

IPIW 2025



Solutions.
People.
Energy.SM

A Workshop Under the Patronage of H.E. The Prime Minister of Iraq and with the support of H.E. the Deputy Prime Minister for Energy Affairs—Minister of Oil.

IPIW2025

PROCEEDINGS

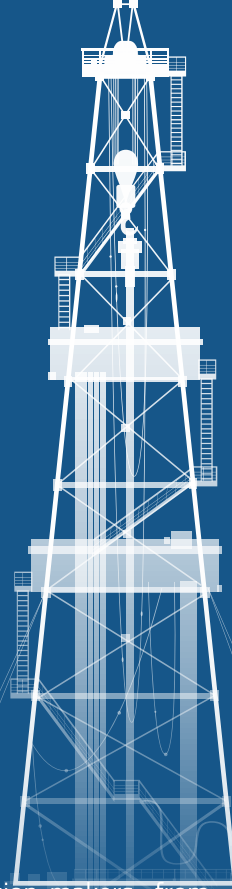
27-28 Oct, 2025
Babylon Rotana Hotel
Baghdad, Iraq





A SPECIALIZED WORKSHOP

Under the esteemed patronage and in the presence of His Excellency, Prime Minister of Iraq, Mr. Mohammed Shia' Al-Sudani, and with the support of the Ministry of Oil, with the attendance of His Excellency, Deputy Prime Minister for Energy Affairs—Minister of Oil, Mr. Hayan Abdulghani Alsawad.



ABOUT THE WORKSHOP

The workshop aims to bring together decision-makers from Iraqi authorities, operators, service providers, subject matter experts, researchers, and prospective investors to address technical, environmental, and economic challenges in Iraq's field developments and production operations. It aims to probe and foster new horizons and opportunities for collaboration to operate mature and marginal fields and achieve mutual growth for all stakeholders while disseminating knowledge about current advancements in the industry. The event is organized by a committee of Iraqi and foreign professionals, with support from Iraq's Ministry of Oil, affiliated entities, and working IOCs and service companies. The theme will include strategic panel sessions, technology/solutions demonstrations by technical presentations (not full papers), and breakdown sessions. The event is a great opportunity for local and international companies to seize opportunities for cooperation and investment in the Iraqi oil and gas industry.

Acknowledgment

The Society of Petroleum Engineers International - Central Iraq Section expresses its sincere gratitude to all those whose support made this event possible.

We are honored by the patronage of **H.E. Mr. Mohammed Shia' Al-Sudani**, Prime Minister of Iraq, whose continued support reflects the government's commitment to advancing the energy sector.

We extend our highest appreciation to **H.E. Mr. Hayan A. Alsawad**, Deputy Prime Minister for Energy Affairs and Minister of Oil, for his support in enabling this important platform for industry collaboration.

Our sincere gratitude goes to **H.E. Mr. Fayyadh Hassan Naemah**, Advisor to the Prime Minister for Energy Affairs, for his continued support of the SPE community in Iraq and valuable contributions in strengthening engagement across the energy sector.

We gratefully acknowledge the support of the **senior management and teams** within the Ministry of Oil, as well as our **sponsors and partners**, whose contributions were essential to the success of IPIW2025.

Finally, we thank all speakers, authors, and participants for their valuable contributions in making IPIW2025 a distinguished and impactful industry event.



هلال البصرة
HILAL AL-BASRAH



PASARGAD ENERGY



東巴石油
EBS PETROLEUM



SAHARA
middle east



RQC
شركة رواد القصة



HALLIBURTON

PETRONAS



SAS OIL



BASRAH
ENERGY



Blue Bell Shipping LLC.
REG. 2007

ANTON 安東

KROHNE



WELCOME MESSAGE FROM THE CHAIRMAN OF THE ORGANIZING COMMITTEE



It is my pleasure to welcome you to the IPIW 2025, a unique platform for industry leaders, experts, researchers, and investors to discuss the future of Iraq's oil and gas sector. With the support of the Ministry of Oil, we aim to foster collaboration and expertise exchange to address industry challenges and opportunities. We look forward to your valuable participation in shaping a sustainable future for Iraq's energy sector.

Mr. Basim Mohammed Khudair

Deputy Minister of Oil for Upstream Affairs
Chairman of the Organizing Committee

Photo: Ministry of Oil

IPIW 2025

A MESSAGE FROM THE CHAIRMAN OF THE
TECHNICAL COMMITTEE



Solutions.
People.
Energy.SM



As we move into a new era recognized with the wide spectrum of the 4th IR implementation; the global oil and gas industry stands on the brink of a significant inevitable transformation. In light of Iraq's ambitious plans to expand its oil and gas sector, SPE's IPIW 2025 provides an excellent platform to hear from the decision makers in Iraq on the de-vilification of what is associated with our industry and champion its sustainability in the country. The event is tailor-made and thematically curated to provide an unprecedented opportunity for operators, service companies and other industry stakeholders to explore potential opportunities to work closely with their Iraqi counterparts and exchange knowledge on the latest innovative state-of-the-art technical advancements in our industry.

Dr. Amir Al-Wazzan

Production Assurance Manager
Dragon Oil, ENOC Group, UAE
Chairman of the Technical Committee

Photo: SPE

IPIW2025

Brought to you by



Partner



Event Supporter



Under the Patronage



Event Organizer

Event Sponsors

Titanium



Platinum

HALLIBURTON



Gold



ANTON 安東

KROHNE



Silver



IPIW2025 IN NUMBERS Abstract Submission Statistics

+162 | Abstracts Received

Iraq-Canada-China-Egypt-France
United Arab Emirates (UAE)
United Kingdom (UK)
United States (US)
Germany-Iran-Italy-Malaysia
Yemen-Tanzania-Turkey

Countries of
Submitting
Companies /
Institutions

Ministry of Oil's Companies VS IOCs

Ministry of Oil's Companies
11.7%



IOCs
88.3%

Abstracts (Industry VS Academia)

Academia (Universities)
6.2%



Oil and Gas Industry (Companies)
93.8%

IPIW2025 Presented and Exhibited Companies/Institutions



HALLIBURTON



Kynote Speaker

Prof. Dr. Dhiya Al-Jumeily

Advisor to the Prime Minister of Iraq For Smart Management and AI Affairs

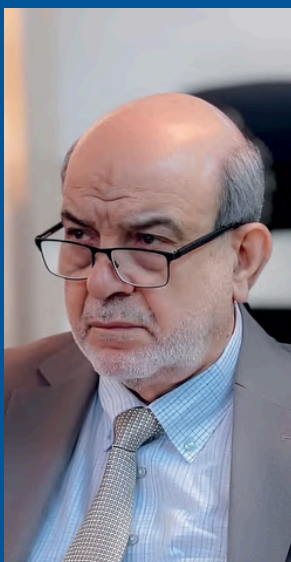
Prof. Dhiya Al-Jumeily OBE is a Professor of Artificial Intelligence (AI) at Liverpool John Moores University with over 30 years of experience in AI research and its applications toward the UN Sustainable Development Goals (UNSDGs). His work spans healthcare, environment, safety, and education, with a strong focus on impactful collaborations across 20+ countries, particularly in the MENA region. Rooted in Iraq and inspired by Baghdad's legacy of early algorithms, Prof. Al-Jumeily has authored over 500 publications and led international scholarly exchange through founding the eSystem Engineering Society (eSES) and the IEEE-supported DeSE Conference, which connects 200+ attendees annually from 25+ countries. He has supervised 25+ PhD students and mentored 20+ academics whose work bridges academia, industry, and real-world AI applications such as intelligent environmental and healthcare systems. His projects have attracted over £7.5 million in funding. In recognition of his contributions, he was appointed Officer of the Order of the British Empire (OBE) by Queen Elizabeth II in 2020 and named among the Top 30 Most Influential Arabs in AI in 2022.



Key Government Energy Officials Participating in IPIW2025



**H.E. Mr. Hayan A.
Al-Sawad**
Deputy Prime Minister
for Energy Affairs and
Minister of Oil



**H.E. Mr. Fayadh H.
Naema**
Advisor to the Prime
Minister
for Energy Affairs
Government of Iraq



**H.E. Dr. Abdulbaqi
Khalaf**
Advisor for Energy
Affairs
Ministry of Oil, Iraq

Meet the Panelists

Ministerial Panel Session

High-Level Dialogue on Policy, Strategy, and Energy Security



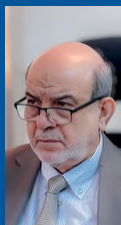
H.E. Mr. Hayan A. Al-Sawad
Deputy Prime Minister
for Energy Affairs and
Minister of Oil, Iraq



Dr. Amir Alwazzan
Production Assurance
Manager
Dragon Oil, UAE
(Panel Session
Moderator)

Strategic Panel Session

Iraq's Oil and Gas Industry: Challenges & Opportunities



H.E. Mr. Fayyad H. Nema
Advisor to the Prime
Minister of Iraq
for Energy Affairs



Mr. Zaid Elyaseri
President
BP, Iraq



Mr. M Bohari M Ali
Country Chairman
PETRONAS, Iraq



Mrs. Dunia Chalabi
Managing Director
TotalEnergies, Iraq



Mr. Abdulkarim AlMaazmi
CEO
Dragon Oil, UAE



Mr. Enrico Trovato
Managing Director
Eni Iraq S.V.



Dr. Amir Alwazzan
Production Assurance
Manager
Dragon Oil, UAE
(Panel Session
Moderator)

Industry-Academia Panel Session

The Future of Petroleum Engineering Education in Iraq: Horizons of
Academic - Industry Collaboration



Mr. Ali Raif Abdallah
Digital & Integration
Country Manager
SLB, Iraq



Dr. Yogesh Bansal
Regional Enterprise
Solution Leader -
MENA Landmark
Software & Services
Halliburton, UAE



Mr. Ali Faraj Zaidan
Head of Petroleum
Engineering Dept
Iraqi Engineers Union



Mr. Ma Cheng
General Manager
EBS Petroleum Company
Ltd, Iraq



Mr. Ali J. Hammond
Director Manager
Petroleum R&D Center
Ministry of Oil, Iraq



Dr. Zeyad S. M. Khalid
Chairman - Iraq Council of
Accreditation for
Engineering Education
MOHESR, Iraq



Dr. Fadhil S. Kadhem
Dean - College of Oil &
Gas Engineering
University of Technology
MOHESR, Iraq



Dr. Shawket Alazzawi
Reservoir Engineering
Specialist
ADNOC, UAE
(Panel Session Moderator)

IPIW2025 ORGANIZING COMMITTEES

MEET THE LEADERS BEHIND THE VISION

Get to know the key decision-makers, industry experts and professionals driving this landmark event. These distinguished professionals from Iraq's energy sector and international organizations serve as the pillars of the organizing committees, shaping the work-shop's goals, content, and impact



Mr. Basim M. Khudair
Deputy Minister of Oil for
Upstream Affairs
Chairman of the
Organizing Committee



Dr. Abdulbaqi Khalaf
Advisor to Ministry of Oil
for Energy Affairs
Co-Chair of the
Organizing Committee



Dr. Amir Al-Wazzan
Production Assurance
Manager
Dragon Oil, ENOC, UAE
Chairman of the Technical
Committee



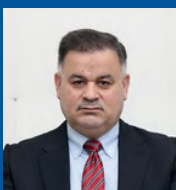
Dr. Shawket Alazzawi
Reservoir Engineering
Specialist
ADNOC, UAE
Co-Chair of the Technical
Committee



Mr. Basim T. Al-Yasiri
Director General
Petroleum Contracts and
Licensing Directorate
(PCLD), Ministry of Oil
Member—Organizing
Committee



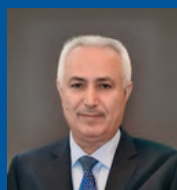
Dr. Hisham Y. Shaalan
Director General Training and
Development Directorate,
Ministry of Oil
Member—Organizing
Committee



Mr. Ali J. Hammoud
Director Manager
Petroleum R&D Center
Ministry of Oil
Member—Organizing
Committee



Dr. Mohammed N. Hussain
Deputy Director Manager
Petroleum R&D Center (PRDC)
Ministry of Oil
Member—Organizing
Committee



Dr. Kareem A. Alwan
Chairperson, SPE Central
Iraq Section
Business Development
Manager, Hilal Al-Basrah Co.
Member—Organizing
Committee



Mr. Jasim Salih Hadi
Head of the Iraqi Think Tank
for Energy Studies Dept.,
PRDC, Ministry of Oil
Chairman of the Support &
PR Committee



Dr. Salam Alrbeawi
Associate Prof. Middle
East Technical Uni., Cyprus
Member—Technical
Committee



Mr. Baraa Zubaidi
Vice Chairperson
SPE Central Iraq Section
Head of Clean Energy
Economics
Petroleum R&D Center
Chairman of the Operation
and Promotion Committee



Mr. Atheer M. Yousif
Tech. and Eng. Board
Manager
Midland Refineries Company
(MRC), Ministry of Oil
Member—Organizing
Committee



Dr. Ramiz M. Shubbar
Head of the Coordination
and Follow-up Division
MRC, Ministry of Oil
Member—Organizing
Committee



Mr. Raied S. Jasim
Head of Follow-Up Dept.,
PCLD, Ministry of Oil
Member—Organizing
Committee



Dr. Abdulsahib Bazoun Al-Hasnawi
Director of the Media and
Government Communications Office
Ministry of Oil

Technical Committee:

Mr. Ahmed AlHanaee
Dragon Oil, UAE
Dr. Emre Artun
Qaboos University, Oman
Mr. Tariq Zeinal Miran
AlBarham Energy
Dr. Aziz Rahman
Hamad Bin Khalifa University, Qatar
Dr. Ghassan Abdulmajeed
University of Baghdad, Iraq
Dr. Mohammad Salih Aljawad
University of Baghdad, Iraq
Dr. Basim M.N. Kasim
SPE Central Iraq Section
Dr. Usama Alameedy
SPE Central Iraq Section
Mr. Hacene Kamli
Gilgamesh Oil Field Services
Dr. Li Xin
China ZhenHua Oil
Mr. Salman Al-Obaidi
IVI holding
Mr. Rami Bakir
OCS Services, UAE
Ms. Aarti Dangl
Emerson, UAE
Dr. Ahmed K. Hassan
SPE Central Iraq Section
Mr. Shwan Dizayee
SPE London Section, UK
Mohamed Ali Oueslati
ENI
Mr. Wassem M. Alward
SLB
Mr. Ahmed Hashim Saadoon
BP
Mr. Hassan Karimi
Baker Hughes, UAE
Mr. Li Ruidong
ANTON Oil
Mr. Christian Millot
TotalEnergies, Iraq
Francesco Russo
Kuwait Energy
Mr. Igor Loschinskii
ESP Services LLC, Iraq
Dr. Ignatiy Volnov
Lukoil, Iraq

Mr. Ahmad Aljarrah
Renwa Group
Dr. Ziad Alhachami
Ital Fluid, Iraq
Dr. Omar Alfarisi
Dragon Oil, UAE
Mr. Ibrahim Washash
AlManar Co., Iraq
Dr. Ahmad Alwaeli
Raban Alsafeena Co., Iraq
Dr. Ghazi Alsharaa
Hilal AlBasrah Co., Iraq
Mr. Nazar Rashid
OilServ
Mr. Victor Li Hao
Haliburton, Iraq
Dr. Watheq J. Al-Mudhafer
SPE Basra Section
Mr. Raboon R. Mohammed
SPE Northern Iraq Section
Mrs. Zahraa Ali
SAS Oil
Mr. Ali Abdulkareem Bandar
Al-Majal for energy and oil services LTD
Mr. Zaher Jabbar Attwan
SPE Kirkuk Section
Mr. Eadie Azahar B Rosland
PETRONAS Carigali Iraq Holding B.V.
Mr. Falah Al-Essawi
NESR, Iraq
Dr. Omar Al-Ismaeeli
Weatherford, Iraq
Dr. Omar F. Hassan
Al Naji University
Dr. Jalal F. Owayed
Kuwait University

Operations & Promotion Committee:

Mr. Ali Nahi Abed
CO-Chair of the Committee
SPE Central Iraq Section
Mr. Hassan Al-Rawi
SPE Central Iraq Section
Mr. Samer Waleed
SPE Central Iraq Section
Dr. Hussein Hadi Marza
PCLD, Ministry of Oil
Mr. Ghaith Jabbar Ajrash
PCLD, Ministry of Oil
Mr. Ali Ateia Ibrahim
SPE Central Iraq Section
Mr. Haider Lafta Mohsen
SPE Central Iraq Section
Mr. Khallad Rabea
SPE Central Iraq Section
Ms. Zahraa Mohammed
SPE Central Iraq Section & BP
Ms. Hinda Riyadh
SPE Central Iraq Section
Mr. Ahmed Nayyef Mahmood
Basra Oil Company

Support & PR Committee

Mrs. Najwa Salim Ali
PRDC, Ministry of Oil
Mr. Louay Ahmed Assi
PRDC, Ministry of Oil
Mrs. Baraa Ziad Tariq
PRDC, Ministry of Oil
Mr. Hussein Essam Fadel
PRDC, Ministry of Oil
Mr. Noor Subaih Radhi
PRDC, Ministry of Oil

Event Program

Scan the QR Code to view/download the full IPIW2025 Program.



LIST OF ORAL PRESENTATION ABSTRACTS

No.	Abstract Title	Page
1	Underground LPG Storage in Salt Caverns – Kirkuk Development Project	30
	Author & Affiliation	
	Yousif Hashim Yousif Al-Shaaya	Sahara Middle East Petroleum Services Ltd
2	A Public-Private Partnership Proposal for Integrated Waste-to-Energy: Sustainable Agricultural Fossil Fuel (SAFF) Production	31
	Author & Affiliation	
	Riyadh Alallaq	Midland Refineries Company
3	Reservoir Management via Physics-Informed Hybrid AI: Dual Target Forecasting	32
	Author & Affiliation	
	Karimu Nasibu	Dar Es Salaam Maritime Institute
4	Multi-Dimensional Profile Control Technology for Carbonate Reservoirs	33
	Author & Affiliation	
	Yang Li	China Zhenhua Oil Co. Ltd.
5	Application of Deep Selective Profile Control and Displacement Technology in the Carbonate Reservoirs of the Ahdeb Oilfield	34
	Author & Affiliation	
	Liyue Qiu	Antonoil Technology (Group) Co., Ltd.
6	Smart Real-Time Corrosion Monitoring System	35
	Author & Affiliation	
	Mohammed Adnan Abbood Ali	Basra Oil Company

No.	Abstract Title	Page
7	Digital Transformation of Asset Integrity Management	36
	Author & Affiliation	Wouter Burger
		Shell
8	Digitally Transforming Well Integrity Management with a Next-Gen Integrated Solution	37
	Author & Affiliation	Christophe Van Laer
		Halliburton
9	Unlocking Residual Oil in Egypt's Offshore GOS – Hybrid Polymer & Ionic Water Injection EOR	38
	Author & Affiliation	Khursund Salman
		Dragon Oil
10	The Use of Properties Urban Planning Information System for Oil Production Territories (Example Basra)	39
	Author & Affiliation	Anwar Sabeeh Alqatrany
		Basra Oil Company
11	Optimizing Drilling Contract Strategies: Transitioning from Daily Rate to Integrated Drilling Services for Cost-Effective and Fit-For-Purpose Development Wells in Southern Iraq	40
	Author & Affiliation	Abdul Rahman Marzoq / Hussam Ismail
		PETRONAS
12	High-Temperature Novel Viscoelastic Surfactant (VES) for Acid Stimulation	41
	Author & Affiliation	Bahaa Alanbari
		NESR
13	Application of HFPM Technology in Multi-Staged Fracturing Horizontal Wells	42
	Author & Affiliation	Fang Ye
		Antonoil Technology (Group) Co., Ltd.

