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**Day 1 – Tuesday February 6**

**08:30 Welcome, Announcements and Safety Moment**

Andre Alonso Fernandes welcomed the UBO & MPD Committee and thanked API for sponsoring the meeting. Safety briefing about the facilities by Lone Star College.

Introduction of Committee Members and Guests. The group was asked to introduce itself. Each attendee gave an introduction including company name and work location. See Appendix 1 for the detailed list of the attendees.

Oscar Gabaldon volunteered to be a minute taker.

Safety moment – Jacob Petz. Safety at home and playing with toys.

IADC Anti -Trust policy.

Reviewed last meeting minutes:

- Brief recap on document progress: API 92S had some text clarification. Influx Management Annex still progressing.
- Nothing new to add/change on the minutes.
- Elections: Reviewed results from elections in Q4 Meeting. Confirmed with Dennis and Paul they accept

<b>Position</b>	<b>Chair</b>	<b>Vice Chair</b>
UBO & MPD Committee	Andre Alonso Fernandes (Petrobras)	Oscar Gabaldon (Blade Energy)
MPD Sub-Committee	Martyn Parker (Pruitt)	Bob Goodwin (Signa Engineering)
UBO Sub-Committee	C J Bernard (Halliburton)	Dennis Moore/Leiro Medina (TBC)
DGD Sub-Committee	Dave Smith (Enhanced Drilling)	Sara Shayegi (Shell)
HSE / Training Sub-Committee	Jacob Petz (Maersk Training)	Jon Thain (Ocean Rig)
Gas in the Riser Sub-Committee	Paul Sonnemann (SafeKick)	Akram Nabyev (Air Drilling Associates)
Regulatory Liaison	Calvin Holt (Chevron) / Konstantin Puskariskij (Maersk Drilling)	

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**09:00 Discussed Meeting and conference schedule**

**2018 Committee Meeting Schedule.**

<b>Quarter</b>	<b>Date</b>	<b>Location</b>	<b>Sponsor</b>
Q2	April 19 – 20	New Orleans	Shell – Sara confirmed at One Shell Plaza
Q3	September 18 – 20	Aberdeen	WTF/Maersk (Maersk training Aberdeen)
Q4	December 4 – 6	Houston	Nabors

Post data note: WFT & Maersk Aberdeen confirmed dates and location for sponsoring Q3 2018 meeting

**2019 Committee Meeting Schedule.**

<b>Quarter</b>	<b>Date</b>	<b>Location</b>	<b>Sponsor</b>
Q1/2	April 11 – 12	Amsterdam	TBA
Q1/2	TBA	February/March	AFGlobal

Discussion about meeting location for Q4 2018 and Q1/Q2 2019 meeting, Nabors and AFGlobal volunteered. Defined that Nabors would Sponsor Q4 2018 meeting and AFGlobal the first meeting from 2019 in Houston. Paul proposed to suggest coordinating with Well Control Committee meetings, if possible hold them same week or close in time.

Actions:

- Discuss with Leesa dates for Amsterdam Conference and Committee meeting.
- Discuss with Well Control Committee about potentially combining dates.
- Looking for sponsors for Amsterdam Conference and Committee meeting.

Post data note: Leesa informed that the MPD conference will be 9-10 April.

**09:30 Subcommittee reports**

**UBO**

- CJ: Received list of proposed changes for the revision of API 92U.
- Next step is to work on those changes.

**MPD**

- Will have evaluate new ballot for API 92P and 92S with API.
- Still working on Influx Management Annex, got contribution from volunteers.

**Gas in the Riser**

- Not much progress on document, subcommittee has not met recently.
- Presentation made to the large group (June 2017), not much feedback. Would like to get more feedback from large group.
- Group agreed to have Paul present again the material shown in June 2017. Highlights from presentation:
  - Finite Riser Energy principle. Closing the riser on the top and bottom confines the

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energy in the riser.

- Riser Equilibrium Pressure and Volume.
  - Determining riser equilibrium point (depth where applied pressure = REP with fluid above gas)

## DGD

- Making DGD document consistent with API 92S.
- Focus the document on experiences actually done. Leave further concepts for Annex to the document.
- Plan to circulate the current version of the document at the end of this meeting, for comments from the large group.

