

OWSG: Operator's Wellbore Survey Group

An ISCWSA Working Committee

Activity Report

ISCWSA Meeting #39 (Long Beach)

May 9, 2014

Neil Bergstrom – Chair

Son Pham – Secretary

OWSG – Anti-trust & Mission Statement

- OWSG Mission Statement: To promote practices that provide confidence that reported wellbore positions are within their stated uncertainty.
- Anti-Trust Statement –
 - We are meeting to help develop and promote good practices in wellbore surveying necessary to support oil and gas operations which enhance safety and competition.
 - The meeting will be conducted in compliance with all laws including the antitrust laws, both state and federal. We will not discuss prices paid to suppliers or charged to customers nor will we endorse or disparage vendors or goods or services, divide markets, or discuss with whom we will or will not do business, nor other specific commercial terms, because these are matters for each company or individual to independently evaluate and determine

(OWSG) Operator's Wellbore Survey Group Purpose

- The OWSG provides a forum for wellbore survey specialists (Wellbore Survey Focal Points) from Oil & Gas Companies to discuss technical and safety aspects of wellbore positioning.
- It is not a decision-making body. This is left to each individual company. Recommendations that come out of the OWSG may or may not be adopted by individual companies. It does not imply endorsement by the ISCWSA.
- The OWSG provides a way to explore the issues and sometimes reach a consensus on good practices. It benefits not only the operator community but the service providers to have consistent practices.

OWSG Representation

- 53 individual members on e-mailing list
 - email OWSG secretary to be added to the list
- Companies represented include
 - Anadarko, Apache, BHP Billiton, BP, Cenovus, Chesapeake, Chevron, ConocoPhillips, Devon, ExxonMobil, Fram Exploration, Hess, Jones, Laredo, Lewis, Maersk, Oxy, Petrobras, Shell, Southwestern, Statoil, Talisman, Total, XTO
- 9 meetings thru May 2014 (Including New Orleans ISCWSA)
- Next meeting planned July 10

Current OWSG Initiatives

- Format for reporting and transfer of raw sensor data
 - coordinated with update of OGP P7 format
- OWSG Standard set of tool error models
 - cooperative effort by CVX and COP using a consultant
 - The error models are not endorsed by the ISCWSA
- Recommendations for standardized display and application of declination and convergence
- Wellplanning and wallplot checklists
- Recommendations for good wellbore survey practice
 - Summary at the end of this presentation

OWSG Proposed Initiatives

- Standardization of MWD QC
 - establish minimum QC requirements
- Minimum Operating and Reporting Procedures
 - to be used as a guideline for company-specific Joint Operating and Reporting Procedures (JORPs)
- Directional and/or Anticollision Software test suite
 - methodology and requirements

Recommendations for Good Wellbore Survey Practices

Wellbore surveys are a safety critical part of the wellbore asset. Reliable wellbore positions are a legal and economic requirement.

The uncertainties in position need to be explicitly stated and form a part of the wellbore record.

These recommendations are not intended to replace Joint Operating and Reporting Procedures (JORPs), but the included points should be addressed.

This is not intended as a comprehensive list, but of common concerns of the OWSG members.

Goal of the OWSG recommendations

- Demonstrate to the operator that the procedures required to satisfy the error model were followed.
- Allow the operator to verify the calculated wellbore position and uncertainty.
- Allow the operator or a third party to independently re-process the raw survey data to determine the position and assess the uncertainty.
- Allow users in the future (perhaps at field abandonment) to assess the reliability of the wellbore positions.

All Survey data delivered to Operator

- This includes **ALL** survey shots
 - even if not included in final positional calculation.
 - Especially check shots, benchmark surveys, and rotation shots.
- Raw Sensor data is required
 - Real-Time preferred, but memory data may be acceptable
 - if reverse calculated must be followed by memory data
- Slide sheets are part of the survey record.
- Documentation of tool calibrations is required.
 - factory, shop and/or field calibration checks

Minimum Reporting Requirements

- Final wellbore position report including uncertainty
- Documentation of any corrections or processing steps used to generate final position.
- Specification of error model (positional uncertainty) to be applied.
- Plots of QC parameters (GTotal, BTotal, Dip or equivalents) for each BHA run before and after any corrections are applied. Acceptance Limits should be shown.
- BHA report showing sensor and non-mag spacing.

Survey Operating Recommendations

(highlights, not a comprehensive list)

- Verify repeatability of measurements
 - with different tools and/or technology when practical
 - use of memory data on trip out is an option
- Verify magnetic reference values
 - ground shots, surface checks, and/or downhole data
- Surveys must pass QC checks
 - limits determined by error model specified
 - exceptions must be documented
- Survey frequency sufficient to characterize wellpath
 - may be supplemented with memory data
- Avoid Gross Errors
 - Independent checks of the application of magnetic declination and grid convergence

The primary survey tool is typically magnetic MWD.

- Largest uncertainties are due to uncertain magnetic reference values and drillstring magnetic interference.
- Degauss to ASTM E1444 and/or TH Hill DS-1 standard
- Measure and record residual magnetism
 - steel parts adjacent to MWD non-mag
- Show non-mag spacing on BHA reports
- Verify non-mag cannot be magnetized
 - collar scans especially at hardbanding and tool joints
- Document the magnetic properties of the BHA materials.
 - Don't use magnetically "soft" materials. Preferable is non-mag or high coercivity (hard to magnetize/demagnetize) steel.

OWSG Questions

- Open the floor for questions and discussion

LinkedIn Group

“Petroleum Industry Steering Committee for Wellbore Survey Accuracy”

- Over 1000 members
- Membership requires manager approval
- Current managers:
 - Neil Bergstrom, Pete Clark, Son Pham, Carol Mann
- Discussions on operations, equipment, software
- Example Discussions:
 - Demagnetizing, non-mag collars, smartphone apps, calculation methods, surface & subsea positioning, links & materials of interest, meeting announcements
- Membership is encouraged for anyone involved in the wellbore positioning business.
- Please contribute your knowledge for the improvement of the community.