No.	Abstract Title	Page
14	Scaling Management in Oil & Gas Reservoirs: Mechanisms and Mitigation	43
	Author & Affiliation	Mohammed Ali Tork / Khosro Jarallah
		OXYNOIL Group
15	Hybrid Bit Design for Consistent Shoe to Shoe	44
	Author & Affiliation	Mostafa Remah Salem
		SLB
16	Integrated Drilling Solutions – Garraf Oilfield Case Study	45
	Author & Affiliation	Karrar Mahan
		PETRONAS
17	Best Practices for Drilling Deep High-Pressure Wells in South Iraq	46
	Author & Affiliation	Ali Alsaad
		Kuwait Energy Basra Limited
18	Enhancing Combustion Efficiency and Reducing Emissions in Refineries	47
	Author & Affiliation	Rand Qusay Kadhim
		Midland Refineries Company
19	Carbon Footprint Management for Iraq's Oil & Gas Processing Sector	48
	Author & Affiliation	Abdullah Sami
		Kuwait Energy Basra Limited
20	Innovative AI-Driven Solutions to Safeguard Iraq's Energy Infrastructure	49
	Author & Affiliation	Mohammed Jaarah
		ROSEN Group
21	Iraq's Gas Turnaround: Flaring Down, Output Up	50
	Author & Affiliation	Alexandre Araman
		Wood Mackenzie
22	Numerical Simulation and Remaining Gas Potential – LFS Gas Field	51
	Author & Affiliation	Yousif Hussein
		Antonoil Technology (Group) Co., Ltd.

No.	Abstract Title	Page
23	Environmental Excellence through Advanced Chemistry – Garraf Oil Field	52
Author & Affiliation		Mohd Ali Kamaludeen PETRONAS
24	Applications of Artificial Intelligence Powered Condition Monitoring Systems for Oil and Gas Industry Based on Samotics Technology	53
Author & Affiliation		Hayder Sahib ALFAJER Group
25	Enhancing Productivity in Carbonate Wells with High-Permeability Contrast Through Combination of Non-Reactive Chemical Diverter and Single-Phase Retarded Acid System (SPRAS)	54
Author & Affiliation		Ali Dheyaa PETRONAS
26	Physics-Informed Deep Neural Network for Corrosion Prediction	55
Author & Affiliation		Christophe Van Laer Halliburton
27	AI-Driven Top-Down Modeling for Mature Offshore Field Development	56
Author & Affiliation		Khursund Salman Dragon Oil
28	Multi-Objective Optimization of Crude Oil Hydrotreating Using Neural Networks	57
Author & Affiliation		Wissam Abdulsattar Muhsin Midland Refineries Company
29	Real-Time Production Optimization – Machine Learning Virtual Flow Metering	58
Author & Affiliation		Mahmoud Korish Dragon Oil

No.	Abstract Title	Page
30	Advancing Rock Typing in Heterogeneous Carbonate Reservoirs Using Machine Learning	59
	Author & Affiliation	Yongjun Fang Kuwait Energy Basra Limited
31	Beyond Intuition – AI/ML for Injection-Well Gel Treatment Design	60
	Author & Affiliation	Munqith Aldhaheeri Missan Oil Company
32	Multi-Reservoir Interwell Connectivity Management Using Transformer Fusion	61
	Author & Affiliation	Ahmed Saihood University of Thi-Qar
33	Predicting Mud Losses in South Iraq Carbonates Using Machine Learning	62
	Author & Affiliation	Wassem Alward SLB
34	Minimizing Financial Risks of Incorrect Measurement	63
	Author & Affiliation	Jay Gadhavi KROHNE
35	ANN for Prediction and Mitigation of Stuck Pipe Incidents	64
	Author & Affiliation	George Bagheri / Zahraa Ali SAS Oil – AlAmal Group
36	Flow Field Characterization and Optimization for Horizontal Well Waterflooding	65
	Author & Affiliation	Boning Zhang China Zhenhua Oil Co. Ltd.
37	Tracer Injection Project in Zubair Field	66
	Author & Affiliation	Matteo Manotti ENI / ZFOD

No.	Abstract Title	Page
38	Water Quality-Differentiated Injection – East Baghdad South Field	67
	Author & Affiliation	Lina Cao EBS Petroleum Company Ltd.
39	Empowering Iraq's Drilling Operations with AI – National Adoption Roadmap	68
	Author & Affiliation	Ethar H. K. Alkamil University of Basrah
40	Multilayer Transient Analysis of Producing Wells from Two Commingled Zones	69
	Author & Affiliation	Shamam Tarq Basra Oil Company
41	Characterization and Geomodelling of Mishrif Carbonate Channels	70
	Author & Affiliation	Hicham Akbi United Energy Group
42	First Field Deployment of New At-Bit Imaging System in Iraq: Unlocking Subsurface Insights at the Drill Bit	71
	Author & Affiliation	Saeed Basso SLB
43	The Right Cement Barrier Enhancing Dependability and Long-Term Isolation to Mitigate Fugitive Emissions - Iraq Case Study.	72
	Author & Affiliation	Mikhail Dange Halliburton
44	A Novel Implementation of a 6-Inch Ultra-Long Horizontal Drilling Technology in the E Oilfield, Iraq: Field Results and Performance Insights	73
	Author & Affiliation	Zhang Jingyi EBS Petroleum Company limited
45	Integrated Reservoir Characterization: Advanced Reservoir Characterization Techniques to improve zone targeting and static model accuracy	74
	Author & Affiliation	Sergey Potryasov Lukoil

No.	Abstract Title	Page
46	Leveraging the Integrated Horizontal Well Multistage Hydraulic Fracturing and Reservoir Monitoring Techniques to Boost Iraqi Tight Carbonate Reservoirs Development	75
	Author & Affiliation Ruidong Li Antonoil Technology Co., Ltd.	
47	Dynamic Sub-surface Evaluation from Play to Prospect through Scalable Earth Modeling in Sandakan and Semporna Basins	76
	Author & Affiliation Debjyoti Das Halliburton	
48	A New Benchmark: Drilling Iraq's Longest 6-Inch Horizontal Section Using PowerDrive Orbit G2 Technology	77
	Author & Affiliation Aous Rasheed Al-Kaseem SLB	
49	An Efficient, Safe, and Practical Chemical Method for Barium Sulfate Scale Removal	78
	Author & Affiliation Bahaa Alanbari NESR	
50	Biosurfactant-Based Soil Flushing Agent for Improved bioremediation of PAHs	79
	Author & Affiliation Gabriele Moscatelli CHIMEC Spa	
51	Harnessing AI and ML for Smarter Drilling: Optimizing Operations and Predicting Hazards	80
	Author & Affiliation Javier Torres Halliburton	
52	Low Carbon Well Interventions with Coiled Tubing Based Approach to Zero Flaring and Zero Waste Operations	81
	Author & Affiliation Alaa Rahimah Jweid PETRONAS	
53	The Role of Polymer-Coated Nanomaterials in Enhancing Oil Recovery and Improving Production Efficiency	82
	Author & Affiliation Ranaa Rasool PRDC	

LIST OF DIGITAL POSTER PRESENTATION ABSTRACTS

No.	Abstract Title	Page			
1	From Waste to Opportunity: The Geochemical Potential of Produced Water for Sustainable Lithium Recovery	83			
<table> <tr> <td>Author & Affiliation</td><td>Anahita Kazemi Kia</td><td>Chemistry and Chemical Engineering Research Center of Iran</td></tr> </table>			Author & Affiliation	Anahita Kazemi Kia	Chemistry and Chemical Engineering Research Center of Iran
Author & Affiliation	Anahita Kazemi Kia	Chemistry and Chemical Engineering Research Center of Iran			
2	Leveraging Groundwater to Replace Limited River Water in Secondary Recovery: Challenging and Solutions in Real Case Study Surface Equipment	84			
<table> <tr> <td>Author & Affiliation</td><td>Ahmed Hadi</td><td>Kuwait Energy Basra Limited</td></tr> </table>			Author & Affiliation	Ahmed Hadi	Kuwait Energy Basra Limited
Author & Affiliation	Ahmed Hadi	Kuwait Energy Basra Limited			
3	Digital Journey: Automated Machine Learning & Big Data Workflow for Oil Field Data Management	85			
<table> <tr> <td>Author & Affiliation</td><td>Hassan Al-Bably</td><td>SLB</td></tr> </table>			Author & Affiliation	Hassan Al-Bably	SLB
Author & Affiliation	Hassan Al-Bably	SLB			
4	Utilization of Flaring Gases for Enhanced Oil Recovery and Carbon Capture	86			
<table> <tr> <td>Author & Affiliation</td><td>Mohammed Al-Mustafa</td><td>BECL</td></tr> </table>			Author & Affiliation	Mohammed Al-Mustafa	BECL
Author & Affiliation	Mohammed Al-Mustafa	BECL			
5	Eco-Friendly Customized Dry Friction Reducer Fracturing Fluid: A Breakthrough Stimulation Solution for Reservoir Enhancement	87			
<table> <tr> <td>Author & Affiliation</td><td>Xie Lin</td><td>Anton Oil Technology (Group) Co., Ltd.</td></tr> </table>			Author & Affiliation	Xie Lin	Anton Oil Technology (Group) Co., Ltd.
Author & Affiliation	Xie Lin	Anton Oil Technology (Group) Co., Ltd.			
6	Smart Remote Alarm Systems	88			
<table> <tr> <td>Author & Affiliation</td><td>Mustafa Emad Kadim</td><td>Oil Products Distribution Company</td></tr> </table>			Author & Affiliation	Mustafa Emad Kadim	Oil Products Distribution Company
Author & Affiliation	Mustafa Emad Kadim	Oil Products Distribution Company			
7	Improving Rig Floor Safety by Leveraging Artificial Intelligence Capabilities	89			
<table> <tr> <td>Author & Affiliation</td><td>Alexandre Javay</td><td>SLB</td></tr> </table>			Author & Affiliation	Alexandre Javay	SLB
Author & Affiliation	Alexandre Javay	SLB			

No.	Abstract Title	Page			
8	Using Geostatistical Techniques to Enhance Reservoir Characterization of the Upper Qamchuqa Formation	90			
<table> <tr> <td>Author & Affiliation</td><td>Nazaneen Said Amin</td><td>North Oil Company</td></tr> </table>			Author & Affiliation	Nazaneen Said Amin	North Oil Company
Author & Affiliation	Nazaneen Said Amin	North Oil Company			
9	Industry-First Integrated ZMLD Process: Recovering Mineral Salts, Bromine Derivatives, and Rare Earth Metals from Produced Water	91			
<table> <tr> <td>Author & Affiliation</td><td>Bahaa Alanbari</td><td>NESR</td></tr> </table>			Author & Affiliation	Bahaa Alanbari	NESR
Author & Affiliation	Bahaa Alanbari	NESR			
10	Hamrin Flare Gas to Power Project	92			
<table> <tr> <td>Author & Affiliation</td><td>Yousif Hashim Yousif Al-Shaaya</td><td>Sahara Middle East Petroleum Services</td></tr> </table>			Author & Affiliation	Yousif Hashim Yousif Al-Shaaya	Sahara Middle East Petroleum Services
Author & Affiliation	Yousif Hashim Yousif Al-Shaaya	Sahara Middle East Petroleum Services			
11	Accelerating Field Development Cycle for Super Giant Field in The Middle East with Automated Development Scenarios	93			
<table> <tr> <td>Author & Affiliation</td><td>Wassem Alward</td><td>SLB</td></tr> </table>			Author & Affiliation	Wassem Alward	SLB
Author & Affiliation	Wassem Alward	SLB			
12	Reinjection Strategy Optimization Via LSTM-Driven Produced Water Forecasting	94			
<table> <tr> <td>Author & Affiliation</td><td>Mustafa Asaad Hasan</td><td>University of Thi-Qar</td></tr> </table>			Author & Affiliation	Mustafa Asaad Hasan	University of Thi-Qar
Author & Affiliation	Mustafa Asaad Hasan	University of Thi-Qar			
13	Novel Class of Retarded, Newtonian, Single-phase HCl-Based Stimulation Fluids – A Laboratory Characterization	95			
<table> <tr> <td>Author & Affiliation</td><td>Bahaa Alanbari</td><td>NESR</td></tr> </table>			Author & Affiliation	Bahaa Alanbari	NESR
Author & Affiliation	Bahaa Alanbari	NESR			
14	The Role of Geomechanical Modeling in Carbon Storage	96			
<table> <tr> <td>Author & Affiliation</td><td>Hadi Ashtiani Abdi</td><td>SLB</td></tr> </table>			Author & Affiliation	Hadi Ashtiani Abdi	SLB
Author & Affiliation	Hadi Ashtiani Abdi	SLB			

No.	Abstract Title	Page
15	Modern Technology in Offshore Platforms for the Storage and Processing of Liquid Gas (LNG) – Floating Solutions as the Future of the Gas Industry in Iraq	97
	Author & Affiliation	
	Aadil Sadiq Wakir	Basra Oil Company
16	Coiled Tubing Drilling Technology	98
	Author & Affiliation	
	Alaa ElKaragi	SLB
17	CwD Technology: Drilling the Un-drillable	99
	Author & Affiliation	
	Aous Al-Kaseem	SLB
18	Real-Time Monitoring and Parameter Optimization of Cuttings Bed in Horizontal Wells Using Iterative Drilling System	100
	Author & Affiliation	
	WuWei	Anton Oil Technology (Group) Co., Ltd.
19	Plasma Bit Drilling	101
	Author & Affiliation	
	Safaa Ali Hameed Ahmed	Al-Karkh University of Science
20	Integrated Geology-Reservoir-Engineering Acidizing Strategies for High-Efficiency Development in Low Permeability Carbonate Reservoirs: EBS Oilfield Case Study	102
	Author & Affiliation	
	Xiao Yong	China Zhenhua Oil Co Ltd
21	Degradation Risks of Rubber Hoses in Oilfield Operations: Safety, Environmental Impact, and the Case for UV- and Chemical-Resistant Alternatives	103
	Author & Affiliation	
	Ali Hameed	Kuwait Energy Basra Limited

No.	Abstract Title	Page			
22	Scale-Induced Flow Assurance Failures from Triazine Base H₂S Scavengers Under High-Salinity Conditions in Storage Oilfield Operations	104			
<table> <tr> <td>Author & Affiliation</td><td>Khalid Ismael</td><td>Kuwait Energy Basra Limited</td></tr> </table>			Author & Affiliation	Khalid Ismael	Kuwait Energy Basra Limited
Author & Affiliation	Khalid Ismael	Kuwait Energy Basra Limited			
23	Emerging Sulphate Scaling Challenges in a River-Water Injected Field: From Breakthrough to Remediation Strategy	105			
<table> <tr> <td>Author & Affiliation</td><td>M. Wahyudeen Zakaria / Amirul Azam / Ainul Azuan</td><td>PETRONAS</td></tr> </table>			Author & Affiliation	M. Wahyudeen Zakaria / Amirul Azam / Ainul Azuan	PETRONAS
Author & Affiliation	M. Wahyudeen Zakaria / Amirul Azam / Ainul Azuan	PETRONAS			
24	Unleashing Synergy: A Collaborative Approach To Cure Total Losses In Vuggy, Karstified Dolomite Formation – Iraq Case Study	106			
<table> <tr> <td>Author & Affiliation</td><td>Mikhail Dange</td><td>Halliburton</td></tr> </table>			Author & Affiliation	Mikhail Dange	Halliburton
Author & Affiliation	Mikhail Dange	Halliburton			
25	RODOG, Innovations in Monobore Well Design: A Step towards Masterful and More Sustainable Drilling	107			
<table> <tr> <td>Author & Affiliation</td><td>Barie Moath</td><td>University of Baghdad</td></tr> </table>			Author & Affiliation	Barie Moath	University of Baghdad
Author & Affiliation	Barie Moath	University of Baghdad			
26	Upgrading East Baghdad Crude Oil (A Strategic Pathway for Iraq's Refining Sector – Daura Refinery)	108			
<table> <tr> <td>Author & Affiliation</td><td>Idrees M. Jassim Ejam</td><td>Midland Refineries Company (MRC)</td></tr> </table>			Author & Affiliation	Idrees M. Jassim Ejam	Midland Refineries Company (MRC)
Author & Affiliation	Idrees M. Jassim Ejam	Midland Refineries Company (MRC)			
27	Enhancing Asset Integrity Assurance Using API 510 and Advanced Inspection Technologies	109			
<table> <tr> <td>Author & Affiliation</td><td>Yasir Salah Obaid</td><td>PETRONAS</td></tr> </table>			Author & Affiliation	Yasir Salah Obaid	PETRONAS
Author & Affiliation	Yasir Salah Obaid	PETRONAS			
28	Innovative Workflows for Brown Field Revitalization	110			
<table> <tr> <td>Author & Affiliation</td><td>Ayoub Sherik</td><td>SLB</td></tr> </table>			Author & Affiliation	Ayoub Sherik	SLB
Author & Affiliation	Ayoub Sherik	SLB			

No.	Abstract Title	Page			
29	Innovative Strategy of Mitigating Asphaltene Issue Via High-Pressure, High GOR Crude Huff-N-Puff Process	111			
<table> <tr> <td>Author & Affiliation</td><td>Tang Xueqing</td><td>Kuwait Energy Basra Limited</td></tr> </table>			Author & Affiliation	Tang Xueqing	Kuwait Energy Basra Limited
Author & Affiliation	Tang Xueqing	Kuwait Energy Basra Limited			
30	From Idle to Productive: Injection Pattern Optimization and Surveillance-Driven Well Conversion in a Large Carbonate Field	112			
<table> <tr> <td>Author & Affiliation</td><td>Amir Azlan Bin Ahmanul</td><td>PETRONAS</td></tr> </table>			Author & Affiliation	Amir Azlan Bin Ahmanul	PETRONAS
Author & Affiliation	Amir Azlan Bin Ahmanul	PETRONAS			
31	Emulsification and Demulsification Study of Ahdeb Oilfield, Iraq	113			
<table> <tr> <td>Author & Affiliation</td><td>Liu Xue</td><td>Al-Waha Oil Company</td></tr> </table>			Author & Affiliation	Liu Xue	Al-Waha Oil Company
Author & Affiliation	Liu Xue	Al-Waha Oil Company			
32	Boosting Iraq Sandstone Acidizing: A Novel Single-Step Fluid Approach for Migratory Clays Damage Removal in South Iraq	114			
<table> <tr> <td>Author & Affiliation</td><td>Nikita Kiselev / Ilyas Islyamov</td><td>SLB</td></tr> </table>			Author & Affiliation	Nikita Kiselev / Ilyas Islyamov	SLB
Author & Affiliation	Nikita Kiselev / Ilyas Islyamov	SLB			
33	From Spreadsheets to Smart Dashboards: Digital Surveillance of a Giant Carbonate Reservoir Using Power BI and Power Apps	115			
<table> <tr> <td>Author & Affiliation</td><td>Fahmi Amni Bakeri</td><td>PETRONAS</td></tr> </table>			Author & Affiliation	Fahmi Amni Bakeri	PETRONAS
Author & Affiliation	Fahmi Amni Bakeri	PETRONAS			
34	Optimizing Openhole Horizontal Carbonate Stimulation with Real-Time DTS and Engineered Diversion Strategies	116			
<table> <tr> <td>Author & Affiliation</td><td>Alaa Elkaragi</td><td>SLB</td></tr> </table>			Author & Affiliation	Alaa Elkaragi	SLB
Author & Affiliation	Alaa Elkaragi	SLB			
35	Water Production Control Methods in Planning the Development System of a Massive Reservoir Under Geological Uncertainties	117			
<table> <tr> <td>Author & Affiliation</td><td>Ivan Domolazov</td><td>Lukoil</td></tr> </table>			Author & Affiliation	Ivan Domolazov	Lukoil
Author & Affiliation	Ivan Domolazov	Lukoil			
36	Hydrogen Sulfide (H₂S) Risk Management in Siba Gas Field	118			
<table> <tr> <td>Author & Affiliation</td><td>Ali Al-Rehaimi</td><td>PETRONAS</td></tr> </table>			Author & Affiliation	Ali Al-Rehaimi	PETRONAS
Author & Affiliation	Ali Al-Rehaimi	PETRONAS			

No.	Abstract Title	Page
37	Injection Profile Control and Water Shutoff for Enhanced Oil Recovery in Heterogeneous Reservoirs: A Case Study from Ahdeb Oil Field, Iraq	119
	Author & Affiliation	Xue Heng Al-Waha Oil Company
38	Smarter, Smaller, Stronger: Deploying Gen 4.0 Dual Frequency Desalting in Iraq's Upstream Sector	120
	Author & Affiliation	Arun Goel / Marshal John Philip / Yi Liu SLB
39	Advanced Asphaltene Characterization and Integrated Modeling in the Yamama Reservoir, Iraq	121
	Author & Affiliation	Khursund Salman Dragon Oil
40	Successful Commingled Production of Two Carbonate Reservoirs With 1200 psi Pressure Difference and Prone to Asphaltene Deposition	122
	Author & Affiliation	Mehdi Seyyedsar Pasargad Energy Development Company (PEDC)
41	Optimizing Financial Auditing to Achieve Operational Cost Savings	123
	Author & Affiliation	Doaa Abed PETRONAS
42	Advancing Upstream Industry with Pasargad Energy's UIA: RAG-Powered Intelligent Assistant	124
	Author & Affiliation	Alireza Shahpoury Pasargad Energy Development Company (PEDC)
43	Digital Integration for Operational Excellence: Case Study of a Partial Oil Field Shutdown in an Oilfield Gathering System	125
	Author & Affiliation	Haider Waleed Kuwait Energy Basra Limited

Underground LPG Storage in Salt Caverns – Kirkuk Development Project

Yousif Hashim Yousif Al-Shaaya

Sahara Middle East Petroleum Services Ltd.



