Minutes if the 34th

ISCWSA meeting

Industry Steering Committee on
Wellbore Survey Accuracy

and

SPE Wellbore Positioning Technical Section

Denver, USA

Nov 3rd 2011

Meeting Venue

Hyatt Regency Hotel

Denver

Colorado

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Agenda

Activity	Presenter(s)	Title / Notes	From	To
Welcome & Coffee			**08:00**	**08:30**
Introductions	Simon McCulloch, Maersk Oil	Introductions & Summary of Schedule	08:30	08:45
Presentation	Jurgen Mazka, Nils Olsen DTU	The DTU Space high precision geomagnetic field model	08:45	09:15
Presentation	Kevin McClard, PDT	Survey frequency and standard procedures for calculating surveys	09:15	10:00
Coffee			**10:00**	**10:15**
Presentation	Neil Bergstrom, Devon Energy	Using magnetic MWD surveys despite magnetic interference when pad drilling	10:15	10:45
Sub-committee update	Harry Wilson, BHI	Report of Collision Avoidance Sub-committee activity	10:45	11:05
Presentation	TBA	Geomatics Presentation	11:05	11:35
Sub-committee update	Steve Grindrod, Copsegrove	Report of Error Model Sub-committee activity	11:35	11:55
Administration	Simon McCulloch	Voting & administration	11:55	12:05
Lunch			**12:05**	**13:00**
Presentation	Jerry Codling, Landmark	Relative Instrument Performance	13:00	13:30
Presentation	Ed Stockhausen, Chevron Ross Lowdon, Schlumberger	Combining Static & Continuous Surveys	13:30	14:00
Sub-committee update	Bill Allen, BP	Report of Relief Well Sub-committee activity	14:00	14:50
Administration	Robert Wylie, NOV	Result of Voting & Treasurer's report	14:50	15:00
Coffee			**15:00**	**15:15**
Presentation	Keith Beattie Gyrodata	High Angle GyroMWD Experience	15:15	15:45
Presentation	Harry Wilson ISCWSA	Position Uncertainty Training Issues	15:45	16:15
Presentation	Pathfinder TBA	Practical Application of Ranging & GyroMWD	16:15	16:45
Sub-committee update	Steve Mullin, Gyrodata	Report of Education Sub-committee activity	16:45	17:!5
AOCB	Simon McCulloch	AOCB, Wrap-up & goodbye	17:15	18:00

Meeting minutes

1. **Simon McCulloch Chair Opening remarks**

   Pete Clark is the only candidate for group chair

   Thanks to SPE and Schlumberger for sponsorship

   Introductions of all present

   Special welcome for operators and new members

2. **Jurgen Matzka (JM) - The DTU Space high precision geomagnetic field model**

   Questions:

   Is this model predictive? Only for past data (Neil Bergstrom)

   It cannot be use for future data (JM)

   What kind of main field model do you use and accuracy (Benny Poedjono)

   Goes up to degree 80 harmonic (JM)

   Will model be commercial (Simon McCulloch)

   Yes eventually, looking for sponsor (JM)

3. **Kevin McClard - survey frequency and standard procedures for calculating surveys**

   Questions:

   MWD Error model is not valid for survey frequency this study shows that - Roger Ekseth

   Agreed (KM)

   This survey frequency is a real issue and needs to be dealt with - Ed Stockhausen

   Agreed (ES)

Need to build weighting function for introduction to error model- (Harry Wilson)

Agreed (KM)

Torque and drag needs to be looked at with respect to survey interval (Rodger Goobie)

Agreed (KM)

Calculate LDS along the wellbore, don't characterize geometry of wellpath (Samuel Rabela)

Only answer is more survey data (KM)

4. **Neil Bergstrom Using magnetic MWD surveys despite magnetic interference when pad drilling**

Questions:

How do you degauss casing – (Jim Chaconas)

Some manufactures do some don't, manufacturer happened to have a degauss facility (NB)

How do you verify the MWD surveys (Adrian Ledroz)

Can be difficult (NB)

What type of gyro surveys were used (Simon McCulloch)

Some NSG, only for lateral position uncertainty (NB)

5. **Harry Wilson – collision avoidance sub committee**

Comments

Showed all the documents of the output from this sub-committee

Meeting of meetings all available

Suggestions on performing standard Separation Factor – may make recommendation

Miss-use of error models, one survey frequency and collision avoidance as well, it is the validity of your database is vital t making this work.

Produced a mitigation against a collision avoidance rule MASD, two probabilities one the collision probability, the other what is the probability of drilling through the casing?

So pressure to break the rule in tight AC.

Lots of evidence of drilling through casing, from Benny Poedjono.

Recommend never to give mitigation against HSE risk well, have to solve the HSE risk.

This document is published.

6. **Stefan Maus - Satellite magnetic missions to support geomagnetic reference models**

Questions:

Are new satellites going to going to be funded after the European mission (Simon McCulloch)

Yes, military most likely, vital for them, but European (SM)

7. **Angus Jamieson Report on Error Model sub-committee activity**

Comments

Discussion of minutes of meeting

Discussion of all revisions to ISCWSA MWD model

Rev 4 BGGM model uncertainty, based on Lat Long, and not normally distributed

Rev4 not implemented and this needs to implemented for all models

E-book, no book on borehole surveying available for Dec this year. Free for ISCWSA members.

