



SPE WPTS Survey QAQC SC Update

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Mission

Survey QA/QC Sub-Committee

Mission Statement:

To define practices that promote the task of defining the required data which may be used to validate and potentially enhance a wellbores' position and uncertainty.

This sub-committee has taken on a project to optimize and issue a cut down performance based set of three documents:

"Gyro QA/QC

MWD QA/QC

Along Hole Depth QA/QC"

The second project scope is "Define and Communicate the Essential Data Required to Verify and Potentially Enhance a Wellbore."

Over ten years ago the QA/QC Sub-Committee published two SPE Papers on survey quality control procedures that are required to ensure a valid error model is applied to the survey data.

- SPE 103734 is on 'Internal' survey quality checks and was presented at the IADC/SPE Asia Pacific Drilling Technology Conference, Bangkok in November 2006.

- SPE 105558 is on 'External' survey quality checks and was presented at the SPE/IADC Drilling Conference and Exhibition, Amsterdam in February 2007.

○ Group Membership and Mission

- *“The Survey QAQC Sub-Committee was formed at the Dallas, SPE, Wellbore Positioning Technical Section meeting in September 2018*
- *The QAQC Sub-committee meeting was attended by over representatives from 6 different operators and 13 different service companies with a total of 22 members signed up and contributing to the project work*

○ Sub-Committee Tasks

- *Reviewed and finalized Gyro QA/QC document ready for review by API body*
- *Conference Call Meetings in Q2 & Q3 2019 to finalize MWD QA/QC and Along Hole Depth Docs*
- *Next SC meeting Calgary Oct 2019*
- *Review API RP78 cut down document feedback*
- *Technical writer to format and issue final version of three documents, (ISCWSA funded project)*
- *Review Full uncut three documents and compile them into a single WBPTS E-Book*
- *Format and Host this document on the UHI Website with download links from SPE and ISCWSA.net sites*

API RP-78 Gyroscopic data QA-QC

conditions, the final acceptance derived from the IPM applied to the instrument shall not exceed the sensor accuracy at a 2σ level.
The temperature range of the calibration, the uncertainty of the sensors and the tolerance shall be clearly listed on the calibration report

1.2 Verification at the service base

API RP78 – The survey instrument shall be tested in the service base on the operation modes expected to be used in the field. The tolerances on the test must be according to the error model.

Prior to mobilizing survey tools to the survey site, the surveying tools shall have their performance assessed for suitability at the service base. This instrument verification process should be designed to ensure that measurements provided by the surveying tool are within the tolerances required for the IPM.

For tools to be used for stationary gyrocompass surveying, this may include taking a series of measurements designed to optimize error source observability (e.g. rotation shots at horizontal East/West, vertical and upside down) for assessment of performance; final acceptance test limits shall be linked to the IPM. This may include direct validation of the survey tool's measurements relative to an instrument performance model using a precision stand across the range of orientations and temperatures across which the instrument is expected to operate.

For tools to be utilized with continuous surveying, this should include a validation of bias stability for sensors used in measuring attitude changes while surveying. This may include comparing the results of a series of zero-velocity updates performed at orientations chosen to optimize error source observability. This may include performing a series of tests where a tool is moved through a range of inclinations and azimuth in a precision stand in order to verify tool performance relative to an instrument performance model.

1.3 Surface test at wellsite

API RP78 – The survey instrument shall be tested at the wellsite on the operation modes expected to be

requirements of the tool error model. These corrections shall be made in accordance with this standard procedure. Common corrections may include: post-run corrections and calibrations, sag, misalignment

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1.19 Survey degradation – Applicable to all survey tools

Management of change procedures shall be followed when a more conservative error model is required due to failures to comply with error model requirements. The data shall meet the criteria of the operating procedures associated with the conservative error model.

FUTURE SURVEY OVERLAP STATEMENTS

1.9 Independent redundant surveys

Comparison of survey data with the results of an independent survey is the most powerful test for independent the data, the more powerful this test becomes. Recommendations on the use of this test for QC purposes is outside the scope of the "Gyroscopic data QA-QC" section. When a square test shall be performed.

- Thank you