Abstract

Iraq's expanding energy sector and increasing production of liquefied petroleum gas (LPG) highlight the need for reliable, large-scale storage solutions to support supply security, operational flexibility, and strategic reserves. Underground salt caverns, successfully used worldwide for hydrocarbon storage, offer a promising but underutilized opportunity in Iraq. This paper assesses the geological suitability of major salt formations across Iraq for underground LPG storage. A detailed evaluation of halite thickness, depth, continuity, and structural integrity is provided to determine feasibility for solution mining and long-term containment. Key technical challenges related to cavern deformation, subsurface stress redistribution, and creep behavior under Iraq's temperature and pressure conditions are explored. The paper reviews international best practices in cavern design and integrity management, including optimized leaching techniques, pressure cycling for stability control, and advanced monitoring systems. Case study being Kerkuk Underground storage. Preliminary modeling suggests that with appropriate geomechanical design and operational controls, salt cavern storage in Iraq is both technically viable and economically attractive. The findings support the strategic development of underground LPG storage infrastructure to enhance domestic energy resilience, reduce surface storage risks, and enable flexible midstream operations. The paper concludes with recommendations for pilot projects and regulatory alignment to unlock the full potential of Iraq's salt resources for energy storage.

A Public-Private Partnership Proposal for Integrated Waste-to-Energy: A project proposal for Sustainable Agricultural Fossil Fuel (SAFF) Production in Alignment with Iraqi Sustainable Development Vision 2030

Riyadh Alallaq

Midland Refineries Company MRC



Abstract

This study proposes the development of a novel Sustainable Agricultural Fossil Fuel (SAFF) derived from the co-processing of agricultural waste (wheat and rice straw) and residual streams from crude oil refining. Inspired by the principles of Sustainable Aviation Fuel (SAF), this initiative valorises waste streams to produce a solid fuel with a superior calorific value (14-18 MJ/kg) compared to conventional municipal solid waste (12 MJ/kg). This makes SAFF a viable, high-energy alternative for solid-fuel power generation facilities, such as the Al-Nahrawan plant.

A critical finding of this research is that the project's success is contingent upon a structured public-private partnership (PPP). Execution is envisioned in two phases: first, a decentralized network of local small enterprises would be responsible for the collection and pre-processing of millions of tons of agricultural biomass. Second, a central, larger-scale industrial entity would handle the precise blending of this biomass with refinery waste to produce the final SAFF pellet.

This model necessitates distinct support roles: national oil companies must provide essential technical consultancy on handling and storing refinery by-products, as well as guarantee a continuous supply of residual from crude oil refining. On the other hand, the Iraqi government is required to facilitate regulatory frameworks, expedite licensing, and offer financial incentives. This integrated approach aligns with Iraqi Sustainable development Vision 2030, promoting private investment in waste-to-energy solutions, enhancing energy security, and contributing to sustainable development goals.

Reservoir Management Via Physics-Informed Hybrid AI: Dual Target(2D) Forecasting Using PG-RDI Blending Index and Ensemble Fusion

Karimu Nasibu

Dar Es Salaam Maritime Institute



Abstract

Reservoir fluid production forecasting in condensate-bearing settings remains problematic, especially as digitalization becomes more prevalent in the oil and gas sector. This Research introduces the application of physics-balanced hybrid model that seeks to connect field operations with modern artificial intelligence technology. Narrowing the gap between empirical processes and advanced predictive engineering, the model marries the XGBoost and Random Forest algorithms within a dual α -controlled ensemble, parameterized to observe inherent pressure gradients and reservoir drive mechanisms.

The approach includes pre-processed past production data, forward validation-based modular training, and feature extraction tailored to upstream flow and subsurface behaviour. An adaptive retrial mechanism only triggered when performance metrics fall below threshold values is enabled through residual error analysis, Optuna tuning, and dynamic α -index updating, mimicking SCADA-controlled field robustness.

Operational testing across Tanzanian gas fields showed substantial correlation between model prediction and plant yield, confirming the framework's field stability and readiness. Key outcomes are improved predictability reliability (confirmed by RMSE, MAE, R^2) and maximized computational intensity via smarter retrial design.

This integrated approach represents a paradigm shift toward AI systems aligned with physics domain knowledge. Implications span upstream forecasting, midstream operations, and potential applications in multi-stage systems and real-time telemetry integration advancing the sustainable digitalization of production processes in energy infrastructures.

Multi-dimensional Profile Control Technology for Carbonate Reservoirs

Yang Li

China Zhenhua Oil Co Ltd



Abstract

Waterflooding in horizontal wells of carbonate reservoirs often suffers from uneven water absorption profiles, leading to preferential inter-well flow channels, reduced injection efficiency, and constrained field development. To address this, a novel multidimensional profile control technology based on waste drilling mud has been developed.

Considering the geological features of carbonate reservoirs, such as naturally developed pores, vugs, and fractures, this technology introduces the concept of multi-dimensional synergistic plugging, which integrates near-wellbore and deep-zone conformance control. It achieves multi-scale plugging, from large channels to micro-fractures, through the combined use of river sand, modified waste drilling mud, and a specialized multi-stage plugging process.

This technology offers multifaceted advantages, including four optional slugs that balance plugging efficiency across varying sand concentrations and enable the use of waste mud alone for complex flow paths. Optimized mud–sand combinations adapt to a wide pore size range, and the treatment remains reversible if plugging occurs. It delivers both technical breakthroughs and clear benefits in cost and environmental performance.

Field data showed an average wellhead pressure increase of over 2 MPa after the first-round application, effectively driving injected water into previously unswept zones. Fiber-optic logging indicated injectivity in the thief zone at the toe of the horizontal lateral dropped from 99% to 42%, and the proportion of active water-absorbing segments increased from less than 30% to over 85%, indicating a substantial expansion of the waterflood sweep volume. Encouraged by these results, plans are underway to expand the technology to other fields in central Iraq.

Application of Deep Selective Profile Control and Displacement Technology in the Carbonate Reservoirs of the Ahdeb Oilfield

Liyue Qiu

Antonoil Technology (Group) Co., Ltd.

ANTON 安東

Abstract

To address the challenges posed by high formation water salinity, strong reservoir heterogeneity, and pronounced water breakthrough behavior dominated by high-permeability streaks in the pore-type carbonate reservoirs of the Ahdeb Oilfield, two novel chemical systems were developed: a salt-resistant selective water shutoff gel profile control system and an ultra-low interfacial tension (IFT) water-based microsphere flooding system.

Laboratory evaluations of the gel-based profile control system and the microsphere flooding system were conducted, including performance testing, physical plugging simulation using artificial cores, and microscopic displacement experiments using glass-etched models. Experimental results show that the gel system possesses characteristics such as low surface viscosity (≤ 50 mPa·s), high strength (D-H grade), controllable gelation time (≤ 3 days at 80 °C), excellent salt resistance, and strong selective water shutoff performance.

The water-based microsphere system features a small particle size (≤ 200 μ m), high water shutoff efficiency ($\geq 76\%$), ultra-low interfacial tension ($\leq 1.0 \times 10^{-3}$ mN/m), and a high oil displacement efficiency ($\geq 85\%$).

A parallel core flooding experiment—designed to simulate vertical heterogeneity with a permeability contrast greater than 10—further confirmed that the combined application of the gel system (injected first) and the microsphere system (injected subsequently) significantly enhanced oil recovery. This combined approach improved the core recovery factor by 15 percentage points, demonstrating remarkable profile control and displacement efficiency.

Field implementation in well AD1-11-* of the Ahdeb Oilfield resulted in an 18-percentage-point decrease in average water cut over 6.5 months, with cumulative incremental oil production reaching 141,333 barrels, with a return on investment (ROI) greater than 9.0.

Smart Real-Time Corrosion Monitoring System

Mohammed Adnan Abboud Ali

Basra Oil Company



Abstract

This study presents an advanced smart real-time corrosion monitoring system that utilizes non-destructive testing (NDT) methods to continuously assess structural integrity without disrupting operations. The system employs high-precision ultrasonic sensors mounted directly on oil pipelines, storage tanks, and processing equipment to measure wall thickness loss in real time. These sensors are networked with data logger that process corrosion rate measurements and transmit them via satellite communication to centralized control rooms, enabling remote online monitoring from any location.

The proposed methodology overcomes limitations of traditional periodic inspections by providing automated, continuous corrosion tracking with high accuracy. Key advantages include early detection of corrosion hotspots predictive maintenance capabilities, and elimination of manual inspection risks. The ultrasonic pulse-echo technique ensures reliable thickness measurements while preserving asset integrity—a critical requirement for pressurized systems. Real-time data transmission via satellite allows operators to make immediate decisions, reducing downtime and preventing catastrophic failures.

Field implementation demonstrates the system's effectiveness in harsh environments, with corrosion trends visualized through dedicated software for analysis. This solution represents a paradigm shift from reactive to proactive asset management, significantly improving safety standards while optimizing maintenance costs. Future enhancements may incorporate machine learning algorithms for predictive corrosion modeling, further advancing the system's capabilities in industrial asset management.

Digital Transformation of Asset Integrity Management

Wouter Burger

Shell



Abstract

The digital transformation of asset integrity management in the energy industry is redefining inspection strategies, particularly through the evolution of non-intrusive inspection (NII) methodologies, recent advancement of inspection techniques, use of sensors & drone technologies and application of Artificial Intelligence (AI) / Machine Learning (ML) based solutions.

AI is not new, but its adoption in Oil and Gas disciplines such as asset integrity, inspection, and maintenance has accelerated significantly in recent years. Technologies like Machine Vision (MV) for external visual inspection, ML for corrosion and erosion prediction, and advanced analytics for Corrosion Under Insulation (CUI) are being deployed across all line of business' integrity strategies.

Despite the promise, deploying AI in asset integrity presents challenges beyond cost, such as access to relevant data, understanding the capabilities and limitations of AI models, and how to maximize realizing the value. On the other hand, non – intrusive inspection (NII) methodology, originally developed by Shell and now transformed into some of the industry practices are means to methodologically optimize the inspection scope and avoiding the downtime of equipment, especially managing the integrity without confined space entry.

In this presentation, the authors share practical insights and lessons learned from developing and implementing NII & AI based solutions within Shell's asset integrity programs. The discussion will highlight both the opportunities and the considerations for successful NII & AI integration.

Digitally Transforming Well Integrity Management With A Next-Gen, Integrated, & Expandable Solution

Christophe Van Laer

Halliburton

HALLIBURTON

Abstract

This paper outlines the deployment of a next-generation digital Well Integrity Management System (WIMS) to replace a non-operational legacy platform. The new solution was designed to ensure comprehensive, real-time well integrity oversight and compliance with NORSOK D-010 and ISO 16530 standards. Key components included digital twins of the entire well inventory, a corporate Well Failure Model (WFM), integrity workflows, and business process management aligned with the organizational RACI matrix.

The system enabled dynamic interaction with surface and subsurface equipment through digital twins, facilitating real-time visualization of operational status, barrier classification, and equipment condition. Real-time data from annuli pressures and wellhead flow rates—sourced from both internal real-time platforms and a commercial production data management system—was integrated to support continuous monitoring and proactive response to integrity risks. All workflows and system logic underwent rigorous validation, ensuring accurate and reliable integrity assessments.

The implementation also featured automated ticketing, approval flows, and alerting mechanisms based on predefined business rules. As a result, the organization achieved key outcomes: enhanced visibility and control through digital twins, streamlined and automated integrity workflows, and analytics-driven dashboards that improved compliance and response times.

The WIMS was built on an open, scalable architecture, allowing for future integration of new data sources, dashboards, and workflows without the limitations of closed-system dependencies. This flexibility not only enhanced operational efficiency but also positioned the organization for continued digital innovation in well integrity management.

Unlocking Residual Oil in Egypt's Offshore GOS: A First-of-its-Kind Hybrid Polymer and Ionic-Adjusted Water Injection EOR Pilot Study in the Morgan Field

Khursund Salman

Dragon oil



Abstract

The Morgan Field in Egypt's Gulf of Suez (GOS) represents one of the oldest and most prolific offshore assets in the region, yet like many mature fields, it faces plateauing production and increasing water cut due to decades of conventional waterflooding. Reservoir heterogeneity, permeability contrasts, and ineffective sweep have contributed to substantial volumes of bypassed oil, particularly in the Kareem Formation. To counter these challenges and unlock untapped reserves, Dragon Oil and GUPCO have initiated Egypt's first offshore Enhanced Oil Recovery (EOR) pilot study considering an innovative Hybrid Polymer and Ionic-Adjusted Water Injection mechanism.

The Use of Properties Urban Planning Information System for Oil Production Territories (Example Basra)

Anwar Sabeeh Alqatrany

Basra Oil Company



Abstract

The wars and the economic blockade against Iraq have created an extremely difficult situation in the Republic; the quality of life has been reduced, the historical and cultural infrastructures of the territories in some cities have been destroyed and have not been restored for long time. Basra Gov.territory is used in interests of oil production and profit of minerals. There's a little environmental monitoring during oil production, as well as measures to restore the disturbed territories upon completion of oil production are not carried out.

The restoration of urbanized territories post-war period in the Iraq today is a promising direction of state policy, which needs to be given special attention, and the development of an information system of settlements located in Oil production Territories (OPT) will be aimed at preserving the ecosystem, reducing anthropogenic impacts, identifying areas suitable for settlements within the disturbed territories.

In this work, proposed methodology showed that creating an information system for OPT will provide a comfortable, safe living environment for the population and settlements also will contribute to the development of prerequisites for sustainable development of urban areas that leads to form a system of accounting for OPT within the borders of the Basra Governorate based on the creation an urban planning information system that provides solutions to the issues of OPT planning by identify main trends in the development of OPT, conduct a full survey of 7 districts of Basra Governorate, to determine the structure, coded composition and content of the database.

Optimizing Drilling Contract Strategies: Transitioning from Daily Rate to Integrated Drilling Services for Cost-Effective and Fit-For-Purpose Development Wells in Southern Iraq

Abdul Rahman Marzooq / Hussam Ismail

PETRONAS



PETRONAS

Abstract

Cost optimization remains a critical focus in the drilling industry. PETRONAS, operating in Southern Iraq, continuously seeks to optimize drilling costs, which account for 50–70% of typical development project CAPEX, ensuring projects remain economical while meeting production commitments and delivering stakeholder value. Protecting PETRONAS and partners' investments requires addressing drilling-related risks and regional-specific challenges within the contracting strategy. Operators often opt for turn-key or Integrated Drilling Services contracts to cap costs; however, placing excessive risk on IDS contractors can increase well costs. Tailoring a fit-for-purpose IDS cost model is essential to balance contractor profitability and operator cost savings. This paper analyses different contracts cost models successfully implemented by PETRONAS in Southern Iraq.

PETRONAS implemented three lump-sum cost models—per well, per meter, and per hole section—alongside conventional daily rate contracts. All wells were drilled in the same reservoir with identical designs and operational sequences using similar rigs, enabling objective evaluation of performance, cost efficiency, and contract risk allocation between daily rate and IDS models.

The comparison revealed a range of wells costs and highlighted advantages and disadvantages of each contract type. The lump-sum per hole section IDS contract achieved the lowest unit cost, reducing costs by up to 50% compared to other models, while all wells were drilled safely and met technical objectives.

An Efficient, Durable, and Practical High-Temperature Novel Viscoelastic Surfactant (VES) for Acid Stimulation

Bahaa Alanbari

NESR



Abstract

Acid stimulation is a vital technique in enhancing well productivity, particularly in carbonate reservoirs, through methods like matrix acidizing and acid fracturing. Matrix acidizing targets permeability impairments near the wellbore, while acid fracturing aims to improve connectivity between wells and reservoirs by creating deep fluid pathways known as wormholes. The stimulation process relies on the careful injection of acid at controlled pressures to dissolve the rock matrix without creating large fractures, enabling better acid distribution in low-permeability areas.

The success of this stimulation is influenced by the characteristics of the wormholes formed, with fluid viscosity playing a crucial role in penetration effectiveness. Three types of acids are commonly used: self-diverting acids, cross-linked acids, and viscoelastic diverting acids (VDAs). Each has unique properties that influence stimulation outcomes based on the reservoir's rock characteristics.

This study focuses on a novel viscoelastic surfactant (VES) developed in the laboratory, demonstrating enhanced stability under extreme conditions, such as low pH and high temperatures exceeding 300°F. Unlike conventional VES, which decomposes under such conditions, the novel VES maintains its viscosity, significantly improving performance in acid stimulation. Laboratory tests indicate that this new additive promises to enhance zonal coverage, wormhole formation, leak-off control, and fluid efficiency in high-temperature carbonate reservoirs.

Application of HFPM technology in multi-staged fracturing horizontal wells in Iraq

Fang Ye

Antonoil Technology (Group) Co., Ltd.

