



# Education Subcommittee Update

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## Education SC Chairperson

Mahmoud ElGizawy

- Global Surveying Domain Manager
- K&M Technology Group, SLB
- PhD & MSc in Geomatics Engineering, U.of Calgary
- 24 years in positioning and navigation (19 years in wellbore positioning)
- Based in Bucharest, Romania





## Mission Statement

- ISCWSA Education Subcommittee is an advisory body dedicated to raising awareness of wellbore positioning practices and challenges within the drilling industry through workshops, webinars, eBooks, public lectures, and other media.



# Activities

## Student Awareness

- Drillbotics Competition (DSATS)
- WPTS Directional Drilling Competition proposal
- PetroBowl
- Student Chapters Engagement

## Professional and Young Professional Awareness

- SPE Live and Webinars
- Distinguished Lecture
- Hits and Misses proposal – target young professional
- ISCWSA Course Scholarship
- Reach out to all small service providers.

## Educational

- eBook Update
- ISCWSA Course Update

## Recognition & Awards

- ISCWSA long time contributors to error models, CA and others



# What is Drillbotics?

- Drillbotics<sup>®</sup> is an international competition for universities to design and build a small drilling rig that uses sensors and control algorithms to autonomously drill a rock sample provided by SPE's Drilling Systems Automation Technical Section (DSATS) and Wellbore Position Technical Section (WPTS).
  - Group A - Option 1 – Generate a virtual model of the rig, the well, and a directional drilling technique.
  - Group A - Option 2 – Generate a simulator to detect and control a kick event.
  - Group B – build and operate a physical rig.
- In the 2023 competition, there is a directional component that will require steering and surveying to hit specified X/Y target coordinates at designated vertical depths. Drilling system must be able to switch between steering modes (slide/rotate) and survey mode (on/off bottom) autonomously.
  - Calculating survey intervals & trajectory be automated.
  - DLS required to hit targets & distance/direction to plan automatically calculated at each survey station & shown on rig floor display





# ISCWSA Volunteer Opportunities

- Competition Judges (x2) – Timothy Paton and Matthew Weber
  - Requirements:
    - Judge (remote or in-person) both Group A & B competition performances in May/ June 2023
    - Primary contribution is expected to be in directional requirement & surveying practices
  - Time Commitment:
    - Read & familiarize self with Drillbotics Guidelines (~1 hr)
    - Competition judging (1 day)
- Table Attendants at Competitions (1-2 Per Competition)
  - Requirements:
    - Responsible for attending competitions to hand out fliers & promote ISCWSA
    - Answering questions about the oil & gas industry and recruiting the next generation
  - Time Commitment:
    - Competition day (1 day)



# ISCWSA Volunteer Opportunities

- Survey Theory Webinar Q&A Host – **Marc Willerth**
  - Requirements:
    - Many students have expressed interest in attending Q&A sessions with industry experts from various fields. ISCWSA could host several 30-minute Q&A sessions with the students to allow the opportunity to ask questions about survey theory & practice.
  - Time Commitment:
    - 30 – 60 minutes per session
    - Available by email to periodically answer questions
- Challenge Team Member (1-2) – **Timothy Paton and Matthew Weber**
  - Requirements:
    - Each summer, the Challenge Team meets to review the results of the previous year's competition & set the competition guidelines for the following school year.
    - Stay involved with the Drillbotics Committee throughout the year & commit to reviewing monthly updates from the university teams.
  - Time Commitment:
    - Varies throughout the year





# Drillbotics 2024 Schedule

## Group A: Competition Schedule

- Phase I (Registration): – 15 Oct 2023
- Phase I (Virtual): Design submission – 31 Dec 2023
- Phase II (Virtual): Judge feedback/initial acceptance of teams  
– approximately 31 Jan 2024
- Phase II (Final presentation, Q&A and rig model demonstration) – May/June 2024

## Group B: Competition Schedule

- Phase I (Registration): – 15 Oct 2023
- Phase I (Physical): Design submission – 31 Dec 2023
- Phase II (Physical): Judge feedback/initial acceptance of teams  
– approximately 31 Jan 2024
- Phase II (Final presentation, Q&A and rig demonstration) –  
May/June 2024



# WPTS Directional Drilling Competition Proposal

- Target university students
- A challenge to hit the target using the directional drilling simulator
- May be add a well plan section?
- Possibly elimination rounds
- Consider school year
- Winner could get a trip to ISCWSA Meeting? \$\$?
- Might get corporate sponsors
- **Volunteers: M. Elshabrawy Angus, M. Long, Tim, David and M. ElGizawy to have a proposal before next ISCWSA meeting**



# PetroBowl

## PetroBowl<sup>®</sup> Competition

The PetroBowl<sup>®</sup> competition matches SPE student chapter teams against one another in a fast-paced quiz competition covering technical and nontechnical aspects of the oil and gas industry.

