

# It is Time to Consider Drilling and Completions as a Business Unit

in the

Upstream Oil and Gas Industry

December 2021

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+ 36 years of experience upstream oil and gas industry with core expertise in drilling project management, well delivery process, risk management and cost optimization.

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# 1.0 Role of Drilling and Completions During Field Acquisition and Exploitation Plans

The cost of drilling and completions is added to the project economics during field acquisitions, assessment of a field potential, preparation of field monetization plans etc. However, the specifics on executional risks, and uncertainties of drilling that usually add up significantly to the cost and impact on deliverables, are generally considered in the industry as "Details".

The same approach may apply for facilities (infrastructure development like platforms, pipelines etc) in most cases.

There may be few exceptions, but they are rare.

#### Note:

In this paper, please note that drilling refers to well construction activities (drilling, testing and completions). Drilling as a term is used only for ease of reference.

To assess a field's potential for acquisition and develop plans for field monetization, the industry practice in general is limited to:

- > The project economics based on reserves, production profile and oil price scenarios where the cost of drilling and completions is invariably an arm's length estimate.
- The CPR (Competent Person's Report) required by banks, lenders and investors is mostly restricted to in place volumes, reserves and production profile.
  - Surprisingly the investing and lending communities do not seek due diligence on drilling which truly handles the risks of getting the oil and gas to surface with impact on the success of the monetization schedule.

Further, while subsurface is a serious contributor to the business case of a field acquisition and development including funding efforts and FID, drilling is rarely a part of them as it is treated as a service unit rather than a business unit.

That is why most of the drilling personnel, while technologically savvy and handling nearly 45-65% of the CAPEX (depending on the type of environment, phase, and extent), execution risks and challenges, are not part of sculpturing the business model of an oil and gas corporate.

This is another reason for many oil and gas companies, especially small and mid-size independents for not always having even a small but core drilling team. Drilling services are considered as temporary and to be on a call off basis when required.

> Oil and gas companies will push back on the cost of drilling personnel with statements that drilling is not required throughout the life cycle of a field.

While I understand this philosophy, it is also important to understand that it does not negate the needs for adequate contribution of drilling to the company's business case.

The consequences of discarding drilling from participating in the business case from the concept stage of field acquisition are that:

- ➔ due diligence on drilling feasibility, risks, uncertainties and impact on schedule, costs and deliverables are ignored during the development of project business case and economics;
- ➔ the reality strikes during execution phase when the complexity, risks, cost, and schedule of drilling and completing the wells are realized, which were ignored during field acquisition and development plan stages;
  - → several projects end up with compromised objectives or failed deliverables;

Many in drilling can reflect similar experiences from their career.

Of course, there are exceptions as always, but they are rare.

Please refer to **Fig. 6.1** (in Section 6.0) to review the Advantage Matrix of considering Drilling as a Business Case.

#### Can you give me some more details? Any offset Wells? just don't want to Give me a ballpark budget for a 15,000 ft offshore LiKe yesterday, need that for a give a number, need a basis for board meeting estimates, some exploration well tomorrow on When do you need data will be useful acquiring a block that? Not sure we can get any Few \$22 million, Level 4, Not sure we can get any data now, use your experience, this is just for the hunt, I Know you can do it, don't worry -no one will hold you for +/- 40% Level 3 risk please ensure you note the qualifying How can you asK \$27 million when you gave me a budget of \$22 million earlier? Please explain, I statements to the earlier? Please explain, I cannot justify this, please make \$22 million to work board 7777777 this

#### 1.1 Scenario 1

This is not uncommon in an oil and gas company.

This story is not exaggerated. This is not uncommon. Some companies may even have a template to pick up well cost without even consulting the drilling team.

And the irony is, this story is not just in the past, but it occurs even today.

# 1.2 Scenario 2

Drilling is a complex process that deals with risks on a continuous basis. Some fields or wells are at higher risk than conventional wells. Ignoring drilling risks and level of uncertainties due to both surface and subsurface complexities during of field acquisition phase, while securing funds and developing monetization plans may lead to compromised or failed projects. This is not a theory but a regular occurrence in the industry.