ANTON 安東

Abstract

High-frequency pressure fracture monitoring involve installing a high-frequency up to 1000Hz pressure gauge at the wellhead to collect pressure data during the fracturing operation. The pressure data is processed by computing devices at the well site to extract wellhead pressure characteristics, which are sent to the supercomputing center for fluctuation analysis, seepage analysis, and numerical simulation.

This study explores the application of high-frequency pressure monitoring technology in staged fracturing of horizontal wells, based on wellhead pressure data (1000Hz) collected during fracturing operations in an Iraqi well. By integrating water hammer effect spectral analysis and seepage pressure decline inversion, the technology enables real-time evaluation of: Fracture fluid entry points (average positioning error $\pm 1\text{m}$), Fracture parameters (half-length, height, conductivity), SRV (Stimulated Reservoir Volume) and permeability.

Case results demonstrate a positive correlation between fracturing fluid volume and fracture extension length, providing direct guidance for fracturing design and flowback optimization. Compared to microseismic monitoring, this method offers cost-effective and efficient solutions for evaluating fracturing performance in complex Iraqi reservoirs.

Scaling Management in Oil and Gas Reservoirs: Mechanisms, Prediction, and Mitigation Strategies

Mohammed Ali Tork / Khosro Jarallah

OXYNOIL Group



Abstract

Scale formation is a major flow assurance challenge in oil and gas production, causing reduced well productivity, equipment damage, and increased operational costs. Inorganic scales, including calcium carbonate, barium sulfate, and strontium sulfate, form when pressure, temperature, or fluid compositions change, especially due to mixing incompatible brines. Once deposited, scales impair permeability and accelerate wear, making their management a critical concern.

This paper reviews scaling mechanisms, prediction methods, and treatment strategies for both subsurface and topside environments. Prediction relies on geochemical modeling and produced water analysis to identify risks and optimize chemical programs, while dynamic reservoir simulations enhance forecasts under varying production scenarios. Treatment approaches include chemical inhibition, mechanical removal, and emerging hybrid methods. Chemical inhibitors, particularly phosphonate- and polymer-based formulations, remain widely used, offering adsorption onto rock surfaces for sustained protection. Challenges include compatibility with reservoir brines, thermal stability, and inhibitor return profiles. Mechanical interventions, such as milling, jetting, and acid dissolution, are applied when prevention fails but are costly and may cause downtime.

Emerging strategies focus on nanotechnology-based inhibitors, green formulations, smart delivery systems, and real-time monitoring via downhole sensors. Integrating predictive modelling with adaptive management enables more effective, tailored scaling mitigation.

A holistic framework combining accurate prediction, advanced monitoring, and reservoir-specific treatment can minimize scale-related risks, extend asset life, reduce downtime, and promote sustainable hydrocarbon production.

Hybrid Bit Design for Consistent Shoe to Shoe

Mostafa Remah Salem

SLB



Abstract

A novel 7-blade hybrid bit was developed to overcome drilling challenges in the 17 $\frac{1}{2}$ " section of South Iraq, characterized by complex interbedded formations. The design integrates ridged diamond elements and proprietary cutters with thicker diamond tables, optimized using IDEAS modeling software to simulate dynamic drilling conditions. This enabled refinement of bit geometry, cutting structure, and gage pad layout. Conical diamond backup cutters were introduced to protect primary cutters in high-impact zones, enhancing durability and operational life.

The bit demonstrated consistent single-run performance across vertical and deviated wells, reducing vibrations, bit failures, and non-productive time (NPT), while improving steerability and directional control—even in high dogleg severity environments. Its deployment eliminated intermediate trips, lowered operational costs, and improved well delivery timelines.

Cross-functional collaboration among drilling engineers, bit designers, geomechanics experts, and field teams was key to success. Real-time feedback and iterative design adjustments ensured rapid optimization and deployment.

Sustainability benefits included reduced fuel consumption and emissions due to fewer bit trips and minimized NPT. Enhanced drilling accuracy also lowered the risk of wellbore instability and sidetracks, aligning with SLB's commitment to efficient and environmentally responsible operations.

Integrated Drilling Solutions for Surveying, Vibration, and Formation Pressure Challenges: A Case Study from Garraf Oilfield.

Karrar Mahan

PETRONAS



PETRONAS

Abstract

This case study presents operational challenges and engineering solutions from a deep well drilled in Garraf Oilfield, southern Iraq. The well design targeted 3622 mMD with high-angle trajectories exceeding 53°, encountering depleted zones and unstable shale formations. Three major drilling problems were addressed.

First, directional survey accuracy was compromised due to limitations of gyro tools in deep, high-inclination sections, where accumulated errors exceeded the 40 m geological target tolerance. A modern high-accuracy gyro was unavailable beyond 1000 m, so the team adopted unconventional solutions: applying Multi-Station Correction and expanding the geological target radius to 50 m, which restored directional reliability.

Second, severe vibrations during the 17-1/2" section (310–2133 mMD) caused mud motor and MWD tool failures, manifested by erratic torque, toolface loss, and communication issues. Vibration data analysis linked the failures to aggressive BHA design and high RPM. Two BHAs with adjusted bent sub angles were deployed, while drilling parameters RPM, WOB, and flow rates were optimized. Real-time monitoring allowed continuous adjustments, eliminating tool failures and improving ROP.

Third, a depleted zone at 3446 mMD created differential sticking risk in the open hole. Formation integrity and offset data confirmed the imbalance, prompting early setting of 9-5/8" casing at 3831 mMD to isolate the weak interval before reaching 4139 mMD TD. Collectively, these interventions reduced non-productive time, preserved tool integrity, and maintained wellbore stability. The case underscores the value of proactive engineering, adaptive survey strategies, real-time vibration control, and timely casing decisions in overcoming complex drilling challenges.

Best Practices for Drilling Deep High-Pressure Wells in South Iraq

Ali Alsaad

Kuwait Energy Basra Limited



Abstract

The drilling of deep high-pressure wells in the Faihaa Oil Field in South Iraq poses numerous surface and downhole challenges and complications. This paper explores the integration of advanced drilling practices and technologies aimed at optimizing well design, reducing operational risks, and enhancing the overall efficiency of drilling operations. By analyzing historical data from offset wells and incorporating cutting-edge methodologies, significant improvements in drilling performance, well integrity, and cost-efficiency have been achieved.

The findings of this study offer valuable insights and implications for future deep high-pressure wells drilling operations in Southern Iraq. By adopting a comprehensive approach that integrates engineering designs, studies, data analysis, optimal drilling practices and rigorous optimization, operators can improve delivery times and reduce costs while ensuring safe, integral and reliable operations. As demonstrated in Faihaa Oil Field, where the average duration from spud to inflow test of the 7" liner of the drilled wells improved from previous 165 days to 74 days, which have led to significant performance improvements and cost-effective well delivery throughout the drilling campaigns.

Enhancing Combustion Efficiency and Reducing Emissions: A Dual Approach of Fuel Blending and Visbreaking in Refineries

Rand Qusay Kadhim

Midland Refineries Company MRC



Abstract

The excessive reliance on Heavy Fuel Oil (HFO) in refinery furnaces and boilers generates severe operational and environmental challenges due to the high content of vanadium, nickel, sodium, and sulfur. These contaminants accelerate tube fouling and corrosion, reduce heat transfer efficiency, increase SO_x and NO_x emissions, and lead to higher maintenance costs in addition to environmental penalties. To address these challenges, two solutions were evaluated. The immediate solution involves blending HFO with lighter fractions such as kerosene and gasoil at different proportions (25%, 33%, and 33% kerosene + 33% gasoil). Experimental results indicated an improvement in thermal efficiency up to 85.5%, a significant decrease in SO_x emissions, viscosity reduction that enhanced fuel atomization, lower fouling from heavy metals, and notable financial savings. The long-term solution focuses on installing a Visbreaker unit to thermally crack heavy residue (RC). With a feed capacity of 5000 m³/day and an investment of 100 million USD, the expected products include gases (5%), naphtha (5%), middle distillates (15%), and residue (75%). The economic feasibility assessment showed an additional annual profit of about 7 million USD, a payback period of less than five years, a residual unit value of 65 million USD, and sulfur emission reduction of approximately 5475 tons/year. In conclusion, blending offers a short-term, low-cost mitigation strategy for enhancing combustion efficiency and reducing emissions, while the implementation of a Visbreaker unit provides a sustainable and strategic long-term solution, ensuring both profitability and substantial environmental benefits.

Igniting a Greener Future: A Paradigm Shift in Carbon Footprint Management for Iraq's Oil and Gas Processing Sector

Abdullah Sami

Kuwait Energy Basra Limited



Abstract

Facing dual pressures of rising energy demand and stringent emissions reduction targets, Iraq's gas processing sector requires transformative strategies. This article presents a comprehensive carbon footprint management framework implemented at a major Iraqi oil and gas facility, positioning it as a regional sustainability leader. The core strategy aims at achieving a drastic 60% flare reduction through integrated measures: advanced process optimization, cutting-edge Air Quality/Continuous Emissions Monitoring Systems (AQMS/CEMS), enhanced Thermal Oxidizer efficiency. Fugitive methane emissions are rigorously controlled via drone-based Optical Gas Imaging (OGI) Leak Detection and Repair (LDAR). Robust carbon accounting, aligned with ISO 14064, utilizing Siemens gPROMS® software, ensures accurate CO₂e tracking.

Complementing direct reductions, the framework leverages carbon credit mechanisms and offsite projects to maximize efficiency and offset residual emissions, ensuring alignment with Iraq's Zero Routine Flaring by 2030 initiative. Visionary fields Green Belt projects encircling the concessions can provide significant ecological restoration and CO₂ sequestration. A key priority is to explore technologies that can be integrated into Iraq's strategies to advance Carbon Capture and Storage (CCS), identify suitable geological formations, and support the country's emerging blue hydrogen and ammonia economy, while enabling a circular carbon model in which captured CO₂ is repurposed as an industrial feedstock.

This integrated model spanning from operational optimization, advanced monitoring, ecological mitigation, carbon sequestration, carbon markets; Solar Projects, to CCS enabled technologies for hydrogen development demonstrates a viable pathway for essential decarbonizing Iraq's critical hydrocarbon sector while enhancing economic resilience through revenue streams from emissions reductions and future low-carbon products.

Innovative AI-Driven Solutions to Safeguard Iraq's Energy Infrastructure

Mohammed Jaarah

ROSEN Group



Abstract

The oil and gas industry has long relied on intelligent scraping technologies, particularly Magnetic Flux Leakage (MFL) methods, for pipeline inspection and integrity assessment. The newly developed MFL-A Ultra represents a significant advancement in this field, enhancing the detection capabilities for previously undetectable threats. Traditional MFL technology typically identifies corrosion defects greater than 10% of wall thickness or 10 mm, whereas MFL-A Ultra can reliably detect pinholes as small as 1 mm, increasing data confidence from 80% to 90%. This advancement is attributed to the innovative design, incorporating 10 times more sensors with a reduced width of 1.6 mm compared to traditional tools. Similar to MRI technology in the medical field, MFL-A Ultra generates detailed images of pipe wall structures, defining complex corrosion patterns and defect groupings. This technology has already been deployed to inspect approximately 23000km in 300 pipelines, contributing to cost savings by minimizing unnecessary excavations. Case studies will be presented showing up to 40% reduction in excavations due to the higher accuracy.

For Iraq, the adoption of such advanced solutions offers significant opportunities to safeguard energy assets, minimize downtime, and strengthen production continuity. With AI-enabled monitoring, operators can optimize maintenance schedules, reduce costs, and ensure uninterrupted exports—critical for both economic stability and energy security. This presentation will highlight key case studies, with a focus on lessons learned from large-scale international deployments, and illustrate how this technology can be adapted to Iraq's operational environment. By combining smart inspection with AI insights, Iraq secures resilient, sustainable energy infrastructure.

Iraq's gas turnaround: flaring down, output up

Alexandre Araman

Wood Mackenzie



Abstract

Iraq is ramping up development of its vast gas resources – estimated at 110 tcf, mostly associated with oil production – to reduce reliance on costly and unreliable Iranian imports and curb widespread flaring, which currently accounts for around half of total output. Baghdad is investing heavily in gas capture and processing, with over US\$5 billion in EPC contracts awarded in the past year, 95% of which have gone to Chinese firms.

Key developments include Basrah Gas Company's expansion to 1.4 bcfd, new combined 430 mmcf/d capacity at Halfaya and Faihaa from PetroChina and UEG, and ongoing projects at Nasiriyah, Ratawi, and Nahr Umr led by Baker Hughes, TotalEnergies, and Halliburton. Non-associated gas fields like Akkas, Mansuriyah, and Crescent Petroleum's Round 5 blocks are also advancing, with Federal Iraq aiming to surpass 4 bcfd by 2032.

Despite progress, Iraq faces structural hurdles: high capex, limited infrastructure, and slow returns. Stopgap measures such as swap deals with Turkmenistan and plans for LNG imports aim to address near-term shortages.

The Kurdistan Region could further support Iraq's gas ambitions. Pearl Petroleum's Khor Mor field produces 750 mmcf/d, with growth expected from Chemchemical and longer-term upside from Topkhana, Kurdamir, and Miran – potentially adding 1.4 bcfd in the 2030s. Realising this potential, however, depends on improved political alignment, infrastructure access, and new market agreements with either Federal Iraq or Türkiye.

Numerical Simulation and Remaining Gas Potential Evaluation of Tight Gas Reservoirs in the LFS Gas Field

Yousif Hussein

Antonoil Technology (Group) Co., Ltd.

ANTON 安東

Abstract

Aiming at the challenges of strong heterogeneity and complex distribution of remaining gas in the LFS clastic tight gas reservoir, this study proposes an integrated modeling-numerical simulation technical framework to address the difficulties in predicting reservoir performance under complex geological conditions. To characterize the multi-scale flow characteristics of tight gas reservoirs, an innovative "quasi-triple porosity continuum" theoretical framework is introduced. The coupled flow of natural fractures and hydraulic fractures is represented using the Embedded Discrete Fracture Model (EDFM), and a dynamic permeability tensor is incorporated to quantify the stress sensitivity effect on hydraulic fractures. Efficient numerical simulation was achieved using GPU-accelerated tNavigator, achieving a five-fold speedup in computation time compared to traditional methods. For the compositional PVT phase behavior (6 components), the Particle Swarm Optimization (PSO) algorithm was employed to solve the problem of deviation in predicting retrograde condensate liquid volume, resulting in a fitting error of $\leq 5\%$. Initialization of the saturation and pressure fields using the enumeration method, combined with an equivalent fracture closure model, enabled successful history matching of 69 wells, achieving a match rate of 85.51% and a reserve match error of less than 3.3%. The results indicate that the remaining gas is primarily concentrated in the un-drained northeast area of the B220 well block. This technology represents the first successful implementation of million-cell-scale, high-resolution simulation for the LFS Gas Field, providing theoretical support and practical tools for the efficient development of tight gas reservoirs. It demonstrates significant potential for application in similar gas reservoir development projects.

Environmental Excellence Through Advanced Chemistry: PETRONAS Revolutionizes Odor Management at Garraf Oil Field, Iraq

Mohd Ali Kamaludeen

PETRONAS



PETRONAS

Abstract

This paper presents an innovative chemical solution implementation at Iraq's Garraf Oil Field, where PETRONAS and Veolia partnered to address environmental challenges through advanced Odor Control Chemistry (OCC) technology. The project demonstrates how specialized chemical interventions effectively neutralize sulfides, mercaptans, and bacterial byproducts in both aerobic and anaerobic conditions of oily water systems, significantly reducing atmospheric pollution. This chemical treatment program is supported by a comprehensive environmental monitoring system across multiple strategic points, ensuring optimal dosing efficiency and immediate response to environmental variations. The integration of precise chemical solutions with real-time monitoring has achieved exceptional environmental performance while minimizing chemical usage, demonstrating PETRONAS' commitment to sustainable operations. Key project outcomes include enhanced air quality, enhanced community protection, and reduced ecological impact, establishing new benchmarks for environmental management in hydrocarbon processing facilities. This successful implementation serves as an industry model, illustrating how innovative chemical solutions, coupled with effective monitoring systems, can achieve both operational excellence and environmental sustainability in the energy sector.

Applications of Artificial Intelligence Powered Condition Monitoring Systems for Oil and Gas industry Based on Samotics Technology

Auday Basheer

ALFAJER Group



Abstract

Advancement of artificial intelligence has made significant contributions to the oil and gas industry in terms of automation process. In this abstract, we propose introducing of AI-powered condition monitoring Systems for oil and gas industry. This system has been developed based on Samotics Technology what is so called SAM4 platform to predict and prevent equipment failures. The SAM4 is the leading solution to remotely monitor pumps, motors and generators in hard-to-reach or hazardous locations. These systems use state-of-the-art machine learning algorithms to monitor the health of assets and equipment from low and high Voltages (LV & HV) sides through analysis of current and voltage signals collected via data acquisition systems. Various features in such an innovative system could be provided; firstly, predictive fault detection in which SAM4 can detect over 90% of developing electrical and mechanical faults up to five months in advance, allowing for proactive maintenance and reducing unplanned downtime. Secondly, real-time monitoring to deliver continuous insights into asset health, performance, and energy consumption through an intuitive online dashboard. Thirdly, this system does have the capability for energy efficiency optimization by offering energy performance analytics to assist in identifying inefficiencies and reduce energy consumption by up to 15%.

Enhancing Productivity in Carbonate Wells with High-permeability Contrast Through Combination of Non-reactive Chemical Diverter and Single-phase Retarded Acid System (SPRAS)

Ali Dheyaa

PETRONAS



PETRONAS

Abstract

New wells drilled vast carbonate fields face significant damage from drilling and completion operations, which severely impacts productivity. Damage can extend from a few inches to over 3 ft into the formation, impairing permeability across pay zones. Natural permeability contrast, due to carbonate build-up over time and depositional environments, also affects lower zone productivity, requiring near-wellbore permeability enhancement. Conventional hydrochloric acid is ineffective due to its high reaction rate. A retarded acid system is essential for controlling reaction rates and improving wormhole development.

The new methodology employed a bullheading operation, combining a high-viscous non-reactive solids-free (HVNRSF) chemical diverter with a single-phase retarded acid system (SPRAS). Coiled tubing was used throughout the operation, beginning with perforation conditioning prior to acid treatment. Real-time fiber optics combined with coiled tubing (FOECT) and distributed temperature surveys were employed to identify high and low intake zones, enabling on-the-fly adjustments to the diversion strategy and monitoring the diverter's effectiveness.

During the 3-well campaign, significant injection pressure increases were observed when diverter pills reached the formation. DTS data demonstrated more uniform acid distribution across perforated intervals compared to previous methods. Production contribution from the bottom zone was validated using production logging data. Continuous well test production monitoring post-treatment with SPRAS and HVNRSF diverter pills showed a ~25% increase in production, due to enhanced penetration into the lower permeability formation.

The combination of SPRAS and HVNRSF chemical diverters significantly improved matrix stimulation, leading to a ~25% production increase. This paper shares the experiences and lessons learned during the initial campaign and provides recommendations for further improvement and broader implementation in the field.

Physics-informed Deep Neural Network Model for Corrosion Prediction

Christophe Van Laer

Halliburton

HALLIBURTON

Abstract

This study introduces a hybrid corrosion and erosion model aimed at predicting the degradation and integrity of well tubulars and pipeline networks by integrating a mechanistic model with artificial intelligence (AI). The architecture is a physics-informed deep neural network that combines established fundamental principles with data-driven methodologies, effectively capturing complex nonlinear relationships to enhance corrosion prediction accuracy. By leveraging both well-understood aqueous chemistry responsible for corrosion and less-understood phenomena—such as changes in corrosion rates due to scale buildup and hydrocarbon composition—the model effectively captures a broad spectrum of factors influencing corrosion and erosion, providing a comprehensive predictive tool.