<https://www.spe.org/en/students/petrobowl/>

- Connect with PetroBowl competition team to include questions on WBS
- Questions are needed. Please submit your questions via the link

[ISCWSA - PetroBowl Q&A Submittal](#)

ISCWSA - PetroBowl Q&A Submittal

The PetroBowl is an international competition hosted by the SPE that pits student chapter teams against each other in a series of quick-fire Q&A rounds related to the Oil & Gas industry. This is a great opportunity for the ISCWSA to continue spreading the message of the importance of wellbore positioning.

- Volunteer: Josh Albright



# Student Chapters Engagement

- SPE student chapters (approx. 400 chapters).
- Connect with SPE
- Get them involved in some of our project. Help them in their thesis, credits..etc
- **Volunteers: R. Kirby, Benny and M.Elshabrawy**



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- ISCWSA Course Update

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# SPE Live

- Planned two Webinars and two SPE Live this year
- 02-Mar-2023 SPE Webinar - Completed
  - Geothermal Wellbore Surveying Challenges
  - Ross Lowdon (Speaker) and David Gibson (Moderator)
- 20- Sep-2023 SPE Live - Completed
  - Directional Data and Wellbore Surveying
  - Adrian Ledroz (Speaker) and David Gibson (Moderator)
- 05 – Oct – 2023 SPE Webinar - Completed
  - Why Your Wells May Not Be Where You Think They Are
  - Angus Jamieson (Speaker) and David Gibson (Moderator)
- 15 - Nov - 2023 SPE Live - Coming Up
  - Recommended Practice for Safe Separation, Surveying, and Wellbore Positioning
  - Jonathan Lightfoot (Speaker) and David Gibson (Moderator)



Sep 20, 2023

**SPE Live: Directional Data and  
Wellbore Surveying**



# Distinguished Lecturer Program



SPE DISTINGUISHED  
**LECTURER**<sup>SM</sup>

Jonathan Lightfoot

Recommended Practice for Safe  
Separation, Surveying, and Wellbore  
Positioning



# Hits and Misses Proposal

- Consideration to re-offer hits and misses workshop
- 2.5 – 3 days workshop
- Delivered by industry SMEs on Wellbore Positioning
- **Volunteers: Robert, Carol and Mahmoud**



# ISCWSA Course Scholarship Proposal

- Tuition Fee: \$1200
- Proposal to have a special rate to students and professional in transition
- Scholarship to take the course. Sponsored by ISCWSA
- **Volunteers: Suzanne Hawkins and M. Long to receive applications and decide on the scholarship**



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# eBooks Update

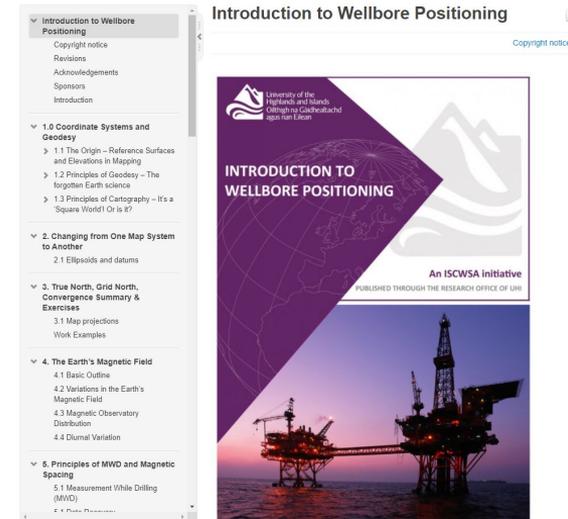
## Introduction to WBP

- **New Revision**
- **Cover update (remove UHI) / new design**
- **WPTS AC Update**
- **Error model revisions – rev5 update**
- Considering a change to the title
- Angus and Mahmoud to separate Introductory materials and advanced material (move to appendices)
- WBP eBook Web version is available