The reasons for the above can be many but the general reasons as well as belief are that technology exists in the industry to bring the oil to surface. So, both the oil and gas companies and the investors do not evaluate the potential complexity and difficulty to drill the wells in schedule, time, and budget. What they consider as the primary criteria are the in-place volumes, ultimate recovery, production rates and overall economics (without due diligence on an activity that spends nearly 45-65% of the CAPEX with risks and uncertainties).

Drilling is also incorrectly perceived as a linear activity like other processes within the oil and gas industry due to lack of understanding of the complexity and risks associated with each well.

# 1.3 Scenario 3

The reality is, except in rare cases, drilling is not considered as part of the business case model in a corporate world. Apart from the exclusion in field acquisition, funding, and monetization strategies, they are also generally excluded in organization business plan sessions, exploitation strategies, decision making committees, investment forums and other committees of the corporate structure.



Whenever there is a need to improve economics by reducing CAPEX or to show early cash from production in the field monetization plans, the first thing the oil and gas companies look is at drilling. Somehow, the industry does not push facilities (infrastructure) to reduce costs arbitrarily as much as it does to drilling.

Probable reasons that I can think of are, (1) facilities work, like a platform or even subsea clusters, are surface oriented and can be seen/observed whereas except for the wellheads and x-mas trees, almost all of drilling costs, risks and uncertainties are managed below the ground and hence they are not observable (please refer to **Fig. 1.1** below), (2) somehow everyone believes Drillex always have a buffer in cost estimates or too much pad to manage risks or schedule. This probably was created mainly by drillers themselves as drilling is also associated with competency bias between drilling experts.

Drillers most likely keep anywhere between 3% to 5% of buffer (in addition to any contingency considered) distributed to various line items of the AFE to manage uncertainties and surprises which tend to occur. This is essential because it is impractical to list all the possible uncertainties that might occur while drilling.



Fig. 1.1 – Surface and Subsurface Infrastructure

# 2.0 Impact of Not Considering Drilling as a Business Unit

By considering drilling (in this paper, it refers to drilling, testing and completions) as a service unit, its boundaries are restricted mostly to execution phase rather than involvement from the concept of a business case.

Please refer to **Fig. 2.1.** It presents the gap where drilling is not involved in the overall process and where it is involved with already created constraints that cannot be changed.



# For the development of FDP (not the execution), Drilling involvement mostly is in:

- Select Stage: Drilling Plans, Basis of Design and Philosophy
- Schedule Governed by Commercialization Model
- Budget Unrisked P50 Model governed by Economics (Investment and IRR?)
- Drilling Risks Learn (from Exploration/Appraisal) and Mitigate

# Fig. 2.1 – Drilling Involvement in Overall Process

# Limitations of the involvement of Drilling in the Overall Process depicted in Fig. 2.1:

- Drilling is scarcely involved in Phase 1 and 2 of Fig 2.1.
- Drilling is involved only in the execution phase of exploration and appraisal (Phase 3 in Fig. 2.1).
- In FDP preparation, drilling mostly is involved for a select stage framework only.
- Drilling is more fully involved during the FDP implementation phase, but by that time drilling is compelled to deliver the objectives despite the constraints which leads to a compromise.
  - In addition, in most organizations, except those who have in-house drilling team, the team working for development might be different than the one worked for exploration which induces a learning curve.

The limitations listed above and in **Fig. 2.1** result in impacting the project delivery in any or all of the following:

- > Schedule
  - ≻ Time
    - Cost
      - Risk management, and
        - > Deliverables.

#### Note:

Examples or case histories are not presented here. First of all, I cannot present them due to confidentiality and if they are presented without details of field or organization, they will look unauthentic. However, the impact on project deliverables by ignoring drilling as a business case is obvious as the organization and upstream personnel can relate to the projects they have handled or come across.

# 3.0 The Irony and Why Drilling Has to be a Business Unit rather than a Service Unit

The irony is that drilling personnel handle risks daily unlike any other discipline in the upstream oil and gas industry. They are trained to think and act calmly in situations of tremendous pressure. Many of them are natural leaders who lead by example with commanding respect (not demanding by position or title), and they are innovative and creative. Their knowledge, experience and versatility are a good combination for valuable contribution to corporate strategies but unfortunately, they are ignored.

