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22ND WPC TOPIC DESCRIPTIONS

BLOCK 1: Exploration and Production of Oil and Gas

FORUMS:

- F1 Exploration challenges – how to reduce risk
- F2 Unconventional hydrocarbon resource development – North American phenomena or global opportunity?
- F3 Managing upstream mega projects
- F4 New technologies in production and development
- F5 Geoscience technology and innovation
- F6 IOR / EOR – maximising the development of mature fields

ROUND TABLES:

- RT1 Exploration and production cost efficiency – building resilience
- RT2 Bridging other industry technologies – impact on upstream
- RT3 Innovative collaboration: what's next for IOCs, NOCs and service companies?
- RT4 Upstream portfolio development in cyclic business environments

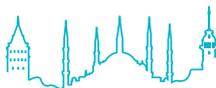
BLOCK 1 – FORUMS

F01 - Exploration challenges – how to reduce risk?

Our industry continues to make new oil and gas discoveries using advanced technologies and improved processes – enabling us to go deeper, more quickly, more accurately, and more safely than ever before. To do so, we must manage the uncertainty of geopolitical risks, economic risks, financial risks, geologic risks, project risks, policy risks, regulatory changes and the supply-and-demand volatility inherent to commodity markets. This Forum will discuss reducing risks in exploration - from regional geology, geophysical techniques and advances in high-speed drilling and completions to commercial and geopolitical risks in order to develop these resources in a safe, secure, and environmentally responsible way.

F02 - Unconventional hydrocarbon resource development – North American phenomena or global opportunity?

Oil and gas production from unconventional resources such as tight oil and gas, shale oil and gas and oil sands has made an enormous contribution to hydrocarbon production in North America. Development of similar resources has been very slow outside North America. This forum will address the contributions from unconventional oil and gas to world supply today and future potential,





the technologies, government policies and public engagement that have made this possible, and the lessons learned for other parts of the world planning to turn their unconventional resource opportunity into reality.

F03 - Managing upstream mega projects

Driven by the need to have access to new reserves, oil companies are increasingly investing in fields that are very challenging technologically and commercially, such as Arctic or deep water projects. The investment and continuing expenditure needed to develop and produce from these fields puts them in the realm of 'megaprojects', costing US\$5 billion or more. This forum will address execution risks and challenges related to delivering profitable megaprojects.

F04 - New technologies in production and development

As hydrocarbons get tougher to find and extract, innovation and new technologies play an important role in becoming more efficient and cost-effective. Business necessities and advanced technologies that could drive changes to lower energy intensity for oil and gas production, operational integrity and intelligent field technologies, unconventional field development and reservoir recovery enhancement will be of importance. This forum will address the role of new technologies in production and development to overcome future challenges in finding, exploiting and commercializing oil and gas.

F05 – Geoscience technology and innovation

This forum will address innovations and technology development within the geoscience area from outcrops to assets, ranging from exploring hydrocarbons to effective production. The challenge is to develop cost-effective and environmentally friendly technologies that tackle issues such as seismic imaging advances, hydrocarbon phase prediction, complex reservoirs, rock mechanics, reservoir management and production forecasting to improve the industry's ability to predict.

F06 – IOR / EOR – maximising the development of mature fields

More than 70% of the world's remaining conventional reserves are contained in fields that are already in production. The industry is faced with developing and implementing profitable technologies and solutions to extract more oil from these mature oil fields. This forum will provide practical examples of how successful IOR and EOR in combination with new reservoir-management techniques and technologies, production optimization, drilling and side-tracking, and facilities can enhance recovery and increase efficient management of mature fields in a cost effective way.



BLOCK 1 - ROUND TABLES

RT01 - Exploration and production cost efficiency – building resilience

During the past 30 years there have been three major cycles of a sharp run-up in world crude oil (and gas) prices followed by a steep decline. In such a volatile environment, a strategy focused on being a low cost producer can be critical in building the resiliency and sustainability of the business. This roundtable will discuss learnings from companies and projects that have taken extraordinary steps to capture efficiencies in capital expenditures and operating expenses to reduce supply costs and to improve operating margins.

RT2 - Bridging other industry technologies – impact on upstream

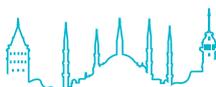
This roundtable will be about learning from other industries by sharing experiences, new technologies and best practices, and by approaching the issues in a new and alternative way. Innovative industries as for example pharmaceutical, automotive, aerospace, banking and IT are all facing and addressing challenges somewhat similar to the petroleum upstream industry. Close cooperation across industries has and will continue to generate new ways of solving problems and stimulate innovative solutions beneficial to more than just one industry.

