveys," *JPT* (August 1969) 871-876.

Wilson, H. and Brooks, A.G.: "Wellbore Position Errors Caused by Drilling-Fluid Contamination," *SPEDE* (December 2001) 208-213.

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**SPE Publications - Peer Reviewed (continued)**

Wolff, C.J.M. and de Wardt, J.P.: "Borehole Position Uncertainty - Analysis of Measuring Methods and Derivation of Systematic Error Model," *JPT* (December 1981) 2338-2350.

Zaremba, W.A.: "Directional Survey by the Circular Arc Method," *SPEJ* (February 1973) 5-11.

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### **SPE Publications - Not Peer Reviewed**

Bang, J. et al.: "Targeting Challenges in Northern Areas due to Degradation of Wellbore Positioning Accuracy," paper SPE /IADC 119661 presented at the 2009 SPE/IADC Drilling Conference, Amsterdam, Netherlands, 17-19 March.

Berger, P.E. and Sele, R.: "Improving Wellbore Position Accuracy of Horizontal Wells by Using a Continuous Inclination Measurement From A Near Bit Inclination MWD Sensor," paper SPE 50378 presented at the 1988 SPE International Conference on Horizontal Well Technology, Calgary, Alberta, Canada, 1-4 November.

Brooks, A.G., Gurden, P.A. and Noy, K.A.: "Practical Application of a Multiple-Survey Magnetic Correction Algorithm," paper SPE 49060 presented at the 1998 SPE Annual Technical Conference and Exhibition, New Orleans, Louisiana, 27-30 September.

Brooks, A. et al.: "Quantification of Depth Accuracy," paper SPE 95611 presented at the 2005 SPE Annual Technical Conference and Exhibition, Dallas, Texas, 9-12 October.

Camden, D.J., Gartner, J-E., and Moulin, P.A.: "A New Continuous Guidance Tool Used for High Accuracy Directional Surveys," SPE paper 10057 presented at the 1981 SPE Annual Technical Conference and Exhibition, San Antonio, Texas, 4-7 October.

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Chia, C.R., and deLima, B.C.: "MWD Survey Accuracy Improvements Using Multistation Analysis," SPE paper 87977 presented at the 2004 IADC/SPE Asia Pacific Drilling Technology Conference and Exhibition, Kuala Lumpur, Malaysia, 13-14 September.

Chia, C.R. et al.: "A New Method for Improving LWD Logging Depth," paper SPE 102175 presented at the 2006 SPE Annual Technical Conference and Exhibition, San Antonio, Texas, 24-27 September.

De Lange, J.I., Nijen Twilhaar, G.D., and Pelgrom, J.J.: "Accurate Surveying: An Operator's Point of View," SPE paper 17213 presented at the 1988 SPE/IADC Drilling Conference, Dallas, Texas, 28 February - 2 March.

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Estes, R.A. and Epplin, D.M.: "Development of a Robust Gyroscopic Orientation Tool for MWD Operations," paper SPE 63274 presented at the 2000 SPE Annual Technical Conference and Exhibition, Dallas, Texas, 1-4 October.

Fruhwith, R. and Lorbach, M.: "Error Analysis of Directional Survey Calculation Methods," paper SPE 16477 available from SPE, Richardson, Texas.

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Gibbons, F.L. and Hense, U.: "A Three-Axis Laser Gyro System for Borehole Well Surveying," paper SPE 16679 presented at the 1987 SPE Annual Technical Conference and Exhibition, Dallas, Texas, 27-30 September.

Grindrod, S.J. and Wolff, J.M.: "Calculation of NMDC Length Required for Various Latitudes Developed From Field Measurements of Drill String Magnetisation," SPE paper 11382 presented at the 1983 SPE/IADC Drilling Conference, New Orleans, Louisiana, 20-23 February.

Haarstad, I. et al.: "Target Design Based Upon Multidisciplinary Uncertainty Information," paper SPE 74460 presented at the 2002 IADC/SPE Drilling Conference, Dallas, Texas, 26-28 February.

Hartmann, R.A.: "MATQUS, A Survey Quality System for Solid State Magnetic Survey Tools," paper SPE 36431 presented at the 1996 SPE Annual Technical Conference and Exhibition, Denver, Colorado, 6-9 October.

Holmes, A.: "A Program To Analyze Directional Surveying Accuracy," paper SPE 16680 presented at the 1987 SPE Annual Technical Conference and Exhibition, Dallas, Texas, 27-30 September.

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Lawrence, B., Mojsin, T. and Strachan, M.: "Improved Accuracy of Borehole Positioning in Horizontal Wells," paper SPE 128185 presented at the 2010 IADC/SPE Drilling Conference and Exhibition, New Orleans, Louisiana, 2-4 February.

Lesso, W.G., Rezmer-Cooper, I.M. and Chau, M.: "Continuous Direction and Inclination Measurements Revolutionize Real-Time Directional Drilling Decision-Making," paper SPE 67752 presented at the 2001 SPE/IADC Drilling Conference, 27 February - 1 March.

Lowdon, R.M. and Chia, C.R.: "Multistation Analysis and Geomagnetic Referencing Significantly Improve Magnetic Survey Results," paper SPE 79820 presented at the 2003 SPE/IADC Drilling Conference, Amsterdam, Netherlands, 19-21 February.

Macmillan, S., McKay, A. and Grindrod, S.: "Confidence Limits associated with Values of the Earth's Magnetic Field used for Directional Drilling," paper SPE/IADC 119851 presented at the 2009 SPE/IADC Drilling Conference, Amsterdam, Netherlands, 17-19 March.

Morgan, D.G. and Howe, N.: "High Accuracy Directional Surveying of Wells Employing Inertial Techniques," SPE paper 8156 presented at 1979 Offshore Europe, Aberdeen, United Kingdom, 3-7 September.

Morgan, D.G. and Uttecht, G.W.: "Small-Diameter Inertial-Grade Sensors Significantly Enhance Wellbore Survey Accuracy" SPE paper 11894 presented at 1983 Offshore Europe, 6-9 September.

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Nyrnes, E. and Torkildsen, T.: "Analyses of the Accuracy and Reliability of Magnetic Directional Surveys," SPE paper 96211 presented at the 2005 SPE/IADC Middle East Drilling Technology Conference and Exhibition, Dubai, United Arab Emirates, 12-14 September.

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Omole, O. and Sadiq, S.O.: "A Monte Carlo Simulation Approach for Estimating Bottom-Hole Coordinates in Directional Drilling," paper SPE 26273 available from SPE, Richardson, Texas.

Poedjono, B. et al.: "Geomagnetic Referencing Service - A Viable Alternative for Accurate Wellbore Surveying," SPE paper 127753 presented at the 2010 IADC/SPE Drilling Conference and Exhibition, New Orleans, Louisiana, 2-4 February.

Prange, M.D., Tilke, P.G. and Kaufman, P.S.: "Assessing Borehole-Position Uncertainty from Real-Time Measurements in an Earth Model," SPE paper 89781 presented at the 2004 SPE Annual Technology Conference and Exhibition, Houston, Texas, 26-29 September.

Rodriguez Rosas, R. et al.: "Acquisition of Directional Survey Data with Adapted Logging Tools," paper SPE 74398 presented at the 2002 SPE International Petroleum Conference and Exhibition in Mexico, Villahermosa, Mexico, 10-12 February.

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Scott, A.C. and MacDonald, B.E.: "Determining Downhole Magnetic Interference on Directional Surveys," paper SPE 7748 presented at the 1979 Middle East Technical Conference and Exhibition, Bahrain, 25-28 February.

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### Non-SPE publications

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