## HSE & Training

- Plan to continue work during this meeting. Then potentially share progress at the end of this meeting.

## MPD Influx Control workgroup

### Liaison Reports

- Certifying Authority report
  - Konstantin updated on mapping global authorities. To circulate list with Committee. Good to identify points of contact, need to rank the need for contacting them and discussing MPD with them.
  - It remains to be discussed the need of a dedicated workshop for regulatory bodies.
  - It remains to be discussed the need of a slide deck for regulatory bodies, to Committee members to share/present locally.
  - NOROK working on D-10 guidelines, relate to recently published DNV 101 document.
  - ABS would like comments on how they can help the regulators from their side. Know the expectations from regulator bodies will help.
- Well Control:
  - Workgroup in Well Control Committee is reviewing well control related practices. Started from Paul initiative to discuss gas in the riser and other relevant issues. Last workshop discussed conventional well control shut-in sequence procedure. Considering closing BOP **before** stopping mud pumps, to use fluid energy to reduce BHP reduction. Similarities to MPD operations highlighted.
  - Paul proposed to invite Well Control members to present their progress to us.
  - Jacob updates from IWCF considering improvements on scenario training, as well as emphasizing human factor. Proposed that Maersk Training can present their interaction with IWCF
- API 16Q:
  - On August 16th 2017 Mike Vander Staak is requesting a liaison between API 16Q and the MPD Committee. This should be revisited in the next committee meeting in Houston (Action).

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- Oscar discussed with David Lewis, Chair of API 16Q Committee. Recently published latest update of the document, which covers MPD to some extent. They are open to add an annex or addendum to cover MPD in more detail, if this Committee considers necessary.
- Discussed committee's position regarding MPD. Willing to evaluate adding annex or addendum. Mike will lead the effort. Harish collaborate. Will organize offline meeting to discuss. Perhaps invite to an earlier meeting with API 16Q committee to discuss.
- Harish: Consider also API 16F, as it's being reviewed now. It deals with riser equipment. Modified riser joint would need to be covered there.

### **API Task Group Reports**

API 16RCD:

- Summary comments from last Task Group (Dec 12-13, 2017) meeting sent by Martin Culen.
- No work to be done on this meeting.

### **11:00 Floater Rigs Survey – Leslie Cook – Calvin Holt**

Leslie Cook w/ Wood Mackenzie presented on MPD Rig Fleet Status.

- Definition of '*MPD readiness*'. Stages?
- Cost parameters around stages
- Current philosophies on MPD kit ownership
- Advantages and disadvantages of rental versus owned

Information sharing: Information will most likely be shared within the Committee.

Calvin presented on the progress of the work with WoodMackenzie

- Why do we need this? Disagreement / misinformation regarding what MPD capable/enabled means.
- What are the levels? Proposed by the small group (Leslie, Calvin, Dennis, Brian P, etc.). Focused on the contractor owned hardware permanent onboard, not what could be.
  - Levels 1, 2, 3, 4, and A. MPD Prepared, Capable, Enabled, Offshore Ready. A is for alternative MPD system: CML, CCS, DGD.
  - Discussion required to finalize levels and labels definition
  - Considerations for personnel: group decided to leave out of the classification, since it can change from well to well. However, open to suggestions.

### **12:00 Lunch - Sponsored by API**

Continued discussion from previous.

- Work progress will continue. Suggestions will be directed to Calvin.
- Discussion will take place at the panel discussion during the 2018 MPD Conference and

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Exhibition. Feedback from the audience will be requested. After panel discussion, the Committee will receive compilation of comments.

**13:00 Breakout sessions**

Groups breaking in work sessions: MPD Subcommittee (to work on Influx Control Addendum), Gas in Riser. DGD, HSE & Training will break out on Tuesday.

**16:00 Meeting adjourned for the day**

**Day 2 – Wednesday February 7**

**08:30** Andre welcomed back the UBO & MPD Committee, thanked API for hosting and sponsoring meeting.

Update from Borre on CML

**09:30 Resume working sessions**

Influx Management Annex, Gas in the Riser and HSEE & Training workgroups.

