

## Minutes of the Sixteenth Meeting of the

**Industry Steering Committee on  
Wellbore Survey Accuracy**Houston, USA  
3<sup>rd</sup> October 2002

## Present:

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\* Chairman

\*\* Minutes

## **1. Introductions**

Len Duncan welcomed everyone to Scientific Drilling's Rankin Road office. He passed on apologies from Matthew Rhodes who was unable to attend. Len then handed over to Torgeir Torkildsen who had agreed to chair the meeting in Matthew's absence. Torgeir noted that Keith Welsh of the Minerals Management Service, who was scheduled to provide an update on the activities of the MMS, was not present.

## **2. High Accuracy Survey Software Module.**

Angus Jamieson first expressed concern that the importance of good survey practice was not fully recognised in the industry, and questioned what the committee could do to raise awareness. The low turnout of operators at ISCWSA meetings was cited as an indication of the problem, and a possible opportunity for improvement.

Angus questioned whether the committee could agree on and then recommend best practice/standardisation for methods of correction and quantification of errors. We have quantified uncertainty via the error model, but the next step could be to improve accuracy by making use of all available data. Such techniques might not easily gain acceptance without some standardisation in the use of data, something that the ISCWSA could help achieve. Angus asked whether contractors are willing to co-operate to this extent. Dave McRobbie responded that contractor interest is dependent on operator interest. The low attendance of operators was noted again. Angus suggested that technical tasks like this be assigned to sub committees of the Steering Committee.

Several suggestions were then made as to how we might raise the profile of good directional practices. Suggestions included encouraging government involvement, seeking SPE affiliation, and changing the name of the committee to something catchier. Harry Wilson pointed out that there was no apparent consensus on whether the Committee wanted to be a standard setting/recommending body, and that until that was determined there might be little point in seeking a higher profile.

Angus volunteered to write an enticing invitation to some of the missing operators to attend the next meeting. Rob Wylie said that the web site name had been registered, but the site was not yet active.

## **3. Construction of a Composite Survey with Improved Accuracy**

Wayne Phillips said that we currently pick one of several surveys as definitive and ignore other overlap survey data, and asked why not use all of the available data to provide improved accuracy. Wayne recommended Regression Analysis as a suitable means of merging the data. Angus stressed that correlation between combined surveys must be taken into account. Torgeir pointed out that a new error model would be required, one that was somehow specific to the combination of surveys used to derive the definitive survey. Ed Stockhausen said that continuous surveys would fall into the category of overlap data and could be merged with the static surveys.

## **4. Globalisation of Marine Magnetic Surveying**

Angus brought the Committee up to date on deployments of the Tech21/BGS survey boat. 50 North Sea fields have now been surveyed, and subsequent deployments will be to the GOM, Africa, Mid East and Far East. Angus said that improved position accuracy provided by In-Field Referencing had allowed re-evaluation of the geology in some cases.

## 5. Collision Risk Calculations and their implementation

Harry repeated the question asked at the previous two meetings; can the Committee recommend standardisation of Separation Factor calculations. However, he realised that the larger (and similarly recurring) question was whether the Committee wanted to make recommendations about *anything*.

Harry felt that this subject offered a good test of the Committee's intent, since there was an obvious sequence of recommendations that were possible on the subject of SF calculation. The Committee could choose the level that it felt comfortable with; from simple/uncontentious to radical/revolutionary.

Several members pointed out that the Committee had no formal means of taking such decisions.

## 6. Anti-Collision and all those messy options.

Jerry Codling expanded on the points made by Harry. He said that only about 40% of customers used anti-collision rules, but those that did made use of a variety of methods. From a software provider's perspective there were obvious benefits from standardisation; e.g. less faults in implementation, easier testing, easier training.

Jerry's preference was for the BP/Statoil method. Andy Brooks thought that this method (being one-dimensional) might be invalid in certain situations (such as near surface) where the problem becomes two-dimensional. Torgeir suggested that these apparently incorrect outcomes, although non-intuitive, were actually valid.

There was then debate about how the Committee might proceed on this issue, but no decision was taken.

## 7. BHA Sag with Varying Monel & Parameter Acquisition

Steve Grindrod said that BHA descriptions are not always precise enough for the purpose of calculating sag corrections. Interpretation of the BHA sheet, in terms of sag program inputs, is too subjective. He cited flex collars as an example of components that are often not described in sufficient detail. Each upset must be modelled and this information is not always available. In fact even the most persistent inquisitor can find it difficult to obtain the necessary information. Steve also pointed out that, for complex flexible components, the accuracy of reported sensor position become more critical.

Patrick Knight pointed out that the MWD sonde might also sag within its collar, something not normally modelled by BHA sag programs. Torgeir said that he was more concerned about gross error in sag calculation, rather than the precise accuracy of the correction.

## 8. Any other business

### Gyro error modelling.

Torgeir reported no progress since the inaugural meeting of the sub-committee in March. He stated that the work would include some statement of QC/verification requirement.

**Relatively large uncertainty in surface hole.**

Patrick raised the acknowledged problem that the ISCWSA MWD model is possibly optimistic in large diameter low angle hole. Torgeir said that BP and Statoil had an outstanding action item on this subject, but he requested input from Sperry-Sun who had relevant data to contribute.

**Tortuosity**

Bill Lesso described the lack of a standard definition for tortuosity. Although predominately a drilling problem, it is quantified from directional measurements, and Bill asked if the Committee could work on a definition that might then gain acceptance as a standard in the industry. Chris Chia and Angus both felt that it was not a suitable subject for consideration by the Committee. This was generally agreed, but also that the related impact on survey position was within the scope of the Committee.

**Dog leg severity contrast**

Harry referred to a meeting convened last month by Ed Stockhausen to discuss errors caused by failure to correctly survey slide/rotate patterns. At the meeting Harry proposed that an appropriate term in the error model would at least provide a more honest estimate of position uncertainty which in turn would encourage corrective action. The term need not be complex since the objective was not to precisely model the effect in all circumstances, but only to acknowledge that there was some contribution to position uncertainty, and hopefully frighten planners and co-ordinators into eradicating the effect via suitable operating procedures. He then handed over to Andy Brooks to propose a candidate error term.

Andy described a term by which inclination and azimuth errors are determined from delta inclination and delta azimuth, divided by a value related to the probable slide rotate ratio. He requested review of his method by interested Committee members. Torgeir suggested that Schlumberger work out a proposal for a new error term(s) for presentation at the next meeting, with other interested committee members providing input to Schlumberger.

John Turvill pointed out that for the error term to perform as intended, well plans might have to be modified to reflect actual survey intervals.

**Web site (ISCWSA.org)**

Robert Wylie asked what the site should include. Introduction, charter, minutes, presentations, the error model, and links to associated sites were all generally agreed to be desirable.

**Next meeting**

Proposed to coincide with SPE/IADC Drilling Conference in Amsterdam in March\*. Ed said that it was probable that ChevronTexaco would host the meeting.

In closing, Torgeir acknowledged the uncertainty regarding the scope and function of the Committee and proposed that we should discuss this at our next meeting. He warned that organising ourselves along the lines of API/IADC would require much more dedication of time and effort than members currently appear willing to contribute. However he took as an action item, for BP and Statoil, the generation of a proposal for consideration by the Committee.

Torgeir thanked Len Duncan and SDC for their hospitality.

\*Subsequently determined that SPE/IADC is 19-21 February 2003