In most organizations, strategic and business decisions (that are non-technical) on drilling are taken by committees who have inadequate understanding or experience of drilling complexity and risks. Unless one is involved in drilling as a profession, others cannot understand the difference between:



Drilling probably has the highest number of non-linear non-random risks as compared to any other industry and it is impractical to comprehend the challenges and the impact of risks without adequate experience.



Fig. 3.2 – Risk Matrix Model

In the past drillers were not petroleum engineers. They rose through ranks learning the art of trade and executional aspects of drilling by hands on experience. They became drilling superintendents and drilling supervisors by experience gained by hard work. There was no time or opportunity for them to learn the fundamentals, principles, and theories behind drilling a well.

Today it is changed. The new breed of drilling managers, superintendents and drilling supervisors are qualified engineers who understand the modern concept of drilling through advanced technologies and digitalization models. They understand risk, investment challenges and corporate goals. However, the industry still has not fully accepted the abilities of this new breed and take advantage of their capabilities beyond being a service unit. The result is compromised or delayed or failed projects even in the 21st century.

Apart from risks and uncertainties, drilling costs are high. They are 45-65% of a field monetization campaign from exploration to development. Please refer to **Table 3.1** and **Fig.3.3** below.

60-70%



#### Table 3.1: % of Drillex in Oil Monetization Process

Phase

Exploration

No

1

Fig.3.3 – Drilling Costs in the Upstream Oil and Gas Industry

For example, if the cost of whole field monetization from exploration to development is US\$ 500 million, the drilling costs can be as high as US\$ 300 million, and this cost does not account for the risks, uncertainties and challenges faced.

In addition to cost, drilling has a large permutations and combinations of linear-nonlinear-random-non-random risks and uncertainties as compared to all the other disciplines in the upstream oil and gas industry. Please refer to **Fig. 3.2**.

Inadequate consideration of drilling risks, schedule, and execution boundary conditions, combined with deficient cost estimates during the business case phase of a field create tremendous strain in the overall field monetization. Several projects have failed or compromised due to the ignorance of drilling related challenges in the creation of field monetization strategies, funding, and economics models.

Unfortunately, the issue of drilling is also associated with competency bias between drilling experts. They all do not see the risks in the same way.

- > Most drillers are expected to be brave and confident.
  - > Cautious drillers however prudent and diligent they are, are discouraged.
    - With that kind of pressure, some drillers exhibit very optimistic attitude which are highly encouraged by the peers and management.
      - ➔ Ironically, their ultimate failures due to excessive optimism would be forgotten with adequate justifications.
    - However, if a cautious driller fails, it would be termed as the consequences of his pessimistic attitude from the start.

Unjustified optimism is allowed unjustifiable failures whereas justified pessimism faces rejection of even justifiable failures.

It is the same philosophy followed across most of the industries globally. Optimism is always encouraged. Diligent and prudent approach are invariably discouraged if they are not aligned with the management or leadership.

In executing complex projects like drilling, the pessimistic and optimistic strategies are to be integrated. The design, engineering and plans must be developed through a pessimistic approach so that all possible risks and uncertainties are evaluated, and mitigation strategies are put in place. The execution and operational aspects need to be optimistic to manage the real time challenges effectively and efficiently.

An optimistic design and a pessimistic execution model will invariably fail.

One thing is good to remember "Heroes in the world have killed more people than mosquitoes" and that "Many projects fail because of excessive optimism during well design process and over confidence without basis or strong fundamentals".

Drilling is a complex process. Every well requires its due respect. Where caution is required, it must be adhered. The line between the true needs of cautious and optimistic approach is thin and the boundary needs to be well defined to ensure that the line is not crossed. Many problems in drilling occur due to crossing of that line.

Hence, it is much more critical to include drilling as a business unit in an organization's culture rather than using it as a service unit.

# 4.0 Drilling Process in the Current Scenario

Drilling plays a major role in ensuring an organization's credibility as a prudent operator especially in the current scenario and hence it is time for organizations to move drilling to be a business unit rather than a service unit within the organization.

However, it is also important to realize that drilling process is complex, and the complexity increases multifold when the wells become more complex.

The advances that were achieved in the technology of process plants (like refineries, petrochemicals, fertilizers, manufacturing etc) made them much safer and efficient in the last five decades.

