

	<p align="center">IADC UBO & MPD Committee Meeting MoM</p>	<p align="center">2nd Quarter Meeting Jun 6 – 8, 2017 Houston, TX</p>
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Day 1 – Tuesday June 6

Welcome, Announcements and Safety Moment

Oscar Gabaldon welcomed the UBO & MPD Committee and thanked Blade Energy Partners for sponsoring the meeting. Safety briefing about the facilities.

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.

Chris Scarborough volunteered to be a minute taker.

Safety moment - as summer comes and kids are out of school, be diligent to keep tabs on their location - they tend to wander

Oscar Gabaldon read IADC antitrust guidelines to the attendees, then proceeded with a short recap of the Q1 2017 meeting.

Q1.17 Meeting Minutes – Review

Oscar went through the MOM from the 1st quarter meeting. No feedback back was received, therefore the minutes were automatically approved.

Discussed Meeting and conference schedule

2017 Committee Meeting Schedule.

Quarter	Date	Location	Sponsor
Q3	September 19 – 21	London	Schlumberger (TBC)
Q4	December 5 – 7	Houston	Maersk Training
Q1(2018)	April 19-20	New Orleans	TBD

Post data note: SLB confirmed dates and location for sponsoring Q3 meeting.

Discussed about shared venue for Q3 meeting, and the general opinion is not favorable. However, the agreement is to maintain main meeting in London.

Review survey results for IADC conference locations for 2019

- Athens
- KL - 5 votes
- Bali - 4 votes
- Thailand - 1 vote
- Bergen / Stavanger
- Copenhagen - 2 votes
- Amsterdam - 10+ votes - WINNER!

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Subcommittee reports

UBD

Antonio Torrealba provided the update:

- Due to limited amount of work the subcommittee have at this moment its members will support MPD subcommittee.

MPD

Andre Alonso Fernandes gave an update:

- Q1 meeting finished reviewing comments for 92S, resolved and returned to API. The 92S document does not require re-ballot and should be pushed forward to publish. Roland Goodman (API) is aligned and only recommends sending it out for review. Believes it is time for this committee to have a general discussion about well control and taking on the MPD Influx control work group. Awaiting for API feedback on 92P. API 92M is in line to be published.

Gas in the Riser

Tom Proehl provided update:

- Problem exists that gas accumulates in places you do not want it such as the shaker house. With MPD there is an ability to route to the MGS, but in cases could require the ability to control the flow out, such as with a choke. The subcommittee will continue to progress this item.
- Robert Ziegler arrived - Met in Brazil, discussed items similar to other discussions, lots of information requests. Interest is high and there was broad acceptance of methods selected. The way forward includes work to integrate the MPD behavior to move away from the single bubble model. Looking at rigging up on a test well (LSU) to prove this in the academic world.

DGD

Borre Føssli updated the group:

- Noted that completion of the 92S, would like to receive a copy to enable update and alignment as applicable with DGD (92C). This document seems to continue to evolve rather than a defined scope. It is felt that AF Global would be necessary participant in the next subcommittee meeting. It was noted that if the document is being written to be inclusive of future technology, then it will continue to grow in scope and never reach a final status.
- Recommend writing to readily available technology.

HSE & Training

Oscar Gabaldon provided the update:

- Group met in Rio and reviewed the returned comments on the curriculum. Training would not be a part of well sharp as this would make this curriculum too cumbersome to implement. This should be a standalone certification. The subcommittee is ready to submit to the full committee for alignment.
- Still need to discuss the instructor qualifications before providing to the committee.

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MPD Influx Control work group

- Provide info regarding evolution of this idea into a document. Now that it is worked to a draft document, requesting the input of the larger committee to accept this work and continue to progress and refine this document. Concern raised that this CANNOT yet cover deepwater operations until the GIR group completes their work task. Several comments in agreement with the influx control WG focusing on surface operations. Committee agrees this is a valuable effort and will determine how to progress this effort once the committee document priorities are reviewed.