The primary objective is to evaluate whether significant improvements in corrosion prediction can be achieved with this architecture by testing it using synthetic data obtained from complex simulators.

AI-Driven Top-Down Modeling: A Pioneering Approach to Fast-Track Development Planning in a Giant Mature Offshore Field

Khursund Salman

Dragon oil



Abstract

The Gulf of Suez Petroleum Company (GUPCO), in collaboration with Dragon Oil, is pioneering a breakthrough in mature field management using Artificial Intelligence (AI). With over five decades of operations, GUPCO possesses one of the region's most extensive subsurface datasets, covering hundreds of wells, decades of production and injection records, and a variety of reservoir behavior. Historically underutilized due to its complexity, this data is now being leveraged through a fully AI-driven Top-Down Modeling (TDM) approach.

Modelling and Multi-Objective Optimisation of a Crude Oil Hydrotreating Process Using Bootstrap Aggregated Neural Networks

Wissam Abdulsattar Muhsin

Midland Refineries Company (MRC)



Abstract

The cost of producing clean oil products has increased due to the stricter environmental regulations. This motivated this work for producing clean fuels using non-conventional processes, such as hydrotreating (HDT) of the whole crude oil. HDT of crude oil is a new hydrotreating process that has not been extensively taken into account in the literature, as the conventional process of HDT is conducted for each oil product individually and not for the whole crude oil. In recent years, artificial intelligence—computer-aided process system engineering—has become increasingly important in enhancing the profit of industrial processes with the development of new simulation, modelling, optimisation, and control techniques. In order to enhance the operation efficiency of the HDT process for crude oil, process optimisation should be carried out. Process optimisation requires accurate and reliable process models. Detailed mechanistic models for crude oil HDT processes are difficult to obtain due to the complexity of the process and the materials involved. To overcome this problem, data-driven models developed from process operational data should be capitalised. Neural network is a powerful tool of data-driven modelling. In order to enhance model prediction accuracy and reliability, bootstrap aggregated neural networks are used in this study. Furthermore, a crude oil HDT process simulated using Aspen HYSYS is used as a case study. It is shown that bootstrap aggregated neural network gives more accurate and reliable predictions than single neural networks. The neural network model based optimisation results are validated on HYSYS simulation and are shown to be effective.

Real-time Production Optimization: A Machine Learning Approach To Virtual Flow Metering

Mahmoud Korish

Dragon Oil



Abstract

This study investigates the application of machine learning techniques for virtual flow metering in oil wells. To develop a robust and accurate VFM model, Two Different Fields were tested for the new technique ;This comprehensive dataset included detailed production data, well parameters, and operational information. Various ML were rigorously tested and compared to identify the optimal model for VFM. The selected model was then calibrated against production test data to ensure accurate predictions.

The calibrated ML model enables the daily verification of production allocation, providing real-time insights into the performance of individual wells. By continuously monitoring production rates, anomalies such as production declines, unexpected shutdowns, or changes in reservoir behavior can be promptly detected. These timely insights facilitate efficient decision-making, timely interventions and optimization of production strategies. Additionally, the ML-based VFM model supports accurate reservoir allocation by providing reliable estimates of individual well contributions, enabling informed field development planning.

After rigorous calibration, the model's performance was further validated through a blind test, where it was applied to a new set of wells without prior training. The results of the confirmed the model's s ability to provide accurate predictions. Moreover, the daily application of the model has demonstrated reasonable agreement with well test data

The findings demonstrate the significant potential of ML-based VFM to enhance the efficiency of oil production operations By leveraging advanced ML techniques and a comprehensive dataset, this approach offers a reliable and cost-effective solution for improving production performance diagnostics, optimizing reservoir management, and ultimately maximizing oil recovery

Advancing Rock Typing in Heterogeneous Carbonate Reservoirs Using Machine Learning, A Case Study in South Iraq

Yongjun Fang

Kuwait Energy Basra Limited



Abstract

This study presents a supervised machine learning workflow for rock typing in highly heterogeneous carbonate reservoirs. By integrating core and wireline log data, addressing class imbalance, and applying rigorous validation, the approach enhances reservoir characterization in both cored and un-cored wells of the South Iraq X field, ultimately supporting optimized production strategies.

A dataset from 12 cored and 30 un-cored wells, including core descriptions, routine core analysis, and logs (GR, Density, Neutron, Sonic), was used. The workflow comprised depth-matching and normalizing core and log data, applying random oversampling to balance rock type classes, testing Random Forest, K-Nearest Neighbors, and Support Vector Machines, selecting the best model via accuracy, precision, recall, and F1-score and validating predictions with pretest pressure data and production performance.

Core-driven labels significantly improved prediction accuracy in un-cored intervals. Random Forest delivered the most consistent results. Key outcomes include reliable rock type prediction in wells lacking core data, increased confidence from integrating production and pressure data and improved capture of cross-well heterogeneity via multivariate log responses with core-based training.

Machine learning provides a scalable, data-driven solution for rock typing in data-sparse carbonate settings, bridging traditional geological interpretation with advanced analytics to improve reservoir modeling and development decisions.

The proposed workflow uniquely combines core-derived labels, oversampling, and production validation, offering a transferable framework for complex carbonate reservoirs globally.

Beyond Intuition: How AI/ML Transforms Reservoir Management—Lessons from Injection-Well Gel Treatment Design

Munqith Aldhaferi

Missan Oil Company



Abstract

Making effective decisions in reservoir management is challenging due to the complex interplay of subsurface and operational uncertainties. Traditional approaches often rely on engineering intuition and experience, which, while valuable, can lead to suboptimal outcomes when data complexity exceeds human cognitive limits. AI and ML offer transformative solutions by analyzing data, uncovering patterns, and enabling data-driven decisions that enhance prediction and reduce risks.

This study presents OptiGel-RF as an illustrative example of harnessing data analytics to develop AI-powered tools for reservoir management. OptiGel-RF systematically determines the optimal gel treatment design type based on reservoir and production data. The tool employs ensemble ML models, specifically Random Forest algorithms, trained on historical data from 65 global field projects (1985–2020) incorporating 12 key reservoir and production variables.

To overcome data scarcity and improve model generalization, generative AI techniques were used for intelligent data upsampling, enhancing the training dataset with high-quality synthetic samples validated through univariate and bivariate statistical measures. Data preprocessing included outlier detection, multivariate imputation (MICE), and hybrid feature selection based on engineering relevance and statistical significance.

Model evaluation demonstrated high predictive accuracy, achieving 92% on original datasets and 100% on synthetic-augmented datasets, with consistent performance across training and validation samples. OptiGel-RF is deployed as a user-friendly Excel-based tool, enabling rapid integration into reservoir management workflows to guide objective, data-driven gel treatment design decisions. This study demonstrates the transformative role of AI and ML in empowering reservoir engineers to improve treatment success rates, reduce water production risks, and maximize asset value.

Multi-Reservoir Interwell Connectivity Management Using Transformer-Augmented Embedding Fusion

Ahmed Saihood

University of Thi-Qar



Abstract

Understanding the connection between injection and production wells—known as interwell connectivity—is critical for optimizing waterflooding, improving sweep efficiency, and maximizing hydrocarbon recovery. In many real-world cases, especially in countries like Iraq, multiple reservoirs are operated by different international companies, making it challenging to share detailed well data due to legal, strategic, and privacy concerns. To address this challenge, we present a new method called Transformer-Augmented Embedding Fusion for Multi-Reservoir Interwell Connectivity (TAEF-MRIC). This approach allows each operator to analyze their own data—such as injection and production rates, bottom-hole pressures, well spacing, and a variety of log-derived properties (e.g., porosity, permeability, net-to-gross ratio)—and convert them into compact summaries called embeddings. These embeddings, not the raw data, are then shared and combined using a machine learning framework to estimate interwell connectivity across multiple fields. The method is tested on three diverse reservoirs, each with different geological and operational characteristics. Despite variations in available logging data, the model successfully learned flow behavior patterns and achieved high prediction accuracy. Also, the method enables collaboration across fields without exposing sensitive data, making it ideal for multi-operator environments.

Integrating Machine Learning and Subsurface Analysis to Predict Mud Losses in South Iraq Carbonates

Wassem Alward

SLB



Abstract

Mud losses, or lost circulation, pose a major challenge in drilling operations, especially in complex carbonate formations. These losses occur when drilling fluids escape into naturally fractured, vuggy, or porous zones, leading to increased non-productive time (NPT), higher costs, and potential well control issues. In southern Iraq, such losses are frequently encountered while drilling through carbonate intervals.

This study aims to characterize and predict mud loss mechanisms in these formations using integrated drilling and subsurface data. Logs, borehole images, and seismic data were analysed to identify geological features—karsts, vugs, fractures, and faults—associated with mud losses. Seismic data quality was assessed to ensure reliable predictions. Key findings revealed strong correlations between mud losses and karst/vug presence, while faults and fractures had minimal impact.

A machine learning (ML) model was developed using 27 engineered features, including acoustic impedance, seismic amplitude, dip, azimuth, and curvature. Historical mud loss records served as labels in a supervised learning approach. Algorithms like gradient boosting and random forest were evaluated, with cross-validation ensuring robustness.

The resulting 3D “risk cube” provides a probabilistic assessment of mud loss risk along proposed well trajectories. This tool enables proactive planning—optimizing mud weight, casing design, and BHA configuration—ultimately improving drilling efficiency and reducing costs. This work introduces a novel integration of geological interpretation and ML to mitigate mud losses in carbonate settings of southern Iraq.

Minimizing the financial risks of incorrect measurement

Jay Gadhavi

KROHNE

KROHNE

Abstract

Large investments are required prior to Oil & Gas production can commence. These are later recuperated by selling produced Oil. Part of this sales process is a very accurate measurement of the amount of oil that is being supplied. The measurement is directly related to the company's financials as it is the basis for the sales slip. Typically, the amount of oil on the sales slip is used for billing. Often paying little attention to the uncertainty of the flow measurement that was used.

In this paper we explain what the financial impact of measurement uncertainty and mismeasurement. We also explain how measurement uncertainty can be minimised by smartly designed metering systems with traceability to international standards. Using these principles and implementing periodic checks can lead to a significant reduction of financial risks in the billing of oil.

Application of Artificial Neural Network (ANN) for the Prediction and Mitigation of Stuck Pipe Incidents in Drilling Operations

George Bagheri / Zahraa Ali

Sohol Al-Salam (SAS Oil), member of ALAmal Group



Abstract

A stuck pipe is a common type of downhole accident characterized by high probability, complex handling difficulty, and the cost of manpower and material resources in drilling engineering, especially in the complex reservoirs of the southern fields. Stuck pipe contributes to 15–25% of downtime, increasing NPT and delaying production. Most stuck pipe incidents are caused by sloughing shale, high-permeability zones, overpressured fluids, pressure imbalance, and depleted reservoirs.

Stuck pipe incidents frequently occur in formations like Mishrif and Shuaiba due to pressure variations, especially during pipe pull-out operations. Some researchers have proposed using artificial intelligence (AI) to predict stuck pipe incidents due to the complexity and uncertainty of their early indications. Research has introduced AI models to mitigate stuck pipe incidents, but further improvements are needed in accuracy and field reliability.

Recent field applications of ANN based stuck pipe prediction models have shown accuracy levels ranging from 85% to 92%, depending on the geological setting and data quality. In a field study, data from 385 wells in southern Iraq were analyzed using an ANN model. It has proven to be effective in predicting stuck pipe incidents and recommending appropriate remedies, which reduced NPT and improved operational efficiency. The performance of ANNs is still very promising in pilot studies conducted in the Middle East, including Iraq, particularly when combined with real time surface and downhole parameters. However, the success of these techniques depends on the availability of high-quality time-series data and accurate historical records.

Flow Field Characterization and Optimization for Horizontal Well Waterflooding: A Case Study of the EBS Oil Field

Boning Zhang

China Zhenhua Oil Co Ltd



Abstract

Horizontal well waterflooding has gained increasing application due to its ability to improve areal sweep efficiency. However, in heterogeneous reservoirs, injected water often flows preferentially through high-permeability zones, leading to early water breakthrough and poor displacement. This study proposes a quantitative, cost-effective approach to diagnose and optimize flow fields in such complex reservoir environments.

A customized tool was developed to extract streamline data from reservoir simulations. Flow field indicators—including production potential coefficient, displacement efficiency, and water cut—were computed to evaluate injection-production performance. Streamline behaviors were classified using K-means clustering, with the optimal number of categories determined via the Silhouette Coefficient. To enhance sweep and oil recovery, injection and production rates were jointly optimized using the Covariance Matrix Adaptation Evolution Strategy (CMA-ES), forming an integrated optimization workflow.

In the EBS oil field, four representative streamline types were identified. “Type 3” and “Type 4” streamlines dominated central zones, correlating with higher oil recovery, while “Type 1” and “Type 2” were found along reservoir edges, indicating suboptimal displacement. This classification revealed inefficient water cycling and uncovered bypassed oil. Post-optimization, the standard deviation of remaining oil saturation dropped from 2.54 to 1.87, the recovery factor increased by 14.25%, and the average water cut fell from 83% to 77%.

The methodology provides a robust, scalable workflow for improving horizontal well waterflooding performance in heterogeneous reservoirs. Its successful application in the EBS field demonstrates its practical value and offers a technical reference for broader field development strategies worldwide.

Tracer Injection Project in Zubair Field

Matteo Manotti

ZFOD ENI



Abstract

Water injection is crucial for pressure support and recovery optimization in the Zubair Field. However, due to its complex geology, ranging from Mishrif karstified carbonates to 3rdPay heterogeneous sandstones, challenges uniform and efficient sweep. Understanding injected water migration is essential to minimize early water breakthrough and refine injection strategies. Traditional surveillance often fails to capture inter-well flow, making tracer diagnostics a powerful alternative.

A three-phase inter-well chemical tracer campaign is underway to directly observe water-flow paths, evaluate connectivity, and validate dynamic simulation predictions. Tracers are injected in a single shot, followed by extended monitoring on nearby oil producers (OP).

Phase-1, implemented in May 2024 in the mature, heavily waterflooded Mishrif carbonate reservoir, involved injecting 5 tracers into 5 peripheral water injector (WI) wells, with monitoring in up to 23 OPs. This phase aims to determine if water is preferentially channeling through karstic features rather than effectively distributing. As of July 2025, one tracer breakthrough confirmed flow 155 days post-injection. Ongoing monitoring will clarify flow geometry and identify dominant or non-contributing injectors, informing optimization measures like choking back high-rate wells or stimulating others.

Phase-2, scheduled for Q3 2025, will target the 3rdPay sandstone reservoir across two areas, using 10 WIs and up to 28 OPs to evaluate a new dispersed water injection pattern. Phase-3 is currently being designed.

Across all phases, tracer data will validate simulation models, assess reservoir flow, and guide strategic water injection optimization. Expected outcomes include improved sweep efficiency, better-targeted injection, and enhanced hydrocarbon recovery.

Water Quality-Differentiated Injection: A Pragmatic and Cost-Effective Approach for Horizontal Wells in the East Baghdad South (EBS) Oilfield, Iraq

Lina Cao



EBS Petroleum Company Limited

Abstract

Waterflooding remains a widely adopted strategy for maintaining reservoir pressure and enhancing oil recovery. In the East Baghdad South (EBS) Oilfield, Iraq, despite being in an early production stage, water injection has been actively promoted. As the first field in the country to utilize treated domestic sewage as injection water, EBS has established a dedicated surface treatment system to meet quality requirements. To further reduce operational costs and enhance injection efficiency, the field has initiated studies on water quality-differentiated injection strategies.

This study investigates how varying water quality standards at different production stages can affect injection efficiency in horizontal wells with heterogeneous pore structures. A staged injection strategy is proposed based on the concept of “capillary filtration–heel priority mobilization–toe pressure-driven activation.” By adjusting water quality parameters according to production stage and reservoir characteristics, the flow patterns in reservoirs with heterogeneous pore networks can be reshaped to expand sweep efficiency and minimize ineffective injection.

Physical core-flooding and numerical simulations indicate that relaxing two key water quality indicators—Total Suspended Solids (TSS) and Oil Content (O)—has the potential to improve displacement efficiency by 5%–10%, while simultaneously reducing water treatment costs by approximately 30–50%.

The findings clarify how injection water quality influences flow behavior in carbonate reservoirs and provide a practical basis for optimizing injection standards. This approach offers a lower-cost, technically sound alternative to traditional injection practices, based on further field validation and optimization in the EBS field.

Empowering Iraq's Drilling Operations with AI: A Strategic Campaign for Adoption and Integration

Ethar H. K. Alkamil

University of Basrah



Abstract

The adoption of AI technologies has the potential to transform the upstream petroleum sector of Iraq by improving the operational workflow and reducing risks related to the extraction of petroleum products. Successful implementation of AI technologies such as fuzzy logic and parallel AI has been documented in the fields of downhole condition forecasting, drilling optimization, and time management. Instruments such as GPT-4 have recently showcased the ability of Generative AI and LLMs to automate documentation and engineering workflows, supporting complex decision-making in real time.

To achieve these goals utilizing the available capabilities in Iraq, this paper suggests a national campaign and a roadmap towards the adoption of AI in drilling practices. The campaign has five pivotal pillars: (Center of Excellence Creation, with a focus on the establishment of a government agency to focus on standardization and digitization of drilling data, revision and standardization of drilling reports, and creation of a unified well data management system; Capacity Building through focused advanced training in AI and data for drilling engineers and technicians; AI Adoption in Drilling Pilot Programs, aimed at proving the value of AI in real drilling scenarios; Collaborations with Iraqi institutions and global AI technology leaders to serve the underlying technology transfer to the Iraqi institutions; and AI System Governance, focused on the responsible and secure implementation of AI systems.

The proposed roadmap addresses digitization gaps, workforce shortages, and cultural resistance by gradually adopting AI, aiming to make Iraq a leader in intelligent drilling.

Multilayer Transient Analysis of Producing Wells from Two Commingled Zones with Different Average Pressure: Applied in Heterogeneous Clastic Reservoirs

Shamam Tarq Abdulkadhim

Basra Oil Company



Abstract

The pressure transient analysis has been regularly the favorite technique for characterizing reservoirs. Average permeability, average reservoir pressure, and the skin factor are three common practices that can be determined by analyzing pressure records. The objective of this study is to introduce the application of Multilayer Transient Analysis (MTA) for producing wells with two commingled zones. The zones of interest are heterogeneous clastic reservoirs with different average reservoir pressure.

The methodology used in this study includes several tasks. The first is collecting a combined set of rate profiles obtained from the production data and transient pressure measurements taken at various surface rates. The second is applying the Selective Inflow Performance (SIP) for estimating the average pressure of each layer. The third is developing MTA models to estimate the values of permeability and skin factor of each layer. The abovementioned tasks have been utilized for the Mishrif reservoir in Zubair oil field, Iraq. This reservoir is characterized by several sub-layers with different petrophysical properties and average pressure.

The observations and conclusions that have been reached in this study are: MTA is a reliable approach for determining the permeability and skin factor of individual layers of a commingled system. It can be used also for studying the producing wells that have crossflow between the perforations or communication within the cavity of the wells. The novel points presented in this study are represented by introducing a workflow for predicting the performance of Mishrif formation (commingled system) in Zubair oil field, Iraq.