However, despite being an industry of more than hundred years, every day, at some part of the world, drilling problems occur.

- Despite all the advancements made in the last three decades in drilling technology, even today at least 20% of the wells face some kind of challenges.
  - Considering +/- 50,000 wells are drilled per year globally, the 20% relates to nearly 10,000 wells.
    - At least 10% of those wells (1,000 or so) get in to major problems while around 5% (around 500) end up in side tracking and/or loss of the well.

This level of failures have been reduced significantly in process establishments like refinery, petrochemical and power plants but it could not be achieved in drilling due to its complexity, high level of uncertainties and extensive dependency on skilled and talented personnel and the need for effective integration of nearly 30-40 services.

Today, drilling is not just about drilling and completing a well as an independent activity. It is an integrated process with clearly defined deliverables that are much beyond accomplishing just the drilling targets. A summary of well deliverables is provided in **Fig. 4.1** and associated risk prevention in **Fig. 4.2**.

Accordingly, every well must be designed and executed to evaluate risks, develop mitigative measures and deliver by managing all the risks effectively. The demand for the reduction of drilling carbon emissions in response to the Climate Emergency Declaration is an added pressure to the oil and gas industry. Future drilling operations will be required to establish practices and implement technologies to reduce carbon emissions.



Fig. 4.1: Futuristic Well Delivery Objectives



Fig. 4.2: Drilling and Completion - Major Risk Prevention Objectives

Conventional approach to drilling is inadequate to achieve such expectations.

# 4.1 Drilling Risks and Impact

The concept of extracting and bringing the oil and gas to surface as "Details" may look attractive and it may help to keep the board, partners, lenders, banks and investors away from demanding detailed due diligence on drilling feasibility during the early stages of field acquisition and monetization plans. However, the impact of such approach has been well demonstrated by the failed or compromised or delayed field monetization schedules due to drilling issues which confirm that considering drilling as a service unit is not a prudent practice.

Drilling, even in a known field, has inherent risks and uncertainties. The effectiveness is impaired due to both surface and subsurface challenges.

Some of the surface challenges are:

- (a) most firms assume one size fits all and implement the same style of operating model to drilling projects despite varying,
  - business cultures and drivers;
  - petroleum license models and asset type;
  - > JV partnership agreements and established processes;
  - > size, model, and project drivers of the company;
  - management structure, capabilities, and decision-making cultures;
  - reverse engineering or copying of another company's procedures;
- (b) an aggressive organization that believes in fast track acquire-exploit-monetize model trying to implement the process of an international super major oil company;
- (c) often, companies miss the opportunity to create a high impact value during drilling project framing phase that leads to costly changes during execution;
- (d) limited tolerance of leadership expectations which:
  - (1) does not allow drilling project alternatives, critical path activities and collaborating proposals;
  - (2) induces advocacy models to adhere to such limiting conditions resulting in unexploring alternate perspectives with the risk of missing a better alternative;
- (e) the supporting functional discipline biases become rampant exerting influence on decision making which creates a conflicting spider web of contradicting and inappropriate role distributions between drilling and support functional disciplines;
- (f) lack of integration between the four pillars of a drilling project, Operator, Drilling Rig Contractor, Service Providers and Regulatory, which leads to wasted time, efforts, and costs;
- (g) the narrow tunnel vision to treat drilling as a service unit and a temporary phenomenon that can be called off when needed;
- (h) lack of opportunities for drilling to present its business case to management, decision makers and partners who treat drilling as "Details"; and

Some of the sub-surface challenges are:

- (a) lack of an integrated approach between subsurface, reservoir/petroleum engineering, production and drilling that negates a robust well design;
- (b) lack of focus and sufficient resources to predict subsurface hazards and challenges that leads to compromised design and larger uncertainties during execution;
- (c) inadequate pore pressure, well bore stability studies and evaluation of potential risks;

- (d) encouraging optimistic design that negates the value of a prudent planning;
- (e) encouraging pessimistic execution approach that negates the value of an effective and efficient execution;

#### Irony:

The subsurface and reservoir engineering are allowed a probability of success, even to 50% in most cases. So negative results are justified and accepted by the management, partners and other stake holders.