RT03 - Innovative collaboration: what's next for IOCs, NOCs and service companies?

How can International Oil Companies, National Oil Companies and Service Companies work together to build and implement innovative strategies to jointly meet the future energy demand? This roundtable will address how these relationships can benefit all stakeholders, help in providing a more equitable balance of risk and reward and explore how the NOC-IOC-Service Company relationship can evolve into successful partnerships.

RT04 - Upstream portfolio development in cyclic business environments

Oil price volatility is very challenging for the industry. A low oil price environment demands a focused approach based on high quality decision making in order for companies to maximize returns and achieve their performance targets. Success requires recognition of uncertainty and practical strategies for the minimization or mitigation of risk to ensure delivery of projects within budget and to generate predictable cash flows. This roundtable will be a discussion around issues such as creating portfolio robustness and development, balancing short and long term value and shareholders perspectives.





BLOCK 2: Refining, Petrochemicals, Transportation and Marketing

FORUMS:

- F7 Competitive refining technologies
- F8 Integration of the refining and petrochemical industry
- F9 Oils and products storage and transportation
- F10 New marketing approaches for delivering products to consumers
- F11 Products of the future

ROUND TABLES:

- RT5 Delivering successful downstream projects
- RT6 Asset management in refining and petrochemicals
- RT7 Outlook of the downstream industries

BLOCK 2 – FORUMS

F07 - Competitive refining technologies

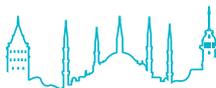
This Forum focusses on improving the economics of refinery processes in order to make them more competitive. This can be done in particular through energy savings and efficient feedstock utilization. Both are strongly related to improved catalysts and optimized separation steps (distillation, molecular sieve separation or membrane separation, process intensification). The Forum will also showcase optimization of processes with respect to matching the product yields and specifications with the market demands, based on the feedstock available. Typical examples are gasoline vs. diesel yield, octane number, sulphur and hydrogen management etc.

F08 - Integration of the refining and petrochemical industry

Integrating refining and petrochemical sites will help fight volatility in the petroleum value chain. If properly planned and implemented, integration not only diversifies the product portfolio, but reduces site specific costs, increases capital efficiency and increases returns. This Forum will demonstrate through practical case studies how the strategic planning of aromatics/fuels/olefin conversion units with a common utility management system capture long term business benefits.

F09 - Oils and products storage and transportation

The Forum will discuss the best practices in cross-border pipeline management considering the safety and reliability factors. It will also include subsea pipelines, storage systems, maritime transportation, and tanker terminals. The Forum will look into the impact of storage capacities





and locations on local processing capacities. The ultimate target of this Forum is to share ideas on facilitating transportation from the producers to the consumer markets.

F10 - New marketing approaches for delivering products to consumers

The oil industry foresees major changes to approach customers. This Forum will look at the integration between trading and refining activities, with oil companies looking for asset-backed trading whilst traders are gaining importance as new refining and retail players. New independent companies are also appearing in the retail business with new business models. The importance of the non-oil business is growing in service station networks, whilst low-cost models are increasing their market share. Additionally, Big Data management enables new delivery and marketing strategies, developing personalized promotions. The retail business also faces the challenge to integrate the traditional service station networks with new model developments, making room for alternative fuels for vehicles.

F11 - Products of the future

When we look at a low carbon future most forget about the petrochemical industry or refinery of the future producing polymers, pharmaceutical and fuels. There are many possible biological building blocks including crops and algae. There are also a number of processes using CO₂ as a feedstock. The latter could be a potential solution but it all depends on thermodynamics and the energy mass balance. This Forum will look at all the feasible technologies for the future.

BLOCK 2 - ROUND TABLES

RT5 - Delivering successful downstream projects

Delivering downstream capital projects within-budget / on-time in today's volatile business environment is of paramount importance. With case studies, this Roundtable discussion will give pragmatic guidance how to prioritize project objectives, phase design stages, evaluate costs, source and conclude EPC contractors and implement construction. Special emphasis will be given to exploring the technical and leadership competencies of project personnel and management to properly mitigate risks throughout large scale refinery and petrochemicals projects.

RT06 - Asset Management in refining and petrochemicals

It is essential that modern and aging refineries are operated in a safe, efficient and environmentally acceptable manner. In general, a PDCA cycle, including maintenance planning, implementation of repair and replacement, operation of improved facilities and evaluation of maintenance, is introduced for asset management in consideration of financing and human resources. The panel will share examples of operational excellence for asset management in refineries and their



implementation in software and hardware, including capital management, human resources and preparation for disaster response.