Characterization and Geomodelling of Mishrif Carbonate Channels in Mesopotamian Basin.

Hicham Akbi

United Energy Group



Abstract

Channels exist in both terrigenous and marine environments. While fluvial clastic channels are well-understood due to their abundance, carbonate channels are less commonly encountered and often considered insignificant in hydrocarbon exploration. However, marine-origin channel systems require deeper investigation. One such case is identified within the shallow-water Mishrif carbonates of the Late Cretaceous in the South Mesopotamian Basin, a region rich in hydrocarbons due to structures formed during the Late Cretaceous orogeny and Miocene Zagros folding. Unexpectedly, large meandering geobodies were observed propagating laterally across the study area. This study outlines a methodology for characterizing, interpreting, and modeling the geometry and sedimentology of these carbonate channels. Like fluvial systems, carbonate channels cannot be confidently identified by well logs or cores alone; integration with seismic data is essential. A single well penetrating a channel geobody provided initial confirmation. Channel widths reached 1–1.9 km, extending at least 15 km in length, with heights ranging from ~9 to 43 m. Two stacked channel systems were identified, filled with reservoir-quality carbonates exhibiting porosity between 14–27%, compared to background intertidal facies with ~10% porosity. Nine additional wells were re-evaluated and interpreted to have penetrated similar geobodies. Seismic and stratigraphic evidence confirmed these features and explained their formation: sea-level fall incised the background micritic carbonates, followed by infill during sea-level rise. Despite seismic and well data resolution mismatch, integrated modeling revealed lateral heterogeneity. These findings suggest untapped hydrocarbon potential along the channel meanders, guiding development framework for Mishrif formation in South Iraq.

First Field Deployment of New At-Bit Imaging System in Iraq: Unlocking Subsurface Insights at the Drill Bit

Saeed Basso

SLB



Abstract

The Retina™ at-bit imaging system introduces a step-change in LWD by capturing high-resolution borehole images directly at the drill bit, before formation properties are altered by drilling invasion. The system integrates high-frequency force sensors within the PDC bit cutting structure, enabling real-time azimuthal measurements of cutter-rock interaction that are processed into detailed borehole images for formation characterization.

This paper presents the first-ever deployment of an at-bit imaging system in a vertical well in the challenging environment of a giant field in southern Iraq. Unlike conventional LWD imaging tools positioned further up in the BHA and often degraded by borehole conditions such as breakout, washout, enlargement, or losses, the new technology delivers images unaffected by post-drilling formation damage.

Moreover, it operates across all mud types and hole sizes, overcoming the fluid and geometric constraints of conventional LWD and WL imaging technologies, while requiring no extra runs or specialized BHA design. The tool's integrated sensors continuously record high-frequency cutter forces, which are converted into azimuthal responses to generate borehole images. These images reveal fine-scale geological features including bedding dips, fractures, vugs, stylolites, and facies transitions at an unprecedented resolution of up to 2 mm.

In Iraq, the Retina at-bit imaging system was deployed in a 12.25-in. section with maximum deviation of 17° deviation and benchmarked against offset resistivity image logs. Results confirmed image fidelity, superior resolution, and accurate delineation of geological features across formations. By delivering immediate subsurface data, Retina advances formation evaluation, precise well placement, and reservoir modeling during drilling operations.

The Right Cement Barrier Enhancing Dependability and Long-Term Isolation to Mitigate Fugitive Emissions - Iraq Case Study

Mikhil Dange

Halliburton

HALLIBURTON

Abstract

The Rumaila oil field located in southern Iraq faces its own distinct set of challenges in achieving the minimum standard of zonal isolation. Selecting an appropriate well barrier is crucial for successfully isolating potential flow zones and maintaining the well integrity throughout the entire life cycle. The cement system delivers the required barrier by minimizing the fluid loss, shortens transition time, improves shear bonding and reduces the permeability of cement.

The zonal isolation standard for the Rumaila oil field requires to have minimum 30 meters cement above the shallowest distant permeable zone and 10 meters of circumferential cement between the two permeable zone within the same section. To qualify as a well barrier element, the cement must completely cover the annulus in the area of interest. However, due to high permeability rock characteristics and the depleted reservoirs, results in seepage losses and higher differential pressure leading to increased fluid loss from the cement slurry, thus compromising the zonal isolation.

To address the challenges of achieving zonal isolation, the unique cement system was introduced which proactively mitigates any potential flow mechanism, including annular flow through unset cement, mud channels and cement permeability.

Additionally, its rapid static gel strength mitigates the risk of flow through the cement and channeling, which can lead to sustained casing pressure.

Furthermore, the cement system can be easily dry blended, eliminating the need for additional equipment and reducing operational costs.

A Novel Implementation of a 6-Inch Ultra-Long Horizontal Drilling Technology in the E Oilfield, Iraq: Field Results and Performance Insights

Zhang Jingyi

EBS Petroleum Company limited



Abstract

This paper presents a comprehensive drilling technology system applied successfully to drill ultra-long horizontal wells in carbonate reservoirs of the EBS oilfield, Iraq. The technology effectively addressed several critical technical challenges, including drilling a 6-inch horizontal section under conditions of high pump pressure, high torque and drag, and maintaining adequate borehole cleanliness.

A novel ultra-low solids, composite extreme pressure lubricating drilling fluid system was developed to effectively protect reservoir formations while reducing pump pressures. A solid-liquid composite lubrication mechanism significantly reduced friction and enhanced mechanical drilling rates. Specifically, solid lubricants precipitated graphite-based mud cakes, while liquid lubricants formed emulsified dispersions, creating a continuous lubricating film. Additionally, polymeric microspheres synergistically established a rolling-sliding hybrid friction interface at the borehole wall.

The Ultra long horizontal well was successfully drilled in the EBS oilfield, achieving a horizontal section length of 2,826 m, and a total measured depth of 5,549 m—each setting new drilling records for Iraq. During testing, the well delivered an impressive oil production rate of 11,467 barrels per day, surpassing previous production test records in both the E oilfield and the Middle Oil Company region.

This study represents the first systematic application and engineering validation of ultra-horizontal drilling technology in Iraq, filling a critical technical gap in the region's well construction practices. The approach offers a robust solution for economically developing reservoirs. In particular, it provides a scalable technical framework for future implementation of ultra long horizontal well, offering strong implications for field development strategies across the region.

Integrated Reservoir Characterization: Advanced Reservoir Characterization Techniques to improve zone targeting and static model accuracy

Sergey Potryasov

Lukoil



Abstract

Building an accurate static model for highly heterogeneous carbonate reservoirs is a complex and critical process for optimized oilfields development. One of the outcomes of modeling is understanding of petrotypes distribution. The integrated approach for reservoir characterization is applied for one of the oilfield in the region with high heterogeneity of productive formations and complex geological structure.

This study represents a workflow how combining core analysis data with standard and advanced well logs along with applying various interpretation techniques leads to a comprehensive understanding of main rock properties. Core based detailed lithological, petrographic and mineralogical studies provide crucial information about energy level of sedimentation environment, secondary diagenesis alterations and predominant pore space types. Integration of results together with RCAL and SCAL data makes available to identify rock types in order to make solid petrophysical relations with strong geological basement. Finalizing of typing procedures includes defining the specific well logging features which help in spreading rock types through all well sections. Obtained data from FMI, NMR, and MICP reveal that porosity alone does not reliably predict flow behavior. Pore geometry and connectivity are equally critical factors. Using rock types, the integrated approach could be implemented in order to build a detailed petrophysical model.

The objective of this study is to establish a robust framework for identifying petrophysically distinct rock classes through multi-source data integration, providing a basis for high predictive static models of reservoirs.

Leveraging the Integrated Horizontal Well Multistage Hydraulic Fracturing and Reservoir Monitoring Techniques to Boost Iraqi Tight Carbonate Reservoirs Development

Ruidong Li

ANTON 安東

Antonoil Technology (Group) Co., Ltd.

Abstract

Iraqi A reservoir in H oilfield of Maysan province is a typical tight oil reservoir with huge reserves, horizontal multistage fracturing stimulation projects are executed successfully to promote the individual well productivity, yielding a sixfold rate improvement comparing with the natural production of vertical well, which verify the feasible and practicable technique to develop tight low permeability carbonate reservoir. This paper comprehensively demonstrates a typical integrated geology-engineering horizontal well stimulation job with coiled tubing hydrajetting perforation and multistage proppant fracturing technique. The compelling case study discourses the one continuous 29 stages frac operation including numerical simulation, technical proposal design, perforating, zonal isolation, annular fracturing, flowback and post-frac production. What's more important, two fascinating onsite monitoring techniques were employed. One was High Frequency Pressure Monitoring (HFPM), a novel and nonintrusive method to capture high-frequency pressure response from the wellhead during pumping shut-in and interpreted downhole parameters, including fracture geometry data, fluid entry point, initial formation pressure, formation permeability. Another was Fiber Optic Production Profile Logging and Downhole Gauge Well Testing. Fiber-optic sensing is a crucial technique for reservoir surveillance, the primary objective was to monitor the production flow allocation along the horizontal section using the fiber-optic cable with a combination of DAS and DTS, and study the correlation between fracturing engineering parameters and oil rate contribution per stage for technical optimization. The integrated fracturing technique provides a practical insight for developing similar tight carbonate reservoirs, aiming to assist in elevating the oil production potential, particularly in Iraq marginal oilfields.

Dynamic Sub-surface Evaluation from Play to Prospect through Scalable Earth Modeling in Sandakan and Semporna Basins

Debjyoti Das

Halliburton

HALLIBURTON

Abstract

The objective of the study is aimed at evaluating the sub-surface insights in Sandakan and Semporna basins through a holistic approach of play to prospect assessment. A dynamic sub-surface evaluation has been carried out to generate play chance maps and translating to prospect generation, volumetric and assessment in order to evaluate the investment decision. The end-to-end exploration workflow solution ranges from ML Driven Assisted Seismic Interpretation to the detail gross depositional map generation followed by 3D Grid-less Scalable Facies model building using an innovative approach of region based Vertical Proportion Curve. The project methodology also includes full-scale 3D Petroleum Systems Modeling and Play Fairway Mapping to screen the play area. The Risk model was combined with Volumetric to build a Prospect Inventory. The Assisted ML Driven workflows augmented with the innovative Grid-less Modeling approach helped to achieve an expedited prospect generation project through improving the efficiency by 50%.

The Assisted ML driven Horizon Interpretation makes brings efficiency in the most time-consuming process of interpretation and captures the sequences from in a dense manner. The novel approach of region based VPC model not only provides lateral control but also vertical connectivity as a background 3D geological trend model.

An innovative grid-less basin scale modeling approach has been adopted to address the challenges pertaining to the extent and the resolution of the model. Due to the flexible scalability, such model can be used from regional scale to prospect scale without any requirement of building multiple models for various purpose.

A New Benchmark: Drilling Iraq's Longest 6-Inch Horizontal Section Using PowerDrive Orbit G2 Technology

Aous Rasheed Al-Kaseem

SLB



Abstract

This paper presents the successful execution of Iraq's longest 6-inch horizontal section, drilled in one of the central Iraq fields using the newly introduced PowerDrive Orbit G2 Rotary Steerable System (RSS). The objective was to enhance production and evaluate the feasibility of drilling extended laterals using advanced downhole technology. Drilling such a profile introduced several operational challenges, including surface torque limitations, high standpipe pressure, hole cleaning efficiency, and directional control. These were mitigated through fit-for-purpose drive system selection, customized BHA (Bottom Hole Assemble) design, and tailored drilling strategy.

Offset well analysis was conducted to assess historical performance and identify potential risks. Based on formation characteristics and trajectory demands, PowerDrive Orbit G2 Push-the-Bit RSS was selected for its durability and directional precision. BHA precisely designed and equipped with real-time telemetry enabled accurate monitoring of near bit inclination and azimuth. Due to the depth of the well, standpipe pressure was proactively managed by adjusting flow rates, staying within rig constraints without compromising control. Surface torque was reduced through parameter optimization, which allowed further progression of the lateral.

The horizontal section reached 2826 meters—over twice the field average of 1200 meters—with a total measured depth of 5449 meters. This successful implementation demonstrates the potential to replace multiple conventional wells, significantly reducing development costs. The project sets a new benchmark for horizontal drilling in Iraq and establishes a design framework for future wells targeting ultra-long laterals up to 5000 meters. The collaborative effort between the operator and SLB was instrumental in achieving this milestone.

An Efficient, Safe, and Practical Chemical Method for Barium Sulfate Scale Removal

Bahaa Alanbari

NESR



Abstract

Subsurface wells for minerals, geothermal heat, CO₂, and produced waters often face scale deposition from incompatible fluid mixing, which can obstruct flow paths. While prevention measures exist, unplanned events frequently lead to significant scale buildup, necessitating efficient removal solutions. A novel converter has been developed that enhances barium sulfate scale removal, a major concern due to its resistance to conventional methods and potential radium contamination (a naturally occurring radioactive material). This alpha version of the technology reportedly achieves 4 to 5 times greater removal efficiency while cutting operational costs by 80% to 90%.

Extensive laboratory tests utilizing safe, food-grade chemicals have ushered this solution to near-field application readiness, achieving an average of 80% conversion of near-pure barium sulfate scales versus just 9% with conventional options. This achievement results in the conversion of scales into fine particles that can easily be flushed away. The new aqueous solution presents numerous advantages, including cost-effectiveness, high efficiency across diverse conditions, minimal toxicity, and non-corrosiveness to typical well materials, making it a promising alternative for geothermal, hydrocarbon, and mining applications.

Biosurfactant-Based Soil Flushing Agent for Improved Bioremediation of PAHs

Gabriele Moscatelli

CHIMEC Spa



Abstract

Bioremediation, through bioaugmentation and biostimulation, is a minimally-invasive way to treat soils polluted by hydrocarbons and other organics, but its efficiency falls in highly anoxic conditions and with recalcitrant molecules. In-situ surfactant flushing therefore complements biological treatment for soils and aquifers. The innovative biosurfactant—a sophorolipid-based formulation developed by Chimec—combines flushing with biostimulation, couples high remediation performance with low ecotoxicity, and contains biodegradable co-surfactants and linkers that support indigenous microbial activity. Its efficacy was assessed in column tests run at Sapienza University of Rome on marine sediment from the Italian National Priority Site of Bagnoli-Coroglio (Naples), heavily contaminated with polycyclic aromatic hydrocarbons (PAHs).

Three identical columns were packed with the sediment and flushed, respectively, with distilled water (blank), 1% alkyl-polyglycoside (APG, reference) or 1% innovative biosurfactant (test). Effluent fractions were collected over time and analysed for PAHs by GC-MS.

Water removed only 1.2% of total PAHs after 225 pore volumes, whereas APG achieved 27.8% after 4.5 pore volumes. The innovative biosurfactant reached 29.4% removal within 40–70 pore volumes, clearly outperforming water flushing and matching, over a broader operating window, the widely used APG.

The innovative biosurfactant delivers higher PAH extraction than water and comparable or better performance than APG while offering superior environmental compatibility, thanks to its greater biodegradability and lower toxicity. Because its constituents also serve as a carbon source, the formulation can sustain microbial growth, potentially prolonging clean-up beyond the physical flushing stage.

Harnessing AI and ML for Smarter Drilling: Optimizing Operations and Predicting Hazards

Javier Torres

Halliburton

HALLIBURTON

Abstract

This innovative approach harnesses live data streams, predictive analytics, and 3D visualization to enhance operational efficiency, minimize non-productive time, and mitigate risks in challenging drilling environments. By fusing real-time sensor data with historical well records, it provides drilling engineers with actionable insights to adapt quickly to evolving downhole conditions, ensuring safer and more cost-effective results.

A key advantage is its predictive power to anticipate and prevent major issues like fluid losses, kicks, and stuck pipe. ML algorithms analyze variables such as hookload, torque, rate of penetration (ROP), and mud properties alongside past data to identify early warnings. For instance, AI detects anomalies in friction factors or mechanical specific energy (MSE), forecasting stuck pipe risks up to 500 feet ahead. Similarly, pressure irregularities signal potential kicks, while flow rate and lithology patterns predict circulation losses. These insights allow operators to adjust parameters like fluid density or ROP, avoiding downtime and costly interventions.

Supported by a cloud-based platform, the system enables multi-well monitoring and real-time global collaboration. Its 3D visualization offers a detailed view of wellbore conditions, integrating metrics like bit depth and formation data for swift, informed decisions. Combining physics-based models with cutting-edge AI, it optimizes strategies and improves predictions through continuous learning.

Field trials demonstrate seamless live data streaming, real-time guidance, and reduced uncertainty. This solution highlights how ML and AI are reshaping drilling, delivering superior efficiency, safety, and cost savings in the oil and gas industry.

Low Carbon Well Interventions with Coiled Tubing Based Approach to Zero Flaring and Zero Waste Operations

Alaa Rahimah Jweid

PETRONAS



PETRONAS

Abstract

This paper presents a case study from a mature carbonate field in Iraq where coiled tubing (CT) technology was leveraged to enhance energy efficiency and environmental sustainability in well interventions. The initiative focused on integrating coiled tubing-assisted acid stimulation with improved post-job flowback management to minimize emissions, waste generation, and chemical hazards while maintaining operational effectiveness.

An integrated framework was developed to align intervention activities with environmental performance targets. Key elements included pre-operational readiness checks on surface and downhole equipment, acid neutralization protocols to eliminate residual acidity before reinjection or transfer to Central Processing Facilities (CPF), and monitoring of critical parameters such as pH, Basic Sediment & Water (BS&W), and emulsion content. These measures ensured compatibility with CPF and reduced the need for surface flaring.

Results demonstrated significant energy efficiency gains through elimination of flaring and substantial reduction of solid and fluid waste volumes. The campaign achieved an estimated carbon dioxide reduction

of approximately 115,000 metric tons (estimation figure until all drilling completed), marking a significant step toward decarbonizing routine well operations in the region.

The Zero Flaring Zero Waste (ZFZW) initiative highlights the potential for energy-efficient well intervention practices to contribute meaningfully to corporate Net Zero goals. The developed Standard Operating Procedure (SOP) serves as a

replicable and scalable model for similar carbonate fields across the Middle East and Southeast Asia. This case reinforces the value of integrating sustainability into well stimulation workflows to drive energy efficiency improvements without compromising production performance.

The Role of Polymer-Coated Nanomaterials in Enhancing Oil Recovery and Improving Production Efficiency

Ranaa Rasool

Petroleum Research & Development Center PRDC



Abstract

This study was conducted to enhance oil recovery from limestone reservoirs through wettability alteration using nano-silica and polyethylene glycol (PEG)-coated nano-silica dispersed in saline water. The influence of nanoparticles on interfacial tension (IFT) and wettability in the oil/water/rock system was investigated. Measurements were performed using the pendant drop method for IFT and the sessile drop method for contact angle, both conducted with an optical tensiometer.

The results demonstrated a significant reduction in contact angle and a noticeable wettability shift toward water-wet conditions with increasing nano-silica concentration. For a liquid/liquid/solid system, the use of 0.01 wt.% nano-silica reduced the contact angle to 30°, and the IFT to 2.26 mN/m for both nano-silica and PEG-coated nano-silica. Nano-fluids were injected into core samples using a flooding system. As a secondary recovery method, PEG-coated nano-silica improved oil recovery significantly compared to standard methods. In primary recovery tests on low-permeability cores, PEG-coated nano-silica increased oil recovery by more than double relative to saline water..