Drilling has no such margins. The target has to be reached without exception.

- Drilling cannot stop at 5 m above a reservoir in a 3,000 m well and claim that more than 98% is achieved. Unless the target is reached and drilled, it is a failure even if it stops at just 5 m above the target.
  - So failures of drilling to deliver target and goals are not easily accepted by the management, partners and stake holders even with valid justifications.

This fundamental difference cannot be eliminated due to the nature of the game. However, the issues can be managed more effectively if drilling is considered as a business unit and allowed to become a part of corporate business strategies and monetization plans along with subsurface, finance and strategy developers.

With the advances in technology, big data science, real time analysis for optimization and remote operating technologies, a platform exists today for drilling technology to deliver the complex web of multiple objectives with minimum failures and compromises.

#### 5.0 Drilling Process in the Current Scenario

The humanitarian crisis created by the dual shock of COVID-19 and its impact on global economy in 2020 created another major oil shock when the oil prices dropped significantly by more than 60% and the cost went even below zero for a short period. This proved to be completely different from the earlier two shocks of the 21<sup>st</sup> century which occurred in 2008-09 and 2015-16. It was unprecedented in the industry with a huge demand drop, high supply stock and a globally impacted humanitarian crisis. The economic meltdown, lockdowns and border closures shook the industry's financial foundations that has led to a large number of bankruptcies and significant drop in investment structure.

Although by October 2021, the oil prices moved north of US\$ 80 per bbl, due to forces that are not truly fundamental the volatility in the oil prices is still high and hence a sustained higher oil price over a long term of several years is highly uncertain.

By Nov 2021, the Omicron mutation of the Corona virus had initiated fresh lock downs, border closures (for countries of risk) and stringent protocols which triggered fears of another economic collapse if the situation is not handled properly and diligently. Already in December 2021, due to the concerns of the impact of Omicron variant of Corona virus on world economy, the oil prices had dropped closer to US\$ 72-73 per bbl, more than 10% drop from the peak reached in October 2021.

In addition to the volatility of oil prices, the industry is under pressure of climate emergency declaration and energy transition demands. Several major oil companies are already launching alternate energy ventures as a hedge against an uncertain future of fossil fuel based energy matrix.

The future, without a doubt, will be a period of intense combat to overcome the forces working against the oil and gas industry. Such forces are numerous with interdependent parameters that are complex. Some of the major factors that would influence future oil and gas industry are:



Fig.5.1 – Major Factors to Influence Future Upstream Oil and Gas Industry

Despite all the challenges, oil and gas will remain a strong force in the energy matrix contributing at least one third of the energy demand for the next three decades as none of the alternate renewable energy sources have the ability to scale up and be as affordable as oil and gas globally. Secondly oil is the raw material for nearly 100,000 products in the world which no renewables and alternate sources of energy can provide.

While this a good news for the industry, there are some fundamental challenges that are growing post the 2015-2016 oil shock. Some of them are:

- 1. Investment Challenges Loss of investor confidence due to continued volatility, growth of renewables and other alternatives.
- 2. No easier fields finding and development risk and cost are becoming higher with uncertain rewards. Demands prudent assessment of field acquisition based on risked models from pore to export.
- 3. Longer monetization no longer tenable increasing necessity for early and effective field monetization with minimum risk and cost.
- 4. Ongoing major transformational changes and emerging strategies to the industry fundamentals.
- 5. Net Zero policy by 2050 and its impact on the oil and gas industry.

With looming challenges of the future, the only way the industry can sustain is by accelerating the steps to achieve a transformative change.

The expectations of lenders, investors and banks are also changing towards a holistic due diligence from in place volumes to export of oil and gas.

In the near future, it will not be surprising that, the CPR (Competent Person Report) required by lenders, investors and banks will not be limited to in place and recovery volumes but also extraction (drilling and completions), production and export.

It is hence time for drilling to become part of business units in an organization instead of being a service unit. Continued failure to change the approach to drilling challenges will only extend the compromised project objectives despite the advances in technology and operating practices.

As the industry is going through major transformational changes and emerging strategies, there is a great opportunity exists today for oil and gas companies to grab and adapt to create a futuristic organization that will allow drilling to become part of the business units within the organization.