RT07 - Outlook of the downstream industries

This panel will focus on current trends and emerging technologies in the downstream industries, including business challenges arising from the increasing use of sustainable first and second generation biofuels and from the advent of new mobility concepts, such as electrical and hydrogen mobility. Changes in the demand and supply pattern resulting from these changes, novel feedstock options and diversification for the downstream industry is also covered in this discussion. It will also address the production capacities and demands in the local and global markets for the refinery and petrochemical industry.

BLOCK 3: Natural Gas Processing, Transportation and Markets

FORUMS:

- F12: Opening up new uses and applications for gas
- F13: Sustainable value chains for unconventional gas
- F14: Delivery of large scale gas projects
- F15: Best practices in the management of safe operation of gas assets

ROUND TABLES:

- RT8: Role of LNG in security of global energy supply
- RT9: Role of gas in the energy mix in a volatile world
- RT10: Gas from producer to market

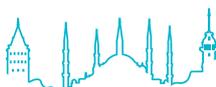
BLOCK 3 – FORUMS

F12 – Opening up new uses and applications for gas

Consumption of gas is increasing faster than oil or coal. In order to feed the increased demand for gas, we need to search for technology innovations beyond the shale gas revolution, which can unlock new sources such as hydrates and hydrogen, develop new processes for unconventional gas, CBM and GTL, as well as focus on new applications such as CHP. What impact do these new technologies have on the usage of gas in transportation, mobility and power generation?

F13 - Sustainable value chains for unconventional gas

The value chain for the gas industry covers production, processing, transportation, storage and





distribution, and each of these sectors has a social and business impact on the industry. For unconventional gas the value chain is largely similar to that of conventional gas but has unique features in terms of sustainability and cost effectiveness, as well as social and environmental impacts. We will consider the differences between the value chain of conventional and unconventional gas, review comparative studies and examples of building an effective value chain for unconventional gas which adds value to the company's revenue line whilst providing a stable supply of gas to the end users.

F14 - Delivery of large scale integrated gas projects

Management of large scale gas projects requires a deep integration of various disciplines, including HSE, design, contracting and procurement, project management and construction. Adoption of novel ways of working, including 4D and 5D planning as well as effective deployment of new technology are essential to deliver the next wave of LNG, (lean) FLNG and unconventional gas projects.

F15 - Best practices in the management of safe operation of gas assets

The gas industry has accumulated very large and complex facilities, including gas fields, pipelines, processing plants, transportation, storage and distribution networks. These physical facilities together with their non-physical counterparts, such as management procedures, software platforms, form the assets of the gas industry. As the gas industry grows, we need to address the risk of these huge, complex assets, and if they might become obsolete in the foreseeable future. Integrated management and risk control are the two important issues facing our industry and we have to evaluate and regularly revise our business practices in terms of effective asset usage and cost reduction without compromising safety. This Forum will share best practices in the management of safe operation of gas assets.

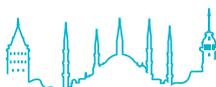
BLOCK 3 - ROUND TABLES

RT08 - Role of LNG in security of global energy supply

Demand for gas continues to rise, with gas forming an effective bridge to lower the carbon footprint of power generation. This roundtable will review the role of LNG as an essential element in the gas supply chain, with LNG increasingly supplementing pipeline gas where the latter is either impractical or impossible as a transport option. The panel will consider if all aspects including supply chain reliability, LNG shipping, technical assurance of plant design as well as safety and integrity assurance are sufficiently covered to guarantee the required security of supply.

RT9 - Role of gas in the energy mix in a volatile world

Global energy demand is forecasted to increase over the next decades due to economic growth in





emerging countries and population increase, with fossil fuels remaining the main source of energy by 2035. At the same time it becomes crucial to reduce greenhouse gas emissions to decrease climate change impact, while waiting for new energies to be technically ready and economical to replace fossil energies.

Could natural gas be the key actor for the energy mix evolution? Its price evolution, its accessibility, its smaller CO₂ impact and its better acceptability could make it the energy mix leader for the transition period. But what will be the necessary conditions?

RT10 - Gas from producer to market

Connecting producers to markets is key for the gas business. Various gases, including conventional and unconventional gas, are produced with high or low BTU content. Gas markets include power generation, commercial gas, city gas, residential gas etc. To connect production with the consumers an extensive infrastructure, including gas networks, storage, transportation and various facilities, is required. This Round Table will discuss what innovative technology is evolving? How can infrastructure optimization be achieved? How can we minimize the environmental footprint of bringing gas from the producers to the markets?