<https://www.manula.com/manuals/iscwsa-ebook/iscwsa-ebook-introduction>

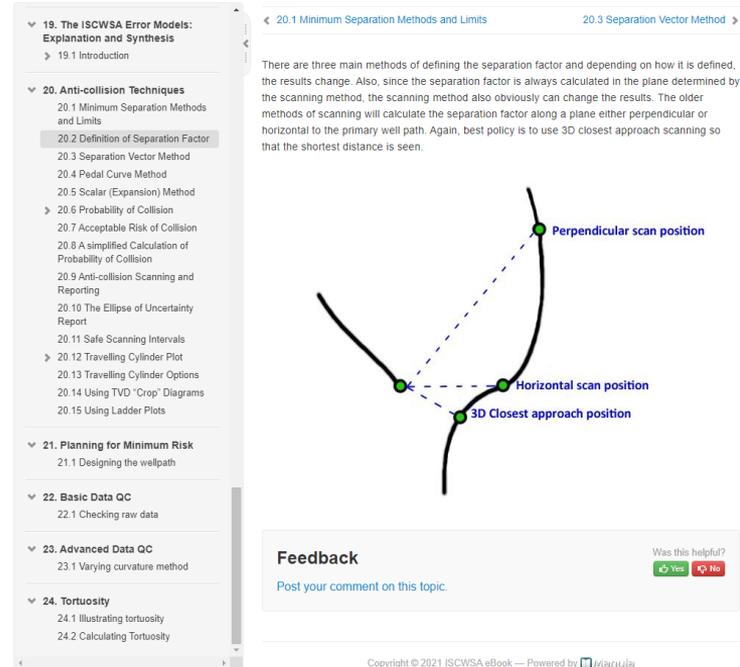
Schlumberger-Private

- ISCWSA hosting/copy right of eBooks
  - Introduction to WBP
  - Well Interception
  - Survey QC (Work-On-Progress)



# eBooks Update

- Call for content updates eBook Introduction to WBS
  - Please contact:  
Prof. Angus at [Angus.Jamieson@hptech.com](mailto:Angus.Jamieson@hptech.com)  
or  
Mahmoud at [Melgizawy@slb.com](mailto:Melgizawy@slb.com)
- Possible to provide feedback directly on the web version



The screenshot shows the eBook's table of contents on the left and a diagram on the right. The table of contents includes sections 19 through 24, with '20.2 Definition of Separation Factor' highlighted. The diagram illustrates three methods of defining the separation factor between two curved wellbore paths: 'Perpendicular scan position' (a dashed line perpendicular to the path), 'Horizontal scan position' (a dashed line parallel to the path), and '3D Closest approach position' (a dashed line representing the minimum distance between the paths).

20.1 Minimum Separation Methods and Limits

20.2 Separation Vector Method

There are three main methods of defining the separation factor and depending on how it is defined, the results change. Also, since the separation factor is always calculated in the plane determined by the scanning method, the scanning method also obviously can change the results. The older methods of scanning will calculate the separation factor along a plane either perpendicular or horizontal to the primary well path. Again, best policy is to use 3D closest approach scanning so that the shortest distance is seen.

Perpendicular scan position

Horizontal scan position

3D Closest approach position

**Feedback**

Was this helpful?

Post your comment on this topic.

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<https://www.manula.com/manuals/iscwsa-ebook/iscwsa-ebook-introduction>



The Industry Steering Committee on  
Wellbore Survey Accuracy (ISCWSA)

## Wellbore Positioning Technical Section

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# Find the resources you need for better wellbore survey accuracy.

Industry Steering Committee on Wellbore Survey Accuracy (ISCWSA) produces, maintains, and publishes standards for the industry, promoting a collaborative understanding of issues associated with wellbore surveying.

[LEARN MORE](#)

### ISCWSA ONLINE TRAINING COURSE

The ISCWSA is pleased to announce that the next "Introduction to Wellbore Positioning" online course is scheduled to start in **March of 2022**. Applications for enrollment are now being accepted.

[ABOUT THE  
COURSE](#)[APPLY  
NOW](#)[GET  
UPDATES](#)



## Wellbore Positioning Technical Section



The Industry Steering Committee on  
Wellbore Survey Accuracy (ISCWSA)

### THE ISCWSA WELLBORE POSITIONING COURSE

📅 STARTS SEP 10 2023 ⌚ APPLICATIONS ARE NOW BEING ACCEPTED.

This course is based on the ISCWSA free eBook "Introduction to Wellbore Positioning".

Using a mixture of videos, training exercises, and self-study material, it covers subjects such as Mapping, directional drilling, surveying, survey uncertainties, and high accuracy...

📄 APPLY NOW

### About the ISCWSA Wellbore Positioning Course

This course is based on the ISCWSA free eBook "Introduction to Wellbore Positioning".