This will not only enhance the overall business risk management but also improve operating standards, maximize value, minimize costs and reduce risk.

Oil and gas companies who are reluctant to shift towards the emerging models are at a risk of lagging behind under the heavy burden of conventional execution process and the loss of the value driven by the future strategies of drilling.

# 6.0 Conclusions and Action Plan

In the last decade, the focus on drilling has been increasing appreciably as:

- > the wells are becoming more complex;
  - finding costs are increasing combined with fading easier wells;
    - > the economics is tight with stringent adherence to schedule and cost;
      - > compliance, risk management and governance are unyielding; and
        - > lender's conditions are becoming increasingly stringent;

It is an irony that despite being an industry of nearly one hundred years and highly advanced technologies evolved in the last three decades, the drilling industry is unable to resolve most of the conflicts discussed in this document. The major reasons are:

- (a) inadequate appreciation and understanding that drilling has the largest permutations and combinations of linear-non-random-nonlinear-random risks and uncertainties as compared to other disciplines (refer to **Fig. 3.2**);
- (b) treatment of drilling as a service unit and "Details" creates limited boundary conditions which focusses only on technical execution but eliminate the opportunities to apply business principles;
- (c) the surface and subsurface challenges listed in Section 4.1 above;

However, going into the future and based on the current scenario, it is not advisable to continue considering drilling as a service unit. Conventional approach to drilling will not deliver the full spectrum of drilling objectives that has grown to a holistic model as depicted in **Fig 4.1** and **Fig. 4.2** and the expectations of lenders, investors, stakeholders and regulatory in the ongoing industry transformation.

By adapting drilling as a business unit, an oil and gas company will gain by a holistic execution process from conceptual field acquisition plan until monetization (start of cash flow). Prudence and diligence in drilling will also enhance an organization's credibility to the eyes of a lender and investor.

The ongoing transformational changes and emerging strategies in the industry provide a suitable platform to make the transition and the adaptation of drilling as business unit seamlessly.

Fig. 6.1 provides an Advantage Matrix of Drilling as a Business Case.

I, the Author, fortunately had the experience of leading drilling projects both as a service unit and as a business unit.

I had realized the value of drilling as a business unit when I saw that it translated to successful drilling projects despite some of them being highly complex.

Similarly, I also had experienced how a drilling project suffers when it is considered as a service unit even if drilling was conventional.

#### Note:

For the sake of confidentiality and professional ethics, I have not referred the projects of my experiences in both environments of drilling as a business unit and a service unit.

There is no ambiguity whatsoever in the fact that an organization benefits significantly when drilling is given its due respect and become part of the corporate business case units.

Unfortunately, very few of the oil and gas organizations consider drilling as a business unit.

However, establishing a futuristic drilling organization as a business unit requires radical changes to the traditional operating practices including but not limited to:

- ✓ coaching both drilling personnel and the decision makers of an organization to understand the value of treating drilling as a business unit rather than a service unit;
- expanding drilling from being a service provider to internal customers like subsurface to all the relevant stakeholders;
- establishing a drilling vs stakeholders' relationship, clearly defined engagements, and deliverables;
- requirement of cost modelling methods that reflect the complexity and risks in a well design adequately;
- develop executional models that allow drilling to work and deliver its business case to the stakeholders;

