### **International Association of Drilling Contractors**



IADC Advanced Rig Technology (ART) Committee 09.30-11.30 Thursday, 4 May 2023 Hybrid meeting IADC HQ, 3657 Briarpark Dr Ste 200 Houston, TX 77042

#### Minutes

IADC Advanced Rig Technology Committee Co-Chairs Blaine Dow, SLB, and Sarah Kern, H&P opened the meeting and welcomed the attendees. IADC's Linda Hsieh gave an overview of the <u>IADC antitrust policy</u>.

Matt Isbell, HESS, gave a guest presentation on Digital Wells and IADC DDR Plus, see accompanying slides. After discussion, the committee agreed that there are gaps in the current IADC codes/subcodes. Matt Isbell noted that several workstreams within D-WIS would like to continue their work using IADC codes but there are structural issues, so group is deliberating whether they need to create their own system, but recognize that it would be easier to take current IADC standard and grow it to suit new needs, but that will require some changes to IADC DDR Plus, including its links to WITSML structure.

He proposed that the committee, working together with other industry stakeholders like D-WIS and OSDU's Wells Data Foundation, work to create a roadmap of various scenarios that could be undertaken to evolve the IADC DDR Plus, considering each scenario's benefits and risks. Deliverable of this effort would be a proposal with the various scenarios outlined, to be presented back to the ART Committee for review and discussion. Group agreed this was a worthwhile effort to pursue, and asked committee members to go back to their organizations and identify individuals who could participate. Interested individuals may contact IADC (linda.hsieh@iadc.org).

Andy Westlake, Seadrill, DCS Vice Chair, gave an update on behalf of Nathan Moralez, BP, DCS Chair. Andrew Zheng, SLB, has volunteered to lead a small working group to finish the Guidelines for Minimum Safety Features for Drilling Control Systems and Assets, but more volunteers are still needed. The committee was asked to go back to their organizations to seek potential volunteers to join this effort. Interested individuals may contact IADC (linda.hsieh@iadc.org).

Shashi Talya, Halliburton, presented a proposal, on behalf of Nathan Moralez, for a new joint project between ART and SPE DSATS around human factors engineering, with the goal of reducing the cognitive load on the driller and other operators of automation systems on the rig. The current envisioned deliverable would be a list of questions for people developing automation systems to consider while developing those systems. Group agreed this would be a good project to pursue. Shashi Talya and Nathan Moralez

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will continue discussions to further refine the project deliverable(s) and submit a finalized project proposal to IADC for approval.

Konstantin Puskarskij, Copenhagen Energy Partners, and Mike Party, HESS, presented updates on ongoing projects under the Energy Efficiency Subcommittee, which will next meet on 25 May 2023.

- Emissions Reduction RP for Drilling Activities: A draft document, developed after approximately one year of work by the workgroup, was distributed within the ART Committee on 2 February 2023, and the review period closed on 15 March 2023. All comments received were incorporated into the draft document, and the resulting new draft was submitted to IADC Division VPs for review on 5 May 2023. The group is currently awaiting feedback. Anyone who would like to receive a copy of the current draft of the document can contact IADC (linda.hsieh@iadc.org).
- Emissions Forecasting and Reporting: Workgroup has agreed on 4 methodologies and are in the process of assigning sections out to individual volunteers to work on drafting; anticipated timeline is to have an initial draft to share with the ART Committee by summer. Each section now has a couple of volunteers but more help would be welcome. As mentioned previously, this group is well represented by drilling contractors (onshore and offshore) and large E&Ps but would like to see more representation by smaller E&Ps. Interested individuals can contact IADC (linda.hsieh@iadc.org).
- Alternative Fuels Report: Yet to start.

Blaine Dow and Sarah Kern noted that they aim to keep guest speakers to only ART Committee meetings in the future and keep ART Subcommittee focused on working on various ongoing projects.

Paul Pastusek, ExxonMobil, gave an update on the Dull Bit Grading Project. A draft document is about 90% complete. Group is still working on getting releases for all images used in the document, and a live bit grading session last year identified a few sections that need minor revisions. As document is nearly 200 pages long, future work may entail creating a shorter, rig-friendly document or poster. There may also be an opportunity for IADC to establish an online forum where SMEs can submit/comment on case studies. Currently estimating project will be finished in Q3 2023. Group is also planning to host a live bit grading session at the 2023 IADC ART Conference in September.

Robert van Kuilenburg, Noble, proposed that IADC consider holding 1-2 workshops focused on helping the industry to rebuild its ecosystem for rig construction/renovation. He noted that even as demand for deepwater drilling continues to increase, the industry has lost its previous ecosystem for designing, manufacturing and commissioning new rigs. The industry should act now before it's too late, or risk being stuck with obsolete designs not capable of supporting new ways of working. Hess, NOV and Huisman have confirmed their support of workshops on this topic.

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The committee showed support for this idea. It was mentioned that IADC is already scheduled to hold an Offshore Regional Forum on 26 September 2023 at Transocean's facility in Houston. Linda Hsieh will discuss with other IADC stakeholders on ways to work together and explore options for holding such workshops.

The meeting was adjourned at 11:30am.