Numerical simulation using CMG software was performed to model PEG-coated nano-silica injection at the laboratory scale. Simulation results were in good agreement with experimental data. The estimated relative permeability and water cut confirmed wettability alteration, with water saturation reaching 0.6 for nano-fluid injection compared to 0.22 for saline water. Additionally, water breakthrough was delayed by approximately 10 minutes for nano-fluids relative to saline water

From Waste to Opportunity: The Geochemical Potential of Produced Water for Sustainable Lithium Recovery

Anahita Kazemi Kia

Chemistry and Chemical Engineering Research Center of Iran



Abstract

Due to its pivotal role in EVs and energy storage, the global demand for lithium is surpassing the supply from conventional sources. This has made oilfield brines (produced water) a promising unconventional resource. The lithium concentration in these brines is influenced by the host rock's lithology and the geochemical history of the formation waters. For example, North American shale formations like the Marcellus Shale show high lithium content, while the vast volume of produced water in the Permian Basin offers significant potential despite lower concentrations. This pattern is also observed in other regions; Canadian Devonian carbonates and Russian-Siberian chloride brines are rich in lithium. In the Middle East, while lithium concentrations in the predominant sandstone and carbonate reservoirs might be lower, the enormous scale of produced water in countries like Iran, Iraq, and Saudi Arabia presents a considerable, untapped resource. These regional differences necessitate a reservoir-specific approach to extraction.

To overcome the limitations of traditional methods like solar evaporation, direct Lithium Extraction (DLE) technologies have become a key focus. These advanced methods, including selective adsorption, ion exchange, and solvent extraction, offer higher efficiency and faster processing times while significantly reducing water consumption and environmental impact. This review evaluates the global potential of produced water as a lithium source and examines these emerging DLE technologies to highlight their combined role in creating a sustainable and resilient lithium supply chain.

Leveraging Groundwater to Replace Limited River Water in Secondary Recovery: Challenging and Solutions in Real Case Study Surface Equipment

Ahmed Hadi

Kuwait Energy Basra Limited



Abstract

This study evaluates a new secondary-recovery scheme that sources groundwater to Replace Limited River Water in Secondary Recovery and conditions it in a dedicated 50 m³/h injection-water station as a pilot test station before distribution to injection wells. The real-plant configuration employs staged solids control (coarse strainers & dual-media filters & micron cartridges) with optional coagulant/polymer dosing, followed by biocide and oxygen-scavenger addition for corrosion and souring control. Commissioning revealed the dominant bottleneck: high particulate loading at the filters driving frequent cartridge changeouts and differential-pressure trips, with associated OPEX, downtime . Process improvements—upstream solids knock-out, automated filter backwash optimization, coagulant , media-bed regrading, and on-line SDI/NTU control reduced cartridge consumption and stabilized water quality production . Compatibility testing with formation water and step-rate/pressure-transient surveillance were used to verify fracture-avoidance and formation protection. The optimized train sustained capacity (120 m³/h) at lower specific energy and chemical dose, while maintaining particulate size distribution <5 micron to protect pore throats. Results demonstrate that groundwater, when properly treated, is a cost-efficient, reliable water source; targeting the solids-control pinch point delivers the largest OPEX reduction and long-term injectivity and water source assurance.

Digital Journey: Automated Machine Learning & Big Data Workflow for Oil Field Data Management

Hassan Mohammed Al-Bably

SLB



Abstract

Data management (DM) in the oil field is one of the key challenges that petroleum engineers face as they seek to optimize reservoir and production performance. Addressing this challenge requires the engineer to bring together and analyze several data elements from different sources, including real-time data, excel sheets, shared folders, logs, seismic and others. Another challenge is to create and automate the engineering workflow to save the engineers' time and improve efficiency. This workflow includes a system for corporate data management (ProSource), Production Data Management (Avocet), real time data retrieval (RTDS), visualization (IVAAP), and analysis of E&P data (Data Iku). This achieved by managing and captures production operations data from the field through integration with the real-time systems (SCADA and Data Historian), other data sources. DM for an oil and gas company needed to check the user data and establish data loading, QC procedure, fields to be populated in the Corporate Databases. This eliminates the excessive time on data gathering, data QC and data integration. Statistics have shown that engineers spent between 60% - 80% of their time gathering data, including processing the data for use in engineering applications. These manual processes are typically time consuming and require considerable re-work. By applying the cutting-edge technologies and methodologies of AI/ML and Big Data to Analyse the data will attain better performance and results. I will represent a proven approach employing Big Data and DM technologies from E&P DM point of view based on my experience for 14+ years in this domain.

Utilization of Flaring Gases for Enhanced Oil Recovery and Carbon Capture

Mohammed AL-Mustafa

BECL



Abstract

The gas released from distillation/Flaring units in oil processing typically includes a mixture of various hydrocarbons and other volatile compounds. The primary components can include Vapors which are light hydrocarbons such as methane, ethane, propane, butanes, and pentanes. These are often collected for use

as fuel or feedstock for petrochemical processes, Naphtha which is a light, volatile liquid used as a feedstock in petrochemical production or as a gasoline blend component, Hydrogen Sulfide (H_2S) which is a toxic gas that may be present, especially if the crude oil contains sulfur compounds. Proper handling and removal are essential.

Carbon Dioxide (CO_2) a common byproduct of combustion processes in oil refining and other Gases Those can include various light hydrocarbons and other gases produced during the distillation process.

Efficient management of these gases is important for safety, environmental compliance, and maximizing the recovery of valuable hydrocarbons. These advanced scrubbing technologies play a vital role in improving air quality, meeting environmental regulations, and enhancing overall process efficiency in oil processing operations.

Eco-Friendly Customized Dry Friction Reducer Fracturing Fluid: A Breakthrough Stimulation Solution for Reservoir Enhancement

Xie Lin

Antonoil Technology (Group) Co., Ltd.

ANTON 安東

Abstract

This study introduces a new polymer dry variable-viscosity fracturing fluid that significantly outperforms traditional emulsions/suspensions systems in operational efficiency, cost-effectiveness, and environmental performance for unconventional reservoir applications. The technology achieves breakthrough performance through molecular design and surface nano-modification of polymer friction reducers enabling rapid dispersion/hydration, coupled with a high-speed continuous blending system providing in-situ concentrate preparation, dynamic dilution, and real-time viscosity adjustment without oil-based suspension technology. In addition, the system demonstrates exceptional salinity tolerance (200,000 ppm) and can be directly prepared using flowback water.

Laboratory validation confirms rapid swelling within 20-30 seconds, 40-60% reduction in friction reducer dosage at equivalent viscosity, 30-50% lower post-gel-breaking residue, 30% decreased core permeability damage, and 70-75% friction reduction.

Field applications in over 30 wells across tight sandstone gas, shale gas, and shale oil reservoirs confirmed: 75-86% friction reduction efficiency; 11-23% overall cost reduction; production increases of 10-30% in shale gas wells and 30-60% in tight sandstone gas/shale oil wells; and high-quality flowback fluids with minimal solids content enabling superior reuse rates.

Overall, this technology provides an efficient, cost-effective, and environmentally friendly fracturing fluid solution for unconventional reservoir stimulation operations, demonstrating broad application prospects.

Smart Remote Alarm Systems

Mustafa Emad Kadim

Oil Products Distribution Company



Abstract

Given the critical importance of safety in oil-related sites and the exceptional nature of fires that require rapid response and precise prediction, the Smart Remote Alarm System is designed to meet these demands by linking oil facilities—such as fuel stations—to a centralized alarm network. This system immediately notifies firefighting teams upon the detection of a fire, pinpointing the exact location via satellite using a secure, proprietary protocol and long-range communication technology that does not rely on the internet.

Central receiving units are installed at firefighting stations and are equipped with audio-visual alerts and dedicated displays showing all relevant information and the precise location of the incident. The system also integrates artificial intelligence technologies to enable predictive analysis before a fire occurs, and it connects to smart sensors and specialized cameras for real-time data analysis.

This is the first system of its kind in Iraq, and it has been successfully piloted in four government-operated fuel stations, achieving outstanding results.

Improving Rig Floor Safety by Leveraging Artificial Intelligence Capabilities

Alexandre Javay

SLB



Abstract

The initiative aims to enhance rig floor safety by leveraging AI technology. Despite significant progress in automating drilling activities, human intervention is still required in hazardous areas like the "red zone." The project, part of a large integrated drilling project in Iraq, introduced an innovative digital solution to improve safety. Cameras connected to AI machines are deployed on the rigs, and proprietary algorithms detect equipment and movements, identifying unsafe conditions and enabling real-time interventions to prevent incidents. The project was pilot tested successfully, proving the reliability of the infrastructure. Challenges in achieving accuracy and consistency were addressed through multiple iterations, leading to acceptable results. Besides real-time intervention, the system generates statistics and reports for further analysis, targeting both efficiency improvements and reduced HSE exposure for workers. Feedback from rig crews is crucial for continuous improvement towards safer human behavior on the rig floor. The system integrates with the larger Behavioral Engineering Methodology (BEM) workflow to identify gaps and risks associated with human interactions. The service provider's commitment to accident-free operations is evident through the adoption of digital solutions and AI, benefiting both operators and service companies. This pioneering approach using AI capabilities has pushed rig floor safety into a new era, demonstrating the potential for digital solutions to transform the management of HSE in drilling operations.

Using Geostatistical Techniques to Enhance Reservoir Characterization of the Upper Qamchuqa Formation

Nazaneen Said Amin

North Oil Company



Abstract

The article explores the analysis methods of core and well-logging data, highlighting their integration in describing the petrophysical characteristics and constructing a geological model of the Upper Qamchuqa formation in the Jambur oil field. Conventional logging data from eight wells were interpreted, and the core data were examined using four techniques based on porosity and permeability data. The flow zone indicator yielded the best results for estimating permeability in sections without core data. A three-dimensional model of the Upper Cretaceous reservoir was developed by applying a variogram model as a simulation method to analyze the data, a sequential indicator simulation algorithm was used to distribute rock types in the cell grid model as an estimation and interpolation method to generate a depositional model for the five divided zones. Porosity and saturation data have been distributed for each zone per facies, applying a sequential Gaussian simulation algorithm for integration between wells.

The inclusion of the spatial heterogeneity in the deposition of the Qamchuqa formation across the reservoir, as it decreases in thickness and eventually is replaced by the Balambo formation at the southern end of the structure. The northern part of the zone UQ has beneficial petrophysical properties than the other four zones. Its properties are associated with rock type RT-5 (excellent quality) with an average total porosity of 13%, an effective porosity of 7.5%, a permeability range (100–1000) MD, and 28 % water saturation, followed by the zone (UQ2). However, these features decrease towards the south of the reservoir

Industry-First Integrated ZMLD Process: Recovering Mineral Salts, Bromine Derivatives, and Rare Earth Metals from Produced Water

Bahaa Alanbari

NESR



Abstract

Produced water from oilfields often contains extremely high salinity (TDS $> 100,000$ ppm) and a complex mix of valuable minerals. Traditional technologies focus on partial recovery or disposal, missing opportunities for full resource utilization. In this study, we present an integrated, zero-liquid discharge process designed to recover high-purity salts—including calcium, magnesium, strontium, lithium, and bromide derivatives—from hard brines.

Our approach begins with selective precipitation of divalent ions as CaCO_3 , MgCO_3 , and SrSO_4 using a proprietary chemical pathway, validated through pilot trials. By carefully controlling pH and temperature, we achieved $>99\%$ purity for each salt. Analytical characterization of solids and filtrates enabled fine-tuning for consistent quality.

Following mineral recovery, the remaining brine is conditioned to concentrate lithium above 100 ppm, allowing for efficient extraction as battery-grade lithium carbonate via direct lithium extraction (DLE). If bromide is present, it can be converted into valuable chemicals such as CaBr_2 and MgBr_2 , which are useful in upstream oil and gas operations.

This is the first fully integrated process capable of recovering all major salts from high-salinity produced water with commercial-grade purity. It offers a scalable, sustainable solution for mineral recovery, turning waste into valuable products and supporting circular economy goals in the energy sector.

Hamrin Flare Gas to Power Project

Yousif Hashim Yousif Al-Shaaya

Sahara Middle East Petroleum Services



Abstract

Iraq, home to some of the world's largest oil reserves, continues to face significant challenges in managing associated gas, particularly the flaring of low-pressure, high-H₂S content gas. While focus remain on major flaring sites, there are many small size flares not being addressed. Despite substantial environmental and economic losses, flare gas recovery and utilization remain limited due to technical, infrastructural, and regulatory constraints. This paper explores the viability of converting flare gas into electrical power under Iraq's harsh field conditions, focusing on gas streams with pressures below 2 bar and H₂S concentrations exceeding 15 Mol%. The study evaluates the limitations of conventional gas treatment and compression technologies in handling such sour, low-pressure streams. Key challenges include corrosion, toxicity, compressor inefficiency, and the lack of grid connectivity near flaring sites. To address these, the paper proposes a decentralized, modular approach using advanced H₂S separation, integrated with microturbine or gas engine generator units designed for low-pressure operation. and mobile power units, the solution emphasizes flexibility, rapid deployment, and scalability. Case studies from Northern Iraq are modeled to estimate power output potential, emissions reduction, and economic feasibility. Results suggest that flare gas-to-power can be both technically and commercially viable with targeted innovation and policy support. This approach offers Iraq a path to reduce flaring, enhance energy access, and monetize wasted resources, aligning with both environmental goals and national energy security strategies.

Accelerating Field Development Cycle for Super Giant Field in The Middle East with Automated Development Scenarios

Wassem Alward

SLB



Abstract

The super-giant field, with its complex multi-stacked reservoirs, presents significant challenges for optimal hydrocarbon recovery. Traditional waterfall planning methods are often siloed and time-consuming, limiting the ability to evaluate multiple development concepts efficiently. To overcome these challenges, an advanced automated field development tool was deployed to generate and compare multiple scenarios, optimizing operational decisions within tight project timelines.

This solution integrates novel algorithms to automate the generation of development concepts, including reservoir target identification, well trajectory design, pipeline routing, surface facility layout, and economic constraints. Reservoir targets are intelligently placed using 3D quality maps (porosity, permeability, HIIP), followed by trajectory optimization using the minimum curvature method. Surface layout is optimized using the A* algorithm for pipeline routing and Dual Annealing for facility placement, minimizing CAPEX while honouring geological and operational constraints.

The field, previously under depletion with declining pressures and poor performance, was restructured into systems based on fluid properties and pressure regimes. Each system was assigned dedicated drilling and gathering centers. The automated workflow enabled rapid evaluation of scenarios to determine optimal well spacing, locations, types, injection strategies, and completions to meet production targets and extend plateau periods. Generated well targets were seamlessly integrated with drilling design tools for automated well planning.

This approach significantly reduced the planning cycle from months to weeks and enabled efficient, data-driven development of the super-giant field. It demonstrates the value of automation in addressing the unique challenges of large-scale field development in the Middle East.

Reinjection Strategy Optimization Via LSTM-Driven Produced Water Forecasting

Mustafa Asaad Hasan

University of Thi-Qar



Abstract

Effective management of produced water is a critical challenge in mature oil fields, where reinjection strategies directly impact reservoir pressure maintenance and environmental compliance. This study proposes a Long Short-Term Memory (LSTM) neural network model to forecast produced water volumes and optimize reinjection schedules based on historical production, injection, and reservoir parameters. By capturing temporal dependencies in multi-variate time-series data, the LSTM model accurately predicts future water production trends and identifies optimal reinjection rates that minimize surface storage costs while maintaining reservoir performance. The model demonstrates high predictive accuracy and operational adaptability, offering a data-driven tool for sustainable water handling and improved field development planning.

Novel Class of Retarded, Newtonian, Single-phase HCl-Based Stimulation Fluids - A Laboratory Characterization

Bahaa Alanbari

NESR



Abstract

The current compositions of retarded acids used in industry face several significant drawbacks, including environmental harm, instability under high temperatures and shear, high viscosity leading to excessive frictional losses, costly additives, and intricate mixing procedures. This study introduces a novel class of retarded acid containing 15 wt% HCl that addresses these issues.

Laboratory experiments were conducted using a rotating disk apparatus (RDA) to assess the dissolution rate of calcite-marble with the new acid alongside traditional 15 wt% HCl. Conditions were set at 250°F with a disk speed of 587 rpm and a pressure range of 1,150–1,300 psig. The study found that the novel acid, characterized as a single-phase, Newtonian fluid with low viscosity, exhibits adjustable reactivity—capable of being tuned to be 1.2 to 9,200 times slower than that of 15 wt% HCl. Furthermore, it demonstrated minimal corrosion on various steel grades without the need for added inhibitors, with measured corrosion rates ranging from 0.00001 to 0.05061 lb/ft² over six hours.

Besides these advantages, the newly developed acid packages serve dual functions as an H₂S scavenger, making them suitable for sour wells. These innovative retarded acids are poised to benefit applications in the oil and gas sector, CO₂ storage, and geothermal initiatives globally.

The Role of Geomechanical Modeling in Carbon Storage

Hadi Ashtiani Abdi

SLB



Abstract

The success of a carbon storage projects depends on three critical factors: capacity, the total volume of CO₂ the reservoir can safely accommodate without exceeding pressure limits; injectivity, the reservoir's ability to accept CO₂ at the desired rate without causing damage or loss of containment; and containment, the assurance that injected CO₂ will remain securely trapped over time. Among these, containment is the most crucial, as it directly impacts the long-term integrity and safety of the storage site.

This paper presents advanced geomechanical modeling workflows designed to evaluate and mitigate key containment risks, including caprock fracturing, fault reactivation, well integrity, surface deformation, and long-term plume-cement-casing interaction. The workflow begins with the construction of 1D Mechanical Earth Models (MEMs) at well locations, calibrated using wellbore data. These MEMs are then expanded into 3D and 4D models to capture spatial and temporal variations in stress and pore pressure. The 3D model integrates upscaled rock properties and seismic fault data to represent the reservoir and surrounding formations. The 4D component, powered by VISAGE, simulates the evolution of stress and pore pressure before, during, and after injection, enabling dynamic risk assessment and operational planning. A real-world case study demonstrates how this workflow was applied to assess feasibility, optimize injection design, and ensure long-term storage security. The results highlight the essential role of geomechanics in carbon storage planning and execution, offering a robust framework for safe, reliable, and sustainable CO₂ containment.

Modern Technology in Offshore Platforms for the Storage and Processing of Liquid Gas (LNG) – Floating Solutions as the Future of the Gas Industry in Iraq

Aadil Sadiq Wakir

Basra Oil Company



Abstract

With the global trend toward exploiting offshore resources and developing natural gas production and processing technologies, offshore platforms have become one of the most important infrastructures in the energy sector. Floating storage and processing technologies (such as FPSOs and FLNGs) represent a paradigm shift in operational flexibility, reducing costs, and expanding the scope of offshore fields.

FLNG (Floating Liquefied Natural Gas):

An explanation of the concept of floating units for gas processing, liquefaction, and storage, and how they can be deployed near offshore fields without the need for long onshore pipelines.

The ability to process natural gas at the production site.

Reduced environmental footprint compared to traditional facilities. Shortened development timeline and increased productivity.

A review of projects such as "Prelude FLNG" in Australia, and how these experiences can be leveraged in Iraq.

Exploiting potential offshore gas fields in the Gulf.

Integration with gas export projects to enhance energy security. Reducing associated gas flaring and achieving environmental objectives.