Liaison Reports

- Regulatory report - Earl not in attendance - BSEE requesting study into riser gas handling and MPD. Blade has provided proposal but no one in room aware of award.
- Well Control report - parking this item for later in the agenda.
- Certifying Authority report - ABS has resumed progressing the MPD certification draft. Expect to finish in the next 3 months and will publish.

API Task Group Reports

- API 16RCD - two updates; work has been progressed on the operational testing standard; discussion from Rio - OEMs challenged with monogramming of sub components. Has reached out to API and defined a potential way forward. Will provide this info in the break out meeting.
- SBP, surface stack (92M) - Roland has received the first set of page proofs back last week. Will distribute to a small group for review. Once complete, it is ready for publication.
- SBP, subsurface stack (92S) - API is putting together recirculation draft to provide last chance to comment. This will not include a vote. Once the comments have been resolved, it will be ready for publishing
- PMCD, subsea stack (92P) - this has been recirculated and there are a few comments to resolve. Once settled 92P is ready to go to publication

New Business Discussed

Documents and discussion prioritization

Antonio Torrealba presented the Committee Document Prioritization results. For initiatives which have not been started, WC in MPD was assigned the highest priority. The top 5 in order are:

- 1) WC,
- 2) Floating mud cap with SS stack,
- 3) Mud cap drilling with surface stack,
- 4) Dual gradient, mud line pumping,
- 5) RP for continuous circulation.

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It was brought up by API, though refreshing the 92U document was ranked low, it is time for the refresh. Discussion in the room about the difference of MPD and UBD. Decision made to enable the subcommittees the opportunity to review tasks and determine way forward. Point raised regarding forward looking aspect of combining all 92 documents into one.

Comment made that this seems like a formatting challenge with regard to usability. Chair said this would be looked at down the road.

- Recommendation that the 92U rewrite should consider including 'flow drilling'
- Recommendation that the 2nd edition of 92M consider including low head MPD.

12:00 Lunch - Sponsored by Blade Energy Partners.

13:00 Resume meeting

Presentation for Well Control Committee

Steve Kropla from the IADC WC committee is looking to have a joint discussion with the MPD committee at the IADC WC committee meeting venue on June 22nd. Intent is for the UBO MPD Committee to present items we are working and discuss with WC committee how the potential overlap will be managed.

Need to cover both the technical and training items. Small group: Paul Sonneman, Robert Ziegler Oscar Galbadon, Blaine Dow, Harshad Patil & Chris Scarborough.

Note: Presentation was done by Chris Scarborough on June 22.

Proposed JIP: Benefits of MPD

The purpose of the JIP is to gather / centralize the data to support the benefits of MPD. The benefits to be documented are:

- Safety benefits
- Drilling efficiency

The JIP would represent the operator, vendor and drilling contractor interests. Propose this JIP is managed / executed by a neutral 3rd party such as:

- University
- Wood Mackenzie
- Classification Society

Feeling in the room was that this would be largely beneficial, but most do not see this progressing due to legal implications and confidentiality agreements.

Recommendation to distribute in a survey to get the industry opinion of this.

Other: Introduction of George Tisdale (Chairman of API 16F)

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13:30 Breakout sessions

- MPD subcommittee - will work the influx control document.
- Gas in the riser - will break out tomorrow, group will participate in influx control this afternoon.
- API 16RCD - will work on the RCD operational standard.
- HSE & Training - will be meeting.

16:00 Meeting adjourned for the day

Day 2 – Wednesday June 7

Oscar Gabaldon welcomed back the UBO & MPD Committee and proceeded to breakout sessions

Breakout sessions

- MPD subcommittee – Divided in two subgroups, to work the influx control document:
 - Equipment issues for influx control
 - Aspects of influx control other than equipment: planning, qualification, certification, testing/commissioning, maintenance.
- Gas in the riser
- API 16RCD
- HSE & Training

12:00 Lunch - sponsored by Blade Energy Partners.

