

# Error Model Management

22<sup>nd</sup> September 2010

# Overview

- Where are we now?
- Floating Rig Depths
- BGS / BGGM
- Toolface Independent Terms
- Standardisation / XML
- Diagnostic Files
- Bias Terms and Depth Issues
- Misalignment / sag
- Error Model Management Document
- Other Issues

# Floating Rig Depths

- Potential problem identified across MWD ties using the Floating Rig Depth model.

## Actions:

- Steve, Jerry, Harry, Darren and Anne to run test data using ISCWSA#1 with ties at 1000m and 5000m. Report 1-sigma Major, Minor & Vertical Uncertainties
- Harry to check BHI implementation of DREF and DREFS

# BGS / BGGM

- SPE paper on the revised BGGM error values has been updated and Published in SPE Drilling and Completion.
- Look-up tables are on the BGS and ISCWSA websites.
- Some implementations started
- Other geomagnetic models (IGRF / WMM)

# Toolface Dependant Terms

- Toolface independent MWD terms (Sensor Bias and SF)
- Andy Brooks has developed TF independent terms -> Steve G compared with current results.
- Recommendation to use TF independent terms at last meeting.
- Investigate pseudo random TF tables and Monte Carlo simulation.

# Standardisation / XML

- Standardisation of Error Term Names / Codes  
- this is needed for a WITSML type system
- Current WITSML proposal needs reviewing by a wider audience.
- WITSML survey information needs update

## Action:

- Steve to contact SLB (Darren) & Paradigm to see if they can test transfer of error model data using WITSML.

# Standardisation / XML (2)

- The EMM group supports a register of terms of standardised terms – to be maintained by Steve and posted on the website.
- Anyone can ask for new terms to be included.

# Diagnostic Files

- Copsegrove MWD Diagnostic files plus a document giving possible reasons for differences on website.
- Copsegrove Gyro Diagnostic files for Models 1, 2, 3, 5, 6 on website (updated file format).
- Need standard format – terms need to be in same order. Steve G to check database and tool terms are in the same order. Propose to use Copsegrove format.



# Bias Terms and Tie Issues

- Use of Bias Terms and Tie issues (Also DP and Wireline depth Ties) - Roger, Angus and Steve G
- Use of drillstring magnetic bias term not recommended.
- DP and wireline depths investigated – may not be a big problem.
- Issues with depths for ellipses to start vs. WRP

# Misalignment & Sag

- Total Method – can use existing weighting functions
- DrillScan proposal had problems with the transition when the extra term is switched on or off.

Action:

- DrillScan to provide a modified term.

# Error Model Management Documentation

- Start EMM current common practice Document:
  - Validate Model e.g. Survey interval
  - QC management [Based on 2x SPE Papers]
  - Identify gross errors ( $>3$  sigma)
- Notice Board on website:
  - Example gyro models only for testing & don't represent real tools.
  - ISCWSA does not approve individual tool models.

# Other Issues

- Concern from users that the gyro companies error models have not been independently validated – Not our job.
- Need better documentation for a combined MWD & Gyro model.
- Multiple survey legs in the same hole section - Tie Modes for terms e.g. if change BHA and or MWD etc – include in EMM documentation.