Survey QAQC Activity Report

Mike Attrell on behalf of Phil Harbidge

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10+ years Well Trajectory Design, Survey Operations & Engineering Support; Torque & Drag Modelling, Survey Management, Collision Avoidance, Survey QAQC & Corrections, Incident Investigation & Reporting

DSATS Drillbotics Competition Challenge Committee,
Canadian Wellbore Positioning Committee (CWPC)

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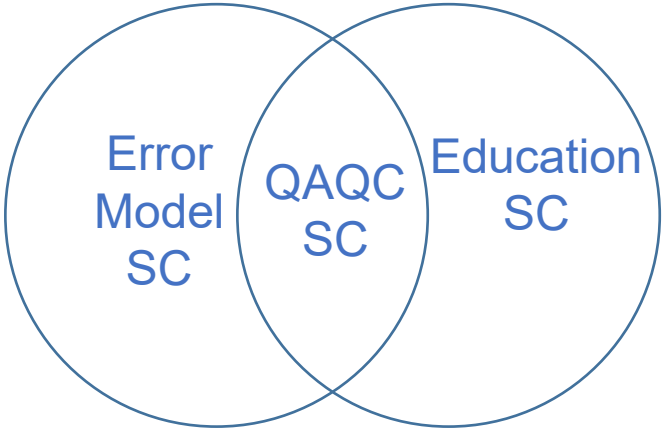
Survey QAQC Sub-Committee Mission

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

https://www.iscwsa.net/committees/survey-qa-qc/



Agenda I

Status Update on Active Projects & Current Working Documents

- API RP78 documents
  - Started by OWSG, passed to Survey QAQC Sub-committee
  - Original documents started as 15+ page reference materials, trimmed to 4 pages for API submission
    - MWD, Gyro, Directional Survey Records, Depth
  - **Current status: in hands of technical writer and API**

Agenda I

Status Update on Active Projects & Current Working Documents

- eBook Content
  - Project initiated when API document editing required removing all/majority of reference material and background theory from compiled documents
  - Use original material from documents as eBook content to be hosted by ISCWSA
  - **Current status: original longer API documents need to be edited & re-worded for eBook audience, pictures and diagrams added where appropriate**

Agenda II

Discuss Addition of MSA Correction/Survey Management Chapter of eBook

- Survey corrections have become more of a standard practice and prevalent in the time since API project was initiated
- Still seen as a “black box” outside of ISCWSA community
- There are questions from operators and other end users about validity/trustworthiness of corrections

Agenda II

Discuss Addition of MSA Correction/Survey Management Chapter of eBook

- MSA correction algorithm validity test?
  - Chad Hanak proposed utilizing synthetic survey data with known and randomized perturbations as a proctored test for survey correction services
  - Compare corrected position (+ellipse) with original position to verify that correction method satisfies error model uncertainty expectations

Agenda II

Discuss Addition of MSA Correction/Survey Management Chapter of eBook

- MSA correction algorithm validity test?
  - Discussion surrounding intent of synthetic data test, how to best use tool
  - Can be valuable educational tool for operators and service providers to understand influences on survey correction results
  - Small part of greater picture

Agenda III

Re-group For Document Editing Projects

- MWD (6 members)
  - Lead: Chad Hanak (chad@superiorqc.com)
- Gyro (3 members)
  - Lead: Ben Hawkinson (ben@scientificdrilling.com)
- Directional Survey Records (7 members)
  - Lead: Mike Long (mlong@roundlabinc.com)
- Depth (2 members)
  - Lead: Harald Bolt (harald@depth.solutions)
- MSA (Members TBD)
  - Lead: Chad Hanak (chad@superiorqc.com)

QAQC e-Book Project Actions

DEPTH e-book content

DONE

GYRO – chapter Formatting + Diagrams

MWD – chapter Formatting + Diagrams

QAQC Minimum requirements document

API RP 78 Terms document

Directional Survey Records (DSR) chapter Formatting + Diagrams

MSA and MSA ERROR MODEL RECOMMENDED PRACTICE CHAPTER/ DOCUMENT

MSA SURVEY QC ERROR MODEL SOFTWARE TESTING (Chad Hanak)

FAC/Error Model Project

Drilling Data Quality and Uncertainty Description Subcommittee Activity Report

Eric Cayeux (erca@norceresearch.no)

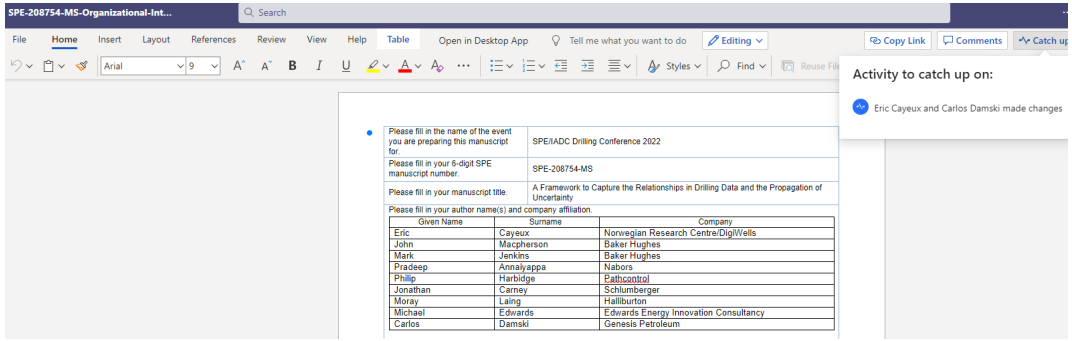
Phil Harbidge (philip.harbidge@pathcontrol.com)

SPE Affiliated "DDQUD" - (DSATS - DUPTS - WPTS Subcommittees)

- Standardize the Industry
  - Drilling Data Quality
  - Drilling Data Uncertainty
- Published Free to Public Paper SPE-208754-MS in Peer Review
- Publish use cases in "DSABOK" online collection & SPE Paper use cases worked up into Semantic Graph and Data Lake
  - https://dsabok.org/drilling-data-quality-uncertainty/

Paper for the SPE/IADC Drilling Conference 2022

SPE-208754-MS



Drilling oil and gas wells is a complex process involving many disciplines and stakeholders. This process occurs in a context where some pieces of information are unknown, or are often incomplete, erroneous or at least uncertain. Yet, during drilling engineering and construction of a well, drilling data quality and uncertainty are barely addressed in an auditable and scientific way. Currently, there are few or no placeholders in engineering and operational databases to document uncertainty and its propagation.

USER STORIES // DATA MODELS FRAMEWORK // SEMANTIC NETWORK // DATA LAKE // UNCERTAINTY PROPAGATION INFLUENCE DIAGRAMS and GRAPH THEORY

Thanks to

Manufacturer & Calibration Experts: BenchTree, Scientific Drilling, Halliburton, Gyrodata, Schlumberger, Baker Hughes…

Operator Experts: Chevron, Oxy, ConocoPhillips, BP, Total, Devon Energy, ExxonMobil, Shell…

Service Company Experts: Depth Solutions, K+M, H&P, Gyrodata, Scientific Drilling, Pacesetter Directional, SuperiorQC, Gibson Reports, roundLAB, PathControl, Independent Consultants…

DDQUD





Questions?