BLOCK 4: Sustainable Management of the Industry

FORUMS:

F16: Knowledge management

F17: Cyber security and new technology risks

F18: Human resources – how to attract and retain talent in our industry

F19: Energy poverty alleviation initiatives

F20: HSE and operations integrity – keeping pace

ROUND TABLES:

RT11: Geopolitics and global trends

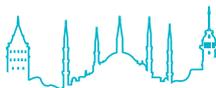
RT12: Ethics, compliance and business principles

RT13: Perception of the petroleum industry by society

BLOCK 4 – FORUMS

F16 - Knowledge management

The Forum will discuss the way Knowledge Management (KM) has evolved from an ‘information revolution’ into a ‘knowledge revolution’. In fact, by fostering innovation and the development of technologies in learning organizations, KM has turned into a new source for competitive advantage. The Forum will share best practices and discuss how this new Knowledge Management approach,





along with Innovation and R&D, can allow for great changes in this collaborative era and evaluate how intellectual capital can shape a new future for energy organisations, when dealt with as “collective know-how”.

F17 - Cyber security and new technology risks

Cyber-attacks have evolved from random, self-propagating destructive viruses and website hacking attempts with no specific target and limited-in-scope to becoming ever more targeted, financially, or politically driven persistent attacks. The advancement of information technology security controls has also led attackers to adopt increasingly more sophisticated new attack methods. This session will discuss the following areas: how to prepare against targeted cyber-attacks against oil and gas companies, the challenges of securing often outdated critical industrial control systems, role of national agencies and regulators in establishing and enforcing common cyber security standards and controls and overcoming the challenges associated with intelligence sharing among different institutions.

F18 - Human resources – how to retain talent

Managing the increasing talent gap, involving young people in the industry and fostering diversity and inclusion in the workforce are some of the hot HR topics. How will the workplace change over time and how do companies manage the transition? How can companies manage talent through boom and bust cycles and retain the knowledge and experience for critical operations?

F19 – Energy poverty alleviation initiatives

With nearly 1.3 billion people lacking access to electricity and 2.6 billion people relying on biomass for their domestic cooking and heating needs, the UN has called a Decade of Sustainable Energy and set up the Sustainable Energy for All (SE4ALL) programme. How can the oil and gas industry play a role and make a difference by using its strength as a technology and innovation leader in the energy sector?

F20 - HSE and operations integrity – keeping pace

As the petroleum industry pursues new supplies from frontier areas in deep water, the Arctic and other remote and sensitive environments, unconventional resources using more intensive operational practices in populated onshore areas, and mature fields with aging wells, facilities and pipelines, the industry faces new challenges to preserve the integrity of these operations and to protect people and the environment. The Forum will present case studies of new and enhanced systems, processes, practices and technologies that have enabled companies to keep pace with this industry evolution and meet their ongoing operations integrity and health, safety and environmental responsibilities, which remain key to earning and retaining a license to operate.



BLOCK 4 - ROUND TABLES

RT11 - Geopolitics and global trends

Geopolitics continue to challenge the global petroleum industry in many aspects. For oil and gas companies, access to reserves and safe routes for development and transportation are of vital importance, while securing energy supplies is paramount for national interests. Regions holding reserves are considered prime assets and are often the subject of political disputes. A thorough understanding of regional and geopolitical trends is therefore essential. How do they impact global operations, and how can we manage to balance the interests of the various stakeholders in the host countries and the industry in order to minimize disruptions and other risks to the operations. In addition, the emergence of unconventional resources has been reshaping geopolitics and marking a break with several established trends in energy supplies.

RT12 – Ethics, compliance and business principles

This Forum will discuss how compliance and ethics practices should be part of the overall business strategy and operations, permeating the entire organization. Taking this integrated approach leads to better overall performance, mitigates risks and allows the organization to meet its business objectives. The Forum will create an opportunity to enhance your leadership skills by learning and sharing innovative experiences and best practices on how a compliance and ethics program can promote and preserve the organization's values and principles to support long-term prosperity while addressing increasing stakeholders' expectations.

RT13 - Perception of the petroleum industry by society

In a communication driven world where anyone can raise their voice using social media, the oil and gas industry must reinforce its communication strategy in order to transmit the key role that hydrocarbons have in the present and the future and its capability to deliver strong safety, environmental, and community engagement performance.

How can oil and gas companies improve their presence in social networks in order to get a better image and be closer to the customer, media and the influencers? How can we cooperate better with institutions, governments and consumers to build public confidence and obtain a social license?