13:00 Resume breakout sessions

16:00 Meeting adjourned for the day.

Day 3 – Thursday June 8

Oscar Gabaldon welcomed back the UBO & MPD Committee and proceeded to breakout sessions

Breakout sessions

- MPD subcommittee – Divided in two subgroups, to work the influx control document:

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- Equipment issues for influx control
- Aspects of influx control other than equipment: planning, qualification, certification, testing/commissioning, maintenance.
- Gas in the riser
- API 16RCD
- HSE & Training

11:15 Reconvene for updates and closeout.

- MPD subcommittee progressed in discussions regarding influx control (see minutes in appendices)
- Gas in the riser subcommittee provided an update on the break-out session.
- API 16RCD task group provided an update from the break-out session.
- Training working group provided an update on the break-out session.

Oscar thanked the group for great participation, thanked Blade Energy Partners for sponsoring the meeting, and adjourned the meeting.

12:00 Lunch - sponsored by Blade Energy Partners.

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Appendix 1. Attendance List:

Name		Company Name
Harish	Patel	ABS
George	Michaud	AFGLOBAL CORP
Brian	Piccolo	AFGLOBAL CORP
Austin	Johnson	AFGLOBAL CORP
Antonio	Torrealba	AIR DRILLING ASSOCIATE, INC
Saeid	Rashidi	AIR DRILLING ASSOCIATE, INC
Sohail	Mohammed	AMERICAN BUREAU OF SHIPPING
Roland	Goodman	AMERICAN PETROLEUM INSTITUTE
Martin	Culen	BLADE ENERGY PARTNERS
Oscar	Gabaldon	BLADE ENERGY PARTNERS
Chris	Scarborough	BP AMERICA, INC.
Wael	Essam	BP AMERICA, INC.
Calvin	Holt	CHEVRON
John	Cohen	CONSULTANT
Gergely	Szekely	CONTITECH OIL & MARINE CORP
Scott	Gooding	CORTEC
Jeff	Graybeal	DIAMOND OFFSHORE
Brian	Ross	EFC GROUP EFC AMERICAS INC
Tom	Proehl	ENSCO PLC
Joe	Karigan	HALLIBURTON
Leesa	Teel	IADC
Konstantin	Puskarskij	MAERSK DRILLING
Sophie	Hovland	MAERSK TRAINING, INC
Jacob	Petz	MAERSK TRAINING, INC
Kim	Laursen	MAERSK TRAINING, INC
Brian	McKenzie	MAERSK TRAINING, INC
Adel	Mettai	M-I SWACO
Carl	Guzman	M-I SWACO, A SCHLUMBERGER COMPANY
John	Conn	M-I SWACO, A SCHLUMBERGER COMPANY
Danny	Spencer	NABORS
Svein	Hovland	NATIONAL OILWELL VARCO
Ajay	Kulkarni	NATIONAL OILWELL VARCO
George	Tisdale	NATIONAL OILWELL VARCO
Tracy	Mossman	NEXEN ENERGY SERVICES
Micah	Spahn	PRUITT TOOL & SUPPLY CO
Martyn	Parker	PRUITT TOOL & SUPPLY CO



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Name		Company Name
David	Postel	REGIONAL MARINE & ENGINEERING SERVICES PTE LTD
Paul	Sonnemann	SAFEKICK
Bibek	Das	SAFEQ SERVICES
Blaine	Dow	SCHLUMBERGER
Sara	Shayegi	SHELL EXPLORATION & PRODUCTION
Hari	Hariharan	SHELL EXPLORATION & PRODUCTION
Brian	Tarr	SHELL EXPLORATION & PRODUCTION
George	Medley	SIGNA ENGINEERING CORP
Per	Berg	STATOIL
Gavin	Humphreys	STENA DRILLING
Omer	Kaldirim	TEXAS A&M UNIVERSITY
Harshad	Patil	WEATHERFORD
Brian	Grayson	WEATHERFORD
James	Chambers	WEATHERFORD
Maurizio	Arnone	WEATHERFORD
Peter	Dugas	WEATHERFORD INTERNATIONAL
Robert	Ziegler	WEATHERFORD TECHNOLOGY & TRAINING CENTER

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Appendix 2. Influx Control Workgroup Notes:

Equipment

It was a group consensus that the equipment section of the “Influx Management” document shall only cover the additional, to already stipulated by API RP 92M and API RP 92S, equipment requirements.

