



ISCWSA #42- HOUSTON

**ERROR MODEL MAINTENANCE
WORKGROUP**

ANDY MCGREGOR - TECH21

Membership

- Grown to 61 too large for a work group
- Members should be taking an active role
- Asking for a positive response for members
- Minutes on website and also via alternative list for distribution of minutes
- Response from approx. half so far.
- Currently 20 wishing to remain a member

Website

- Drafted a statement about role committee
- Drafted a statement about the reasoning behind Rev4 MWD models
- Created spreadsheets detailing Rev4
- All to be added to the website

Error Model Documentation

- Produced an outline of content
- Largely covered by spreadsheets covering the detail of the models and write up in the e-book.
- Two weak areas – details of how to implement and handling of gyro model transitions.
- Will make available spreadsheets which work through error model for the test wells as an example anyone wanting to implement

Inclination Only Surveys

- Produced a document recommending how to handle inclination only surveys.
- For actual survey data will calculate TVD from the survey inclinations
- Not for plan where a max inc is used for the error envelope
- Will be further addition for handling tie-ons between inclination only surveys and directional surveys.

Geo-magnetic Lookup Tables

- Formed a work group at last meeting
- No progress

Correlation of Error Sources

- Standard anti-collision method is combining covariances
- Need to consider correlation of error sources
- Error model able to accommodate 1 or 0 values via global propagation. Rarely implemented
- Relevant for geo-magnetic reference terms
- Current practice generally the conservative option – perhaps optimistic for interleaved wells
- Previously produced a spreadsheet detailing ballpark correlation values
- Will document two algorithms to handle this.
- Will evaluate some test cases to determine how large the effect can be,
- From that decide on a recommendation

Course Length

- Jerry Codling presented details of work on effect of survey interval on well position
- Based on continuous gyro data
- Some candidate weighting functions, for shorter intervals to 500m
- Could be a basis for addition to the models
- Need further work for longer survey intervals, for straight hole sections, plans
- Danger of misuse?

Error Models for Ranging

- Current practice when ranging shots are added to the definitive survey – e.g. hand-railing
- Is there a need for an error model term
- Future use

Relationship Between Sensor Calibration and Error Model

- MWD model lumps together sensor misalignment terms and scalefactors
- Underlying maths not stated
- MWD tool suppliers trying to relate to data from calibration stand
- Will document and provide some worked examples