Using a mixture of videos, training exercises, and self-study material, it covers subjects such as mapping and geodesy, directional drilling, surveying, survey uncertainties, and high accuracy directional drilling.

iscwsa: RB0001  
Intro to Wellbore Positioning Discover New Help

1.1.1 Mapping History  
Bookmark this page

Mapping History video

Project from the centre of the Earth

And when we do that, we've projected every point on the Earth's surface with the exception of the North Pole onto the cylinder.  
Now, clearly, if we were to continue to go to higher and higher latitudes there would be an enormous vertical stretch, and so the Mercator projection is only published to maybe 85 degrees of latitude practically.  
**What this does mathematically is it creates the same amount of stretch north-south as we have east-west.**  
And so in general the shapes of the countries are about right. But the sizes of the countries are enormously distorted.  
Take a look at Greenland now. If I told you that you could fit the whole of Greenland 10 times into the continent of Africa you now get an idea of how much scale distortions we're talking about.  
I'm sure that people in Greenland love this map. I believe there's only 55 thousand people live there, but according to the map they have one of the

📅 STARTS SEP 10 2023

⌚ APPLICATIONS ARE NOW BEING ACCEPTED.

🕒 ENDS NOVEMBER 2023

💰 TUITION FEE \$1,200

📄 APPLY NOW

### Course Benefits

- 🌟 Industry recognized certificate
- 🕒 Be more informed in your work
- 👨‍🏫 Expert instructors
- 🕒 Paced to fit working students

### FAQs & Support Help

How do I learn this course's Certificate?



- ISCWSA took over the ISCWSA eBook based “Introduction to Wellbore Positioning” training course from the UHI, and converted the course to run under a modern Learning Management System (edX) through the ISCWSA website.
- It now includes a series of videos lectures, readings, problems, exercises, and simulation examples, with Continuous Assessment grading.
- Registration for the course is through the [iscwsa.net](http://iscwsa.net) website, and it runs on an [iscwsa.net](http://iscwsa.net) Training Server



Week 0: Introduction – Connections

Week 1: Mapping and Geodesy

Week 1-1 : Mapping, Projections, and Datums

Week 1-2 : North References and Scale Factor

Week 2: MWD, Earth's magnetic field, QC, and Corrections

Week 2-1 : MWD and Earths Magnetic Field

Week 2-2 :Basic QC and Survey Corrections

Week 3: Drilling Rigs, Well Planning, and BHA design

Week 3-1 : The Drilling Rig

Week 3-2 : Introduction to Well Planning

Week 3-3 : Introduction to BHA Design

Week 3-4 : Directional Drilling Simulator

Week 4: Data Management, Quality Control, and Depth

Week 4-1 : Data Management and Data Audits

Week 4-2 : Depth Measurement, Uncertainty, and Corrections

Week 5: Survey Tools and Survey Calculations

Week 5-1 : Survey Tool Types

Week 5-2 : Survey Calculations

Week 6: Survey Uncertainty and Collision Avoidance

Week 6-1 : Uncertainties and how they propagate

Week 6-2 : Survey Uncertainties and Error Models

Week 6-3 : Anti-collision terminology, planning and operations

Week 7: High Accuracy Drilling

Week 7-1 : Survey Corrections for High Accuracy Drilling

Week 7-2 : Introduction to Ranging Technologies

Week 7-3 : Exercise - Drill Relief Well

Week 8: Revision Time and Examinations



# Recognition of contributor to ISCWSA (error models..etc)

- Add a new page “Hall of fame” to ISCWSA.net
- Add previously recognized distinguished members
- Benny has compiled a list of contributors.



# Acknowledgement

- Education SC members are acknowledged for their participation and contribution to the SC activities
- 20 Participants in last meeting
  - Georgy Rassadkin, Gunnar
  - Mike Long, Roundlab
  - Tyler Longeaw, Roundlab
  - Suzanne Hawkins, Baker
  - Rustam Rakhmangulov, K&M
  - Nicholas Zachman K&M
  - Francisco Huitron, K&M
  - Robert Wylie, XnDrilling
  - Ayush Raj Srivastava, XOM
  - Mallore Schurr, SQC
  - Ryan Kirby, SQC
  - David Erdos, Erdos Miller
  - Josh Albright, SQC
  - Timothy Paton, SQC
  - Mohamad Elshbrawy, Shell
  - Adrian Castro, Turnazontal
  - David Gibson, Gibson Reports
  - Carol Mann, DGI
  - Benny Poedjono, Independent