Often the considerations in API RP 92M and 92S are not mandatory (“should”) while they will be mandatory (“shall”) circulating the influx out of the hole.

Discussing the additional requirements it is important to set the operation limits for the equipment and systems where the group consider influx management shall belong to the yellow zones of the MPD operation matrix, where smaller influxes, which can be circulated while drilling ahead, belong to the green zones. The red zones belong to well control.

The pressure rating of the weakest link in the system (including casing shoe strength) shall define the borderline between the yellow and red zones. So shall we consider to extend the yellow zone; i.e., accept higher maximum anticipated surface pressure (providing the shoe can take it), this may require equipment and/ or systems upgrade. This discussion belongs to the process safety part of the documents; however, partially dictated by the equipment and system existing capabilities and upgrade potential.

The below agenda was used for gap analysis identifying extra requirements for the equipment and systems:

- Affected equipment and systems;
- Process flow diagram (PFD) and arrangements;
- Equipment qualification;
- Equipment certification;
- Equipment and systems testing and commissioning;
- Equipment and systems maintenance;
- Existing regulations.

Affected equipment and systems

Following equipment and arrangements shall be further scrutinized:

- Pipework and valves;
- MGS and liquid leg;
- MPD chokes;
- RCD;
- Marine riser and components;
- Flexible hoses;
- MPD control system;
- Sensors;
- PRVs;
- Flow meters.

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Process flow diagram and arrangements

Influx circulation considerations may affect the PFD where means of diverting the flow to MGS or overboard may be stipulated as mandatory.

Capacity verification and pressure control on the MGS and liquid leg shall be considered.

Hotline provision for MGS liquid leg restoration should be considered.

Ex zones may need to be considered in the areas the gas may be expected circulating the influx via the MPD system; this may also require extra gas detection capabilities.

PFD may also be affected by the discussion in the riser gas working group.

Equipment qualification

Extra qualification requirements may include NACE compliance on the system component level, gas compatibility test for flexible hoses and system gas integrity verification (pressure test and gas sensors).

Equipment certification

Additional certification requirements may need to be considered for MPD choke (API 16C compliance with exception of the pressure rating), RCD compliance with API 16RCD certification requirements and valves compliance with API 6A or API 16A.

Equipment and systems testing and commissioning

Following testing steps were identified and discussed:

- Testing of individual components upon manufacturing (FAT);
- System testing upon assembling (SIT);
- Testing while in operation.

Individual components testing is driven by the specification equipment is manufactured to.

System testing limits are driven by the border line between the yellow and red zones, since the system integrity operating in yellow zones shall be ensured. Other words, the system is tested to the weakest link.

Testing while in operation is well/ hole section specific and normally testing requirements will be lower than to the system integration test. These in-operation testing requirements will mostly be driven by the maximum anticipated surface pressure in the given hole section, which in its turn likely will be limited by the well design (casing shoe, etc.).

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In-operation testing may also be governed by Company and/ or regulatory requirements.

Equipment and systems maintenance

Extra precautions arranging equipment maintenance may be required considering influx circulation. This may include wall thickness measurement program to control erosion, more frequent inspection of valves and chokes, etc.

Existing regulations

Ability of circulating the influx via the MPD system shall be also aligned with existing regulations stipulated by Class (ABS, DNV-GL, etc.) or industry (API, etc.).

Pending Discussion

- Certification
- Fit for Purpose Testing
- Control System
 - Automation
 - Interlock
 - Reliability
- RCD
 - Sealing interfacing (“RCD friendly environment”)