Questions:

Approved ISCWSA error models, some people say they (Simon McCulloch)

Do not approve individual performance models, this was clearly stated – (AJ)

Do we have standard well profiles and numbers -Ed Stockhausen

Do have test well, but inadequate, so more needed and info on propagation and AC calculations, will be done next year – (AJ)

8. **Simon McCulloch Voting and Administration**

Comments:

Peter Clark voted in as vice chair, Ed Stockhausen nominated and harry Wilson seconded

Field trip details discussed

9. **John Thorogood - Lessons from aviation on the impact of automation -**

Comments:

Cannot leave ppt slides as it will be part of a presentation at IADC. (JT)

Explanation of automation advancement in the air industry, show cockpit of aircraft and showing multitude of displays and how easy it is to make a mistake

Explanation of Air France disaster 20000hrs experience with the pilots but could not work out what was going as different sensors confused them all in 4.5mins. This seems very simple to fix in hindsight.

Highly automated flight deck, ambiguous signals, and sudden changes are complex interfaces the issue?

Automated choke example = better control but need control if it goes wrong

ROP optimization, reduces driller oversight but allows the driller to focus on wider management issues.

Dynamic positioning systems multiple redundancy but need very high training needs

Discussion on timescales on decision making, instant, near instant and longer term.

Emerging technologies these need envelope protection

Where are we going?

- Reduced crewing?
- Full automation
- Experts control remotely

Questions

We expect technology to do things for us, so we don't know what to do when it fails (Kevin McLard)?

That is right, developing pilots to fly instruments not fly, guys were trying to make sense of strange instructions. Very complicated and we tend to over simplify in hindsight. Reading list on human error available via the ISCWSA website (JT)

Does this impact AC Robert Wylie?

Yes, we need to raise our game here (JT)

Discussed pilot training, pieto tubes known to be faulty both caused the incident. 5th time this has happened (Benny Poedjono)

IT can compound the error (JT)

Need to publish near miss events in the oil industry (JT).

10. **Bill Allen -Intercept committee update**

Comments

Mission decided – demystifying ranging technology for the industry

Thanks to each presenter at the sub committee meeting

Questions:

What do we use ranging technology for? Jim Chaconas

Answered by (Chip Abram) Relief wells not most common, fish bypass, Plug and abandon, SAGD coalbed methane, well twinning more common.

11. **Robert Wylie - Treasurers report**

Comments

Explanation of financial history, issues before charging for meeting with no money.

Approx $40k in the bank

What are we going to do with these funds

- Specific pieces of work beyond our volunteers
- Education awareness sub-committee with ISCWSA promotion
- Use money for sponsorship for a student to perform work on error models etc (John Thorogood)

12. **Keith Beattie - High Angle GyroMWD experience**

Questions:

How does the outrun battery mod, what type of survey is it (Bill Allen)

Triggers with down linking in future, works like a drop gyro (KB)

What is the accuracy of the GWD70? (Harry Wilson)

At least as accurate as the standard drop gyro (KB)

Error models updated (Harry Wilson)

Answered by Roger Ekseth Yes

What is the limit on GWD70 accuracy

Ok to 70 degrees (KB)

When does GWD70 become worse than MWD (Angus Jamieson)

Should run with both (KB)

Comment on error model above 70 degrees inclination, that this needs to be investigated for its propagation (Harry Wilson)

Survey redundancy very important on catching gross errors (Neil Bergstrom)

Agreed (KB)

What is different in QA/QC with GWD70 and what the quality numbers will they have(Phil Harbidge)

Now takes into account G sensors bias errors and earth rate, decreased allowable number of deviations, massive improvement in quality readings (KB)

13. **Steve Mullin - Report I on the Education sub committee**

Comments:

Sub-committee are workgroups so limit the number of people in the committee, so one per company, 14 in total. People double booked only 6 there but was still productive.

Suggestion on how we handle sub-committee meetings.

Make use of the SPE to publicize what we do other technical committees do.

Have slides to explain the ISCWSA committee, introduce into survey presentations to cover the industry.

Web site we can use this, ideas for the next meeting.

Presentations to academic institutions. Produce a presentation on surveying

Could use linked in to keep in touch, and get discussion going

Additional comments by committee members

Discussion on ATW's and its value an opportunity to educate those who don't know surveying well enough. Dynamic audience participation very important. Can be written up to produce a paper (John Thorogood)

The best ATW's included breakout sessions and interactive as possible, great opportunity (Carol Mann)

Sub-committees can work together so we always have a common message (Bill Allen)

Mindjet software allows people to add content to a website, allows people to share documents (Kevin McClard)

14. **Charles Duck - Practical application of ranging and GyroMWD**

Questions:

Gravity MWD needs a tie in surveys to orient (Simon McCulloch)

Yes, good quality survey needed (CD)

Is there a minimum inclination needed for Gravity MWD? (Simon McCulloch)

4 degrees cased hole and 1 degree in open hole ; CD

Gravity MWD includes magnetic sensors (Simon McCulloch)

Yes they are standard MWD tools – CD

How is SAG taken into account - Mike Pond

SAG corrections are built into the program – CD

15. **Harry Wilson - An introduction to survey error modeling -**

Comments:

All part of an education program

Specifications are vital, both for what you want measured and the results

A step through guide to making an error model

16. **Phil Harbidge - Update from the Webmaster**

Comments:

Phil showed the new website and asked for ideas on more content