**11:50 Regulatory Update – Earl Dietrich**

BSEE – GoM

- Two rigs approved for MPD implementation by DNV as per DNV OS-E-101 and unconditional BSEE approval
- Transocean DW Invictus and DW Thalassa
- BSEE requested participation in hazard analysis process i.e. HAZID, HAZOP.
  - Did not participate in FMECA but requested copies for their records
- One more rig is in process of fitted and will undergo BSEE evaluation and approval.
  - Process of ABS-CDS approval started.

PSA / NORSOK Norway

- D-010 revision ongoing.
  - Includes PMCD and Floaters.
  - Taking input from industry
- DNV OS-E-101 rewrite available.
  - Differentiates between well control equipment and influx management.

**12:00 Lunch - sponsored by API**

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**13:00 Lisa Grant – Well Control / Well Integrity Group lead at BSEE**

Presentation based on the question: What does BSEE need to request from operators for approval process?

MPD will be considered and require a New Technology Plan until a NTL or similar is in place.

**Outline**

- Intended use: Purpose, conditions (e.g. UB vs OB mud)
- Schedule (installation, HAZID, HAZOP, etc.)
- Risk assessment
- Integration of new systems
- Overview of what has been done previously (e.g. same system, similar type of well)
- Key mechanical components
  - Part of the barrier system?
  - What is a key mechanical system
  - Schematics
  - P&ID's. Identification of flow paths for different operations (e.g. drilling, connections, WL logging, etc.)
    - PRV setup
- Testing and validation
  - Computer based? OK
- Operational procedures.
  - Provide context to understand intent of the procedure
  - Identification of risks associated with the procedure. Mitigations.
- HAZOPs and HAZIDS
  - BSEE will participate to assess process followed
- Training and competencies assessment
- Applicable Standards (API)
- Failure modes. High level concepts
- Riser Analysis
- Well Control aspect
  - Intensity (more than volume) approach
  - Kill scenario – Kill analysis. Is the well killable?

**From Committee:**

Mike V. proposed to establish a task group to prepare the list of required document and requisites to feed BSEE. Mike and Sara will lead the establishment of the task group.

Decision tree approach to assess requirements depending on the intended use / operations is encouraged.

Comment from BSEE (Neil Funwie and Lisa Grant): Committee documents need to avoid ambiguity, especially on levels of recommendation, to provide easier assessment from regulators. Consider adding explanatory notes to the context of the statements.

**13:30 Resume breakout sessions**

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**RGH:** Identified key bullet points to capture for gas in the riser. Parameters such as compressibility, expansion of the riser, etc. have not been considered before in gas in the riser conditions for management. Considerations of these parameters make for more realistic conditions, most likely more benign than previously estimated.

**HSE & Training:** Will continue working tomorrow.

**16:00** Meeting adjourned for the day

### Day 3 – Thursday February 8

**08:30** Andre welcomed back the UBO & MPD Committee, thanked API for hosting and sponsoring meeting.

**08:45** Resume working sessions

Influx Management Addendum, Gas in the Riser and HSE & Training groups to continue work.

**11:45** Workgroups report

MPD Influx Management:


- Section 3.1 (Equipment) was reviewed, agreed.
- Section 3.4 (Determination of Safe Operating Limits). Decided that needs significant modification, to make it more in line with recommended practices, while still providing guidance.
- Volunteers: Oscar and Will B. will lead the re-write of Section 3.4. Sagar will collaborate with this section. Bob G. volunteered to continue work on Section 3.7 (Overview of different circulation Methods).
- Volunteer work will circulate prior to the next meeting, in order to accelerate the development of the document.

Gas in the Riser:

- Omer K. has been working on a physical model at A&M, which could help simulate and further understand the concepts involved in riser gas management.
- Paul sent further notes after the meeting, check appendix 2.

