



“Prepared for MPD”
Managed Pressure Drilling Rig Capabilities

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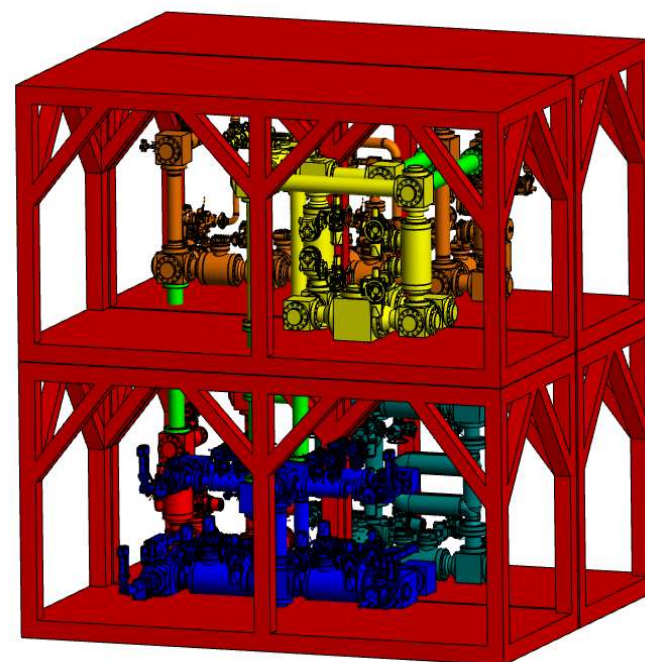
What's in a name?

Managed Pressure Drilling capability on rigs comes in many forms:

- Infrastructure (e.g. pipework, utilities) installed, ready to “plug and play,” operator contracts a third party MPD provider
- Drilling contractor owns some components (e.g. distribution manifold, rotating head, or riser components), and operator provides others (choke manifold, control system)
- Drilling contractor owns and operates complete system
- MPD providers' involvement varies widely in these different forms

In all these cases, the key questions are the same:

- *What is the amount of work required to get the rig to “MPD capable”?*
- *Who is doing what? What is the timeline? Cost?*
- *What is the level of competency and experience on the rig and in the wider team? If it's not there, what's the plan to develop it?*
- *What is the contractual model?*
- *What is the operating model offshore and onshore?*
- *Are personnel roles and responsibilities, company policies and operating procedures in place?*
- *Are performance indicators and liabilities clearly defined?*





Why are we having this discussion?

Providing MPD capability as part of the rig has many benefits...

- Drilling contractors have inherent strengths when it comes to owning and operating capital equipment.
- Drilling contractors offer many synergies in inventory control, equipment maintenance, number of personnel, and competency development and management, leading to a more cost effective solution for the client.
- Significant reduction in the lead time required for an MPD project if MPD equipment and experience is on the rig.
- Contractual management efficiencies for the operator.
- Permanent MPD installations are better integrated into the rig, save time, money, and deck space; and ultimately can result in a safer installation and operation.
- Continuous MPD use improves overall operations risk management and performance even in non-MPD operations.
- Increased marketability of the rig fleet.
- Potentially boost the use of MPD – could be on every rig one day!
- MPD providers benefit as well: More resources can be made available to research and development and engineering, and they gain the ability to streamline business size and spending.



Why are we having this discussion?

...and also introduces many complexities

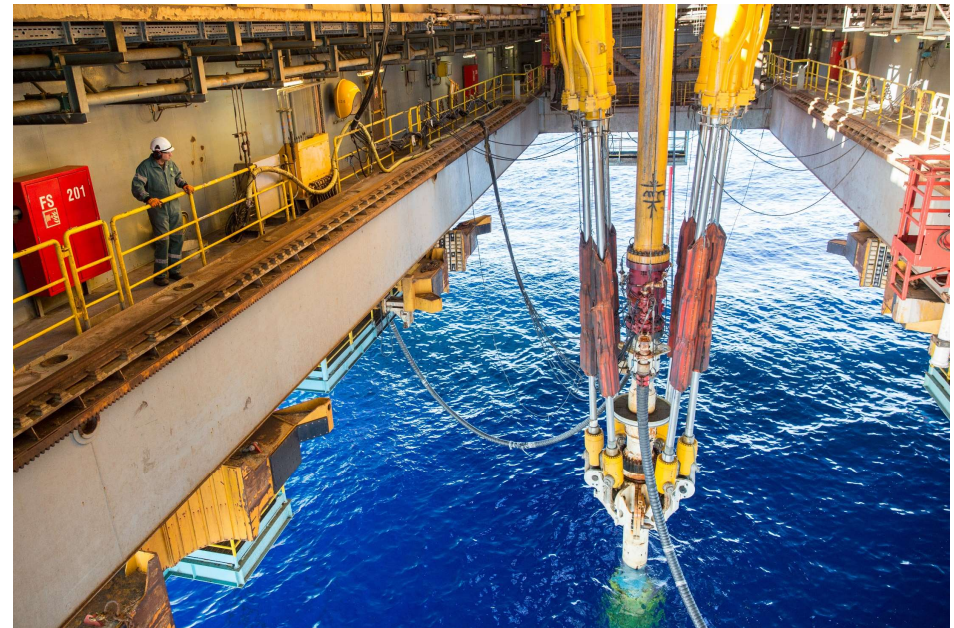
- What is the definition of “MPD capability?” -- Hardware? Software? Policies and procedures? Training and competency? Personnel roles?
- Integration of MPD into the rig management systems: Organization, decision making, communication, control of work, safety management, operating envelope.
- Competency development and management programs.
- How will MPD providers perform as suppliers of capital rig equipment?
- How will drilling contractors perform as suppliers of well engineering?
- Contractual impact on definitions of rig downtime related to MPD equipment
- And with all that, how will accountabilities and liabilities be distributed?



What's in a name?

For operators, focus should be:

- Implementing contracting strategies with sufficient time for delivering the selected option.
- Providing clarity on expectations, policies, and operational requirements.
- Supporting drilling contractor readiness and their MPD implementation.
- Refining operating models and contractual arrangements.
- Understanding the big picture and filling in any gaps (e.g. specialist engineering; immersive training).





Questions?