Attendance: Andre Alonso Fernandes, Petrobras Andrew Calderwood, Stena Drilling Andv Westlake. Seadrill Anil Godumagadda, Patterson-UTI Drilling Blaine Dow, SLB Bob Silva, Amerimex Motor & Controls Brandt Lanzet, Patterson-UTI Drilling Brendon Webb, H&P Calvin Carter, MI Swaco Chris Stewart, Parker Wellbore Cody MacDonald, IPT Global Darren Mourre, TSC Drill Pipe Greg Matherne, Precision Drilling John Dady. Seadrill John de Wardt, DE WARDT & COMPANY Juan Pablo Arias Tamayo, Training Consultors Kalyan Singamshetty, ConocoPhillips Keith Boughton, Inteliwell Konstantin Puskarskij, Copenhagen Energy Partners

Paul Large, Esgian Paul Pastusek, ExxonMobil Robert Dugal, American Block Company Robert van Kuilenburg, Noble Robert Wylie, xnDrilling Ronald van der Meulen, GustoMSC Sarah Kern, H&P Sean Roach, SLB Shashi Talya, Halliburton

Leslie Dill, Precision Drilling Linda Hsieh, IADC Marcel Snijder, Patterson-UTI Drilling Mark Anderson, Ensign Energy Services Matt Isbell, Hess Melissa Eudy, Mi4 Michael Lee, ABS Mike Party, Hess Muhammad Jahanzaib Aijaz

## Why are we talking about IADC Codes?

- Colleagues and I foresee a future where a system including the IADC codes will be primarily digital.
- This vision goes beyond reporting how time was spent and the equipment involved. This new system will be capable many more things and tracking operations is only one functional aspect.
- We think it is a good time to reflect about the systems being built and consider how we can accelerate adoption of the concepts into industry practice. How can we make the most out of our current systems that have worked so well for so many?

### Why are we talking about IADC Codes?

- We are approaching this topic from our own experiences introducing and using digital wellsite systems.
- An example of some of the collective groups of experience is the Drilling and Wells Interoperability Standard which is a sub committee of the SPE Drilling Systems Automation Technical Section. DWIS is "A cross-industry group working on solutions to improve connectivity and data exchange between key equipment and systems deployed during well construction – regardless of the provider."
- Working with the new systems, we have used IADC Codes, Sub-Codes, and customized Sub-Codes, but we've reached a point where certain things break down since the IADC codes were not necessarily envisioned for the way of working we are moving toward.

## Gaps

- Data Classification Attributes (Activity and Equipment Attributes)
  - The data structure, content, and hierarchy are inconsistent
    - Result is contractors have made their own Sub-Codes with their descriptions
  - State and condition definitions need measurement and data quality qualifications
- Well Design, Multi-Well, Planned, Unplanned, Transition, Concurrent Attributes
  - Currently out of scope
- Time Granularity
  - Common practice is to capture activities greater than a threshold time (ex. 30 minutes) modern systems can capture much more information

### example







Have the best plan

Agree on the task

Credit: 204050 • A Novel Use of Digital Technologies for More Effective Multi-Party Well Planning and Execution





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# Different Context for Different Stakeholders



#### **FINANCE ACTIVITY PROGRAM**

- Cost based program
- Focused on operational and capital costs for the well program/event.
- "Live Plan" updates based on deviations<sup>2</sup> from the planned:
  - P10/50/90 Cost Estimates
  - AFE
  - Durations to complete events.
- Takes into account operational contracts with partners.



#### SUPPLIER<sup>5</sup> ACTIVITY PROGRAM

- Materials based program w/ scheduled delivery times
- Focused on materials required to implement operations or activities in the well program.
- "Live Plan" updates based on deviations<sup>2</sup> from the planed:
  - Mechanical specifications.
- Takes into account material inventories and long lead times for special equipment.
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#### OFS<sup>4</sup>ACTIVITY PROGRAM

- Operation or Activity based program w/ scheduled times.
- Focused on a specific function during a phase, operation or activity.
- "Live Plan" updates based on deviations<sup>2</sup> from theplanned:
  - Mechanical specifications.
  - Design of Service contract.
- Takes into account service providers specialized processes & best practices.



#### DSM<sup>3</sup>ACTIVITY PROGRAM

- Time & depth based program
- Focused on implementation of phases, operations and activities as planned.
- "Live Plan" updates based on deviations<sup>2</sup> from the planned:
  - Mechanical specifications.
  - Durations to complete operations<sup>1</sup>
- Takes into account operators best practices & industry regulations.



#### **DRILLERS ACTIVITY PROGRAM**

- Rig Action Plan based program
- Operational set points/envelopes (ROP | WOB | RPM | GPM...) needed to achieve prescribed goals for the current activity (eg Drill 5 7/8 section to 5800')
- "Live Plan" updates based on fast loop / real time engineering.
- Takes into account rig providers best practices & rig capabilities.

#### Footnotes

- For example, if the operation "Casing intermediate section" takes 3 hours longer to complete than planned the cementing services needed for the next operation, "Secure intermediate section", need to be notified to either arrive on site later or stay on standby for those 3 hours.
  Tolerances will be defined for each operation or mechanical specification which trigger an update to the "Live Plan".
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  Drilling Supervisor (DSV), Drill Site Manager (DSM) or other persona referring to the operators representative at the drilling site.
- 4) Oilfield Service Providers
- 5) Providers of materials, logistics, scheduling/tracking & related procurement systems.

**Two Basic Plans?** 



## The Well Plan

Requirements and objectives of the well design

## The Operations Plan

- Time and depth sequenced
- Wellsite integration of activities for execution

What role do IADC Codes play?

### The Rosetta Stone





### Framing the Issues and Potential Actions...

- Is it the right time to revisit the IADC Code System and its applications?
- Would a roadmap for the IADC Code System be helpful, or do we let it take its own path as a static system?
- Propose a short-term effort to frame different development/roadmap scenarios with benefits and risks.
  - Ex. evolve the current system, allow parallel development to define practices and then incorporate into IADC codes, add a sub-system,...
  - What are the right questions to answer to inform future action?
- Goal: accelerate data exchange and methods to communicate between the rig owner, operator, service companies, and qualified users.