HSE & Training:

- Working on MudCap inclusion in MPD curriculum. MCD section is in accordance with API 92P latest draft.
- Final adjustment to be finished in the next few days, intend to circulate to the Committee for review in preparation for next quarterly meeting.
- Reviewed guidelines for instructor qualifications. Will be circulated to the Committee along

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with the MPD curriculum.

- Dual Gradient and CML is expected to be included at a later date.

DGD:

- Reviewed all document, minimal changes done and some still required. Will circulate amongst the Sub committee and later review, prior to circulation to the Committee.

**Action: Task Group conformation**

Sara and Mike will lead the effort of compiling requested material for BSEE (See above Lisa Grant intervention).


Volunteers for the task group: Oscar, Dennis, Dave Smith, CJ Bernard.

**12:00 Wrap up**

Andre thanked API for venue and sponsoring the meeting.

**Committee Meeting adjourned**



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Appendix 1. Attendance List:

<b>Name</b>		<b>Company Name</b>
Harish	Patel	<b>ABS</b>
Sohail	Mohammed	<b>ABS</b>
Alex	Gidman	<b>AFGLOBAL CORP</b>
Shawn	McClosky	<b>AFGLOBAL CORP</b>
Brian	Piccolo	<b>AFGLOBAL CORP</b>
Akram	Nabiyev	<b>AIR DRILLING ASSOCIATES</b>
Roland	Goodman	<b>API</b>
Leiro	Medina	<b>BEYOND ENERGY SERVICES &amp; TECHNOLOGY CORP</b>
Will	Bacon	<b>BLADE ENERGY PARTNERS</b>
Oscar	Gabaldon	<b>BLADE ENERGY PARTNERS</b>
Neil	Funwie	<b>BSEE</b>
Julian	Pham	<b>BSEE</b>
Calvin	Holt	<b>CHEVRON</b>
Gergely	Szekely	<b>CONTITECH OIL &amp; MARINE CORP</b>
Pari	Natarajan	<b>DNV GL</b>
Sixto	Romero	<b>DRILLSOFT</b>
Brian	Ross	<b>EFC GROUP</b>
Dave	Smith	<b>ENHANCED DRILLING</b>
Borre	Fossli	<b>ENHANCED DRILLING</b>
Christopher	Bernard	<b>HALLIBURTON ENERGY SERVICES GROUP</b>
Konstantin	Puskarskij	<b>MAERSK DRILLING</b>
Jacob	Petz	<b>MAERSK TRAINING, INC</b>
Dennis	Moore	<b>MARATHON OIL COMPANY</b>
Juan	Pinzon	<b>NABORS CORPORATE SERVICES</b>
Svein	Hovland	<b>NATIONAL OILWELL VARCO</b>
Tracy	Mossman	<b>NEXEN ENERGY SYSTEMS U.S.A. INC</b>
Jon	Thain	<b>OCEAN RIG MANAGEMENT INC</b>
Andre	Fernandes	<b>PETROBRAS</b>
Martyn	Parker	<b>PRUITT</b>
Sagar	Nauduri PhD PE PMP	<b>PRUITT</b>
David	Postel	<b>REGIONAL MARINE &amp; ENGINEERING SERVICES PTE LTD</b>
Paul	Sonnemann	<b>SAFEKICK</b>
Mike	Vanderstaak	<b>SELF EMPLOYED</b>
Hari	Hariharan	<b>SHELL</b>
Sara	Shayegi	<b>SHELL EXPLORATION &amp; PRODUCTION</b>
Brian	Tarr	<b>SHELL EXPLORATION &amp; PRODUCTION</b>



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<b>Name</b>		<b>Company Name</b>
Robert	Goodwin	<b>SIGNA ENGINEERING CORP</b>
Bob	Goodwin	<b>SIGNA ENGINEERING CORP</b>
Ragnar	Fredriksen	<b>STATOIL</b>
Gavin	Humphreys	<b>STENA DRILLING</b>
Omer	Kaldirim	<b>TEXAS A&amp;M UNIVERSITY IADC STUDENT CHAPTER</b>
Harshad	Patil	<b>WEATHERFORD UNITED STATES</b>
Earl	Dietrich	<b>WEATHERFORD UNITED STATES</b>
Leslie	Cook	<b>WOOD MACKENZIE</b>

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Appendix 2. Riser Gas Management report:

IADC UBO/MPD Gas-In-Riser Subcommittee

Report of subcommittee activity 6-8 February, 2018

Prepared by Paul Sonnemann

As this was the first subcommittee meeting since June 2017, following which a draft document titled “Agreed principles of riser gas management” was delivered to the main UBO/MPD Committee, initial discussions at this working session focused on clarification of underlying principles for new subcommittee members present.