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	Drilling Preparation Drilling Execution				Drilling Business Case			Drilling Feasibility								
Creates the boundary conditions for expectations and reduces over / under commitment			Create awareness on level of efforts and resources needed Provides a comprehensive understanding of requirements to drill			<ul> <li>Drilling risk, time, cost, schedule impact models</li> <li>Describe level of complexity</li> <li>Strategies to successful business model</li> </ul>			<ul> <li>Allows to understand potential complexity early in business model</li> <li>Enable to develop educated economics</li> <li>Empowers better negotiations</li> </ul>			Field Acquisition				
Creates a binding and buy in to establish parameters to execute Connect to plan and develop prudent execution models A source for commitment and a platform to express possibilities		Practical schedule to drill and complete wells Level and extent of cash flow and budget to First Oil or Gas		Creates awareness on limitations and boundary conditions		<ul> <li>Enhances the level of ownership, buy in and prudent integration</li> </ul>	Drilling CPR: Allows stakeholders, Lenders and Investors to understand the Drilling Risk and Feasibility Matrix		<ul> <li>Enhances credibility with lenders and investors</li> </ul>	Field Economics and Fund Closure						
			Creates binding and buy in to establish parameters to execute		<ul> <li>Understanding of limitations and boundary conditions</li> </ul>	Custodianship and Commitment to execute	project economics	Understanding of sensitivities in	<ul> <li>Educated models based on uncertainties and variance matrix</li> </ul>	expectations of stakeholders	<ul> <li>models and reduces assumptions</li> <li>Allows management of</li> </ul>	<ul> <li>Allows practical schedule,</li> <li>educated decision making,</li> <li>understanding of cash flow</li> </ul>	Field Monetization Plans			
mitigation and management	<ul> <li>Practical well plans in FDP</li> <li>Integrated engineering models and well proposals</li> <li>Optimum practically achievable design and cost based on risk mitigation and management</li> </ul>		<ul> <li>Roadmap and prudent FDP strategy</li> </ul>	<ul> <li>Integration of subsurface, surface</li> <li>and production</li> </ul>	<ul> <li>Connect to execute</li> </ul>	execution.	<ul> <li>Establishing parameters for efficient</li> </ul>	<ul> <li>Statement of requirements for effective management</li> </ul>	Enhances ability to execute with reduced risk and optimized cost	<ul> <li>Prudent development plans</li> </ul>	<ul> <li>Allows optimization of schedule, number and type of wells</li> </ul>	Field Development		IP Owned by: iWells, Dubai		

# Fig. 6.1 – Advantage Matrix of Drilling as a Business Case

iWells, Dubai has developed and suggest the following models to create the platform to achieve the transition of drilling to a business unit. This is the first step in the process and further advances will be made as the industry encompasses the concept.

#### 6.1 Drilling MBA

In the last hundred years of the industry, drilling so far had existed mostly as a service and technology unit.

With the advent of drilling as a business unit, a suitable platform is required to create the awareness and a roadmap to achieve the transition.

The Author had developed a completely new model called "**Drilling MBA**" under a focused Executive MBA on Upstream Oil and Gas Monetization and Drilling Project Management, the World's first of its kind, that is aimed to expand the role of drilling personnel to Drilling Techno-Commercial Engineers and Drilling Techno-Commercial Managers.

I believe that this executive MBA will help to lead the transition of drilling from being a service unit to business unit and create a platform for the industry to apply a holistic approach to drilling as a business unit.

This Executive MBA is designed for not only drilling personnel but also for integrating disciplines, decision makers and senior management of an oil and gas organization.

The Author had developed a unique curriculum for the **"Drilling MBA"**, and iWells Integrated Management Consultants ("iWells"), has an in-principal agreement with a major petroleum engineering institute to launch the executive Drilling MBA program in 2022.

#### 6.2 Drilling Competence Person Report (DCPR)

iWells has developed unique models, talent, and systems to create a drilling competence persons report (DCPR) which will allow banks, investors, lenders, insurance companies and regulatory to add value to their due diligence and reduce the risks of investment and monetization compliance.

The DCPR can also be expanded to a Well Examination Certificate (WEC) to evaluate and validate individual well design and program for prudence, compliance, and conformance.

#### 6.3 Coaching for Drilling as a Business Unit

iWells has developed unique models to coach fresh as well as experienced drilling and integrating other discipline personnel to apply business principles to drilling.

The coaching will be available online from February 2022 in iWells portal both live as well as recorded video models.

#### 6.4 Publication on Drilling as a Business Unit

In addition to this paper on drilling as a business unit, the Author is working on several other papers on drilling project management, delivery process and futuristic models.

Please refer to the paper of Futuristic Drilling Organizations published in July 2021:

# 7.0 Further Contacts:

For further discussions or presentations or materials, please contact:

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#### Website: www.iwellsmc.com

**iWells Management Consultancy:** iWells is specialized in drilling oil and gas wells with focus on well optimization, technical and operational integrity, effective drilling execution strategies, risk mitigation and prevention, integration of multi-disciplined approach to deliver complex projects through a defined well delivery process, optimization process to reduce drilling carbon emissions and establishing Integrated Project Management concepts in the industry.

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