It was noted that existing documentation of such principles remains lacking. There was an agreed need for the industry to further review, validate and demonstrate related principles in ways more likely to be effective than what has been, or is likely to be able to be provided by the subcommittee alone. Encouragingly, several new industry efforts along these lines have recently been announced:

- New NAE funding of \$4.9mil for LSU, Texas A&M & Weatherford to detect and mitigate gas-in-riser events
- New NAE funding of \$1.2mil for U of Houston to study Hydrocarbon influx behavior in a deepwater marine riser

Additionally, the subcommittee reviewed a new Excel spreadsheet intended (still in development stage) to facilitate theoretical calculation of various single and multi-bubble riser gas conditions. While not expected to eliminate the need for more sophisticated modeling of riser gas behavior, it is hoped that this worksheet, since it is based on relatively simple and readily accessible calculations, can help anyone interested in understanding the non-intuitive nature of free gas volumes nearing, but not yet at the top of the riser. It is expected that this worksheet will become a useful tool for future subcommittee sessions, as it provides an easily used method to assess proposed scenarios.

It is worth noting that quite a lot of the work session was taken up by evaluating the output of an existing commercially available hydraulic simulator which provided data that is not always consistent with the above-mentioned Agreed Principles. Until the industry has available a modeling tool that is fully accepted as valid and reliable (hopefully the result of the NAE funded projects mentioned above), it is expected that progress toward agreement on practical use of related principles will likely be hampered by user experiences with invalid (or at least, less routinely reliable) models or principles. This again indicates a need for some commonly accepted, if less than perfect, mathematical approach (eg the Excel spreadsheet mentioned above) that can be used to roughly evaluate proposed riser gas management practices until such time as the more refined model(s) are available.

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Since modeling inadequacies continue to prevent assessment or development of practical riser gas management strategies, a proposal was made to focus on development of a few simple graphics to illustrate the differences between historical and new understandings of the consequences of worst-case riser gas behaviors.

To this end, the following list of differences to be illustrated was prepared:

- 1) riser collapse myths
- 2) variable pressure consequence of attempted bleed-off of riser pressure (PRV function and sizing)
- 3) risks associated with bleed off, rather than containment, of riser gas
- 4) relative importance of inclusion of fluid compressibility in all calculations
- 5) importance of proactive rather than reactive closure of riser top
- 6) relevance of NACE/gas containment capability/rating of riser for influx and/or worst case riser gas management

Ideally, each topic could be introduced (or at least have the results summarized) on a single page/slide. The purpose would be to quickly illustrate the importance, and perhaps the unexpected nature of near surface free gas-in-riser behaviors. More complete explanation and justification of new thinking illustrated would be handled elsewhere. But such a presentation could at least provide a basis for individuals, companies and training organizations to more carefully consider utilization and unquestioned support for conventional riser gas related practices.

The final topic discussed by the subcommittee related to possible issues associated with proposed dynamic well control through riser practices. It was commonly agreed that existing deepwater MPD systems can certainly provide much greater benefit than is commonly recognized while handling gas kicks. But definition of exactly what, if any, practical limits exist, and how to define them, will likely rely on availability of reliable models that can predict outcomes of successful influx management (such models are currently available) as well as reliable models to evaluate outcomes and control strategies that may be required in the event of major error/failure (these models are still lacking) during influx removal through the riser.

It is expected that future work sessions focus on;

- The development and possible distribution of the above mentioned graphics, Further evaluation of possible use of evolving software tools to aid in development of riser gas management practices.
- Detailed evaluation and/or development of dynamic influx management guidelines