Adopting offshore platform technology for storing and processing liquid gas represents a real opportunity for Iraq to enter the global gas market through advanced technology, while enhancing economic returns and reducing waste and environmental damage.

Coiled Tubing Drilling Technology

Alaa ElKaragi

SLB



Abstract

As oil and gas developments mature, reservoir depletion reduces field output, and fewer opportunities exist to drill new wells. Drilling new wells as the sole means of increasing field production often becomes less profitable and presents greater operational risks. Economic risks also increase, as the likelihood of completing successful wells decreases and the required capital investment grows.

Coiled tubing drilling (CTD) has been utilized on a commercial basis for many years and can provide significant economic benefits when applied in suitable field applications. In addition to the potential production-versus-cost advantages, CTD offers the following additional benefits: safe and efficient pressure control underbalanced drilling (UBD), real-time telemetry, continuous pumping with constant bottomhole pressure (BHP), faster tripping time, a smaller footprint and weight, faster rig-up/rig-down operations, reduced environmental impact, and fewer personnel requirements. When applied to drill directionally through tubing reentry wells with fit-for-purpose casing exit methods, high dogleg capability, and real-time UBD, CTD provides the necessary flexibility to access compartmentalized, bypassed pockets in the reservoir. This ensures maximum reservoir contact while causing minimal to no formation damage.

This paper presents recent case histories of various CTD applications globally, along with actual production results compared to conventional drilling methods. These case histories were conducted in environments similar to those in Iraqi operations.

CwD Technology: Drilling the Un-drillable

Aous Al-Kaseem



SLB

Abstract

This paper demonstrates the application of Directional Casing While Drilling (CwD) technology to overcome severe wellbore instability and hole pack-off challenges that previously cost the client over 2M\$. The well, considered un-drillable due to multiple stuck pipe incidents, lost-in-hole BHAs, and two abandoned sidetracks with mother bore, well been suspended for two years. The goal was to achieve safe and successful drilling CwD technology was deployed within an integrated engineering workflow incorporating geomechanical modeling, post-drill analysis, feasibility studies, risk assessment, and evaluation of torque, drag, stress and hydraulic behavior.

IDEAS simulations guided Bit-BHA-under-reamer combinations, system stability, and downhole dynamics, resulting in a well-defined operating parameter roadmap Allegro CD was identified as the enabling technology, with the key benefit of simultaneously drilling and casing unstable formations. A 13-3/8" whipstock was used to exit the mother bore, followed by rathole drilling with a 12-1/4" RSS BHA to initiate the fourth sidetrack. The 9-5/8" Allegro CD system then drilled and cased 804 m through the unstable interval to planned TD, securing the casing point and achieving successful completion. This was the first worldwide of CwD through a whipstock.

Following this success, CwD was tested in another field and subsequently adopted as standard solution for drilling these formations

Allegro CD is SLB's retrievable CwD system, in which the BHA is locked to the casing via the Drill Lock Assembly to transmit energy to the bit and reamer. Configurations can include RSS, motors, or a combination depending on well objectives

Real-Time Monitoring and Parameter Optimization of Cuttings Bed in Horizontal Wells Using Iterative Drilling System

WuWei

Antonoil Technology (Group) Co., Ltd.

ANTON 安東

Abstract

During the drilling of high-angle and horizontal sections, cuttings tend to accumulate along the wellbore, forming a cuttings bed. When the thickness of the cuttings bed exceeds 5% of the borehole diameter, it can severely reduce the rate of penetration (ROP), increase torque and drag, and even cause annulus blockage or stuck pipe incidents. However, there is still a lack of effective technical means for real-time monitoring of the thickness of the cuttings bed.

To address the lack of effective real-time monitoring technologies for cuttings bed formation, Anton Oilfield Services has developed an advanced monitoring module integrated into its real-time iterative drilling system. This module combines pre-drilling parameter modeling, real-time optimization during drilling, and post-drilling evaluation to deliver a closed-loop control process. By continuously analyzing and adjusting key parameters, the system provides accurate predictions of cuttings bed thickness and supports real-time decision-making for borehole cleaning.

Field trials of this technology in five horizontal wells demonstrated significant improvements, with drilling cycles shortened by an average of 19.7% compared to adjacent wells-up to 35.1% in the best case. In the key well sections of 3 wells, the average ROP increased by 62.15% compared to before. The successful implementation of this technology provides an innovative solution for real-time monitoring and mitigating the impact of cuttings beds in horizontal wells, substantially enhancing drilling efficiency, and reducing operational risks. It offers a robust and scalable solution for horizontal and high angle hole, paving the way for more safer and more efficient drilling operations.



Plasma Bit Drilling

Safaa Ali Hameed Ahmed

Al-Karkh University of Science

Abstract

Plasma bit drilling is an advanced non-contact drilling method that uses plasma energy (a high-temperature, ionized gas) to drill through hard materials, especially rocks, ceramics, or metals. It's an emerging technology that's particularly interesting in oil and gas, geothermal energy, and deep rock drilling where conventional mechanical bits wear out too fast.

Integrated Geology-Reservoir-Engineering Acidizing Strategies for High-Efficiency Development in Low Permeability Carbonate Reservoirs: EBS Oilfield Case Study

Xiao Yong

China Zhenhua Oil Co Ltd



Abstract

The low-permeability carbonate reservoir in the EBS Oilfield, discovered in the 1980s, presents significant challenges for efficient reactivation and production. Low permeability, poor pore connectivity, and suboptimal production necessitated a shift from conventional acidizing to integrated geology-reservoir-engineering technologies and solutions, which enhances conductivity and achieves deep penetration to maximize the production potential.

An integrated geology-reservoir-engineering acidizing strategies were established combining systematic physical testing, numerical simulation optimization and real-time operational control. For medium-porosity and low-permeability carbonate reservoirs, deep penetration pinpoint jetting acidizing technology for openhole horizontal well was invented. Applied successfully in 82 wells (100% success rate), including precise stimulation of a 2500m open-hole section with 2 inches CT, this technique achieved an average production increase exceeding 10% in every year, reaching 2,268 bbl/d in Y2024. For low-porosity, low-permeability mud-rich reservoirs (packstone and wackstone) containing, multi-stage tool-free fishbone fracture acidizing technology was proposed. Completed the triple optimization of jetting tools, fluid performance and engineering technology. A breakthrough test production of 10,647 bbl/d was yielded in the first field application, reduced total costs by \$2.0 MM compared to cased-hole or plug segments completion, and experienced zero coiled tubing stuck incidents.

This case study provides actionable insights for operators targeting low permeability carbonate reservoirs, highlighting how integrated geology-reservoir-engineering acidizing strategies can simultaneously enhance high-efficiency development.

Degradation Risks of Rubber Hoses in Oilfield Operations: Safety, Environmental Impact, and the Case for UV- and Chemical-Resistant Alternatives

Ali Hameed

Kuwait Energy

Kuwait Energy Basra Limited

Abstract

Rubber hoses remain essential components in oilfield production, storage, and transfer systems, providing flexibility and operational convenience. However, their susceptibility to chemical degradation and UV-induced aging poses significant challenges to safety, environmental performance, and cost efficiency. Chemical attack from hydrocarbons, H_2S scavengers, acids, and brine leads to leaching of additives, loss of elasticity, and cracking. Concurrently, UV radiation accelerates polymer chain scission, reducing hose strength and increasing the likelihood of leaks or rupture. These degradation pathways not only compromise equipment reliability but also elevate the risk of uncontrolled hydrocarbon or chemical release, threatening personnel safety and the surrounding environment.

Adoption of hoses engineered for corrosion resistance to aggressive fluids and enhanced UV stability demonstrates tangible operational and economic benefits. Resistant hose materials, such as PTFE-lined composites and fluoropolymer-based designs, extend service life from 2–5 years for conventional rubber to 10–20 years, reducing replacement frequency and minimizing unplanned downtime. Life-cycle analyses indicate that while initial investment is higher, overall cost is significantly reduced due to fewer failures, lower environmental liabilities, and enhanced safety assurance.

This paper emphasizes that integrating UV- and chemical-resistant hose technologies into oilfield facilities is a cost-efficient strategy that improves sustainability, safeguards personnel, and ensures long-term operational integrity.

Scale-Induced Flow Assurance Failures from Triazine Base H₂S Scavengers Under High-Salinity Conditions in Storage Oilfield Operations

Khalid Ismael

Kuwait Energy Basra Limited



Abstract

Triazine-based H₂S scavengers have been widely applied in sour-crude processing and storage systems due to their efficiency in neutralizing hydrogen sulfide. However, operational evidence increasingly demonstrates that their use can induce severe scale formation, resulting in significant flow assurance challenges, equipment integrity threats, and production losses. This paper investigates the chemical interactions between triazine scavengers and high-salinity produced water, highlighting mechanisms of CaCO₃, BaSO₄, and Mg(OH)₂ precipitation under oilfield operating conditions.

A case study from Feihaa Field is presented, where deployment of triazine scavengers resulted in rapid deposition within flowlines, valves, and separators, restricting throughput and reducing production by 30–40%. Laboratory analysis confirmed carbonate-dominant scale driven by triazine-induced pH shifts and side reactions with dissolved ions. The deposits led to recurring acid stimulation, increased maintenance cost, and heightened risk of under-deposit corrosion and unplanned shutdowns.

Mitigation efforts—including replacement with non-triazine H₂S scavengers, injection of phosphonate/polymeric scale inhibitors, and continuous pH monitoring—demonstrated measurable recovery, with production improving by ~20% within three months. This study concludes that triazine scavengers, while effective in H₂S control, present unacceptable scale-related risks in hydrocarbon production operation. Immediate transition to alternative scavenger chemistries is recommended to protect production, minimize costs, and ensure long-term flow assurance.

Emerging Sulphate Scaling Challenges in a River-Water Injected Field: From Breakthrough to Remediation Strategy

M Wahyudeen b Zakaria / Amirul Azam / Ainul Azuan

PETRONAS



PETRONAS

Abstract

Field W utilizes river-sourced water injection to maintain reservoir pressure and enhance sweep efficiency. After four years of injection, water breakthrough was observed in several wells. One year post-breakthrough, downhole hard unknown deposits (HUD) began forming rapidly, escalating in severity and negatively impacting production performance.

Water chemistry analysis revealed increasing concentrations of sulphate and calcium ions in the injection source over time. HUD samples collected from affected wells were analyzed in the laboratory and confirmed to be sulphate-based scales, primarily calcium sulphate. The scale was found to be poorly reactive with conventional hydrochloric acid (HCl), indicating the need for alternative remediation approaches. A comprehensive scale management study was initiated, covering source water monitoring, scale solubility testing, and inhibitor performance screening.

The combination of elevated ionic content in the injected river water and prolonged breakthrough conditions contributed to aggressive sulphate scale precipitation. This led to flow restrictions, reduced well productivity, and increased intervention frequency. Traditional acid stimulation was ineffective due to low solubility of the scale.

A dedicated sulphate scale remediation and inhibition program is necessary moving forward. This includes upstream water quality monitoring, deployment of sulphate-specific chemical inhibitors, and regular surveillance to sustain production and avoid unplanned downtime in waterflooded wells.

Unleashing Synergy: A Collaborative Approach To Cure Total Losses In Vuggy, Karstified Dolomite Formation - Iraq Case Study

Mikhil Dange

Halliburton

HALLIBURTON

Abstract

The South Rumaila oil field located in southern Iraq faces its own distinct set of challenges in curing lost circulation in challenging karstified dolomite of Damman formation. Operators and service partners have waged a decade long war against these losses, trying every trick in book. A new tailored solution is now rewriting the playbook, the lost circulation material (LCM) was brewed by the local engineering team is achieving a major success in curing lost circulation.

Drilling through karst facies at depths of 450 to 650 meters presents a formidable challenge. Up to 90% of wells encounter severe to total circulation loss due to the geological characteristics, which include caverns, vugs, and large fractures. The formation Damman is composed of interbedded limestone and dolomite. The karst presents in Damman range up to large-scale cave/void system.

Material comprises a blend of fibers, resilient angular particles, and coarse materials. The fluid system underwent rigorous engineering, combining computer-aided simulation and laboratory testing. This process determined the optimal safe concentration of LCM, allowing it to be effectively pumped through the drill pipe. Before field deployment, the formulation underwent thorough testing and verification to assess its ease of mixability at the surface.

After careful analysis, an optimal concentration of 29 lb/bbl of LCM was determined. This concentration effectively addressed voids encountered in Damman, simultaneously blocking them, and reinforcing the formation.

As a result, drilling could proceed, and primary cementing operations could be conducted without losses.

RODOG, Innovations in Monobore Well Design: A Step towards Masterful and More Sustainable Drilling

Barie M. Mohsin

University of Baghdad



Abstract

A big challenge of using 20" conductor casing makes huge cost as overall of well expenditures. To overcome this challenge, a one-diameter well configuration, extending from the surface to the pay zone, is proposed through the utilization of the Monobore developed expandable bit known as "Rodog" bit, in conjunction with a novel well design that employs either expandable bit, or Bi-center bit referred to as the Rodog well.. This advancement is intended to maintain a well uniform diameter by enlarging the borehole after the previous section, thereby reducing the required casing diameters, mud and cement volumes, as well as the inherent savings afforded by Monobore technology. This study presents a comprehensive review of Monobore technology, firstly addressing its applications in different regions and comparison with conventional wells, then discussing its enhancement through the application of expandable bits, Bi-center bits, and the innovative bit design "Rodog". The study was conducted on a vertical well in the X-oilfield, located in southern Iraq, where casing with a 20" conductor was commenced and ended with a 7" liner. After implementing the Rodog bit (without Monobore technology), the conductor transitioned to 13 3/8" diameter, resulting in a cost reduction of 22%. Combining the Rodog bit with Monobore technology, referred to as Rodog Plus, the casing starts with 10 3/4" conductor and ends with a 7" liner, followed by cementing the production section, which saves up to 35% of total material costs material requirements.

Upgrading East Baghdad Crude Oil (A Strategic Pathway for Iraq's Refining Sector Midland Refineries Company (Daura Refinery))

Idrees M. Jassim Ejam

Midland Refineries Company (MRC)



Abstract

The East Baghdad (EB) Oil Field contains heavy crude oil with an API gravity of 22° more or less. This poses significant refining challenges compared to medium and light crudes from southern Iraq. However, upgrading EB crude offers a strategic opportunity to enhance domestic refining capacity and economic returns.

The study aims to evaluate technological and economic options for upgrading EB crude into synthetic crude oil (SCO) with properties ranging from 31°–35° API, suitable for integration with the Daura Refinery of the Midland Refineries Company.

Three upgrading pathways were assessed: Solvent De-Asphalting (SDA), Delayed Coking (Coker), and Hydroconversion (HDC). Each option was analyzed in terms of technology maturity, operational safety, scalability, and economic feasibility. A phased development approach (140 KBD → 210 KBD) was also examined.

Among the options, SDA was identified as the most reliable and practical for Iraq. It provides shorter payout time, balanced investment costs, and stable operations. Economic assessments confirmed improved yields of gasoline, LPG, kerosene, and diesel, with significant reduction in heavy fuel oil residues. By-products such as pitch, coke, and sulfur were shown to have value in power generation, road asphalt, and cement industries.

The upgrading of East Baghdad crude is essential to Iraq's energy strategy. It enables greater utilization of heavy crude reserves, supports refinery integration, improves economic margins, and contributes to sustainable industrial growth. SDA-based upgrading with phased expansion offers the optimal solution to unlock EB's potential.

Enhancing Asset Integrity Assurance Using API 510 and Advanced Inspection Technologies.

Yasir Salah Obaid

PETRONAS



PETRONAS

Abstract

Asset integrity management is a critical element of oil and gas operations, where unplanned downtime and excessive maintenance costs present major challenges to sustainable production. Conventional inspection methods often require extended shutdowns and lead to high costs, underscoring the need for innovative methods aligned with international standards.

This paper presents the application of Internal Rotary Inspection System (IRIS), an advanced non-destructive testing (NDT) technique, integrated with the API 510 code criteria to enhance asset integrity assurance and reduce downtime. A case study was carried out on a rundown air cooler (heat exchanger), where inspection was performed using an IRIS. The results were integrated with a Similar Service Assessment (SSA) in accordance with API 510 requirements. By applying this methodology, a comprehensive integrity assurance report was developed to confirm equipment fitness-for-service and to establish best practices for similar equipment in operation.

The findings demonstrated measurable reductions in downtime and maintenance costs while maintaining compliance with recognized international standards. Furthermore, the study highlights future opportunities for leveraging artificial intelligence (AI) tools to analyze inspection data and provide predictive recommendations, thereby advancing asset integrity assurance to a proactive and data-driven level.

This work provides valuable insights into the best practice of integrating advanced inspection technology with API codes. It offers a practical framework for cost-effective and reliable asset management, supporting the industry's goals of safety, efficiency, and sustainability.

Innovative Workflows for Brown Field Revitalization

Ayoub Sherik

SLB



Abstract

In a giant brown oil field, hundreds of wells were left depleted with significant residual oil due to strong aquifer support and poor water encroachment management. To recover this trapped oil, a comprehensive intervention program was implemented, leveraging tailored Y-tool systems to enable inflow profiling and minimize nonproductive rig time—addressing limitations of conventional ESP designs that ignored dynamic saturation changes.

The workflow began with an extensive review of nearly 100 wells, revealing common issues such as well integrity problems, solids production, and frequent ESP failures caused by declining oil rates. The integrated workover program included retrieving failed pumps, assessing wellbore integrity, installing ESP bypass systems, and performing cased-hole logging for saturation and flow profiling. Multirate and pressure transient tests were conducted to evaluate reservoir performance and guide remedial actions. This approach enabled dynamic reservoir evaluation, identifying bypassed hydrocarbons, watered-out zones, and integrity concerns.

The insights gained allowed for precise ESP system design tailored to each well's potential, reducing failures and optimizing production. Over 100 shut-in and underperforming wells were successfully restored, resulting in an additional 63,000 BOPD and a reduction of more than 90,000 BWPD. These results validated the effectiveness of the integrated methodology, prompting the operator to launch a second phase to further capitalize on the success. This project demonstrates the value of combining advanced diagnostics, tailored ESP solutions, and dynamic reservoir evaluation to maximize recovery and operational efficiency in mature fields.

Innovative Strategy of Mitigating Asphaltene Issue Via High-Pressure, high GOR Crude Huff-N-Puff Process

Tang Xueqing

Kuwait Energy Basra Limited



Abstract

Faihaa field in Iraq has multi-stacked hydrocarbon accumulations. Well production from shallow, Yamama A/B reservoir, was 2,800 BOPD, with asphaltene-onset-pressure (AOP) of 5,300 psia. The deeper reservoir, Yamama C/D, has reservoir pressure of 8,400 psia, and well production yields 1,500 BOPD volatile oil, with GOR of 2,400 scf/STB. Yamama A/B was first production. When pressure declines to lower than AOP, asphaltene deposition occurs. The operator has applied huff-n-puff development strategy, i.e. perforate the untapped Yamama C/D zones and allow high-pressure, high-GOR volatile crude to re-pressurize low-pressure Yamama A/B reservoir; during puff process, bottomhole flowing pressure (BHFP) is sustained above AOP to mitigate asphaltene deposition issue. The highlights are below:

Perforate Yamama A/B and Yamama C/D and run 3-1/2-in. tubing string with slide-sleeve door and packer. Open slide-sleeve-door and then allow high-pressure/high-GOR YC/YD crude to go into low-pressure Yamama A/B zones, soak and then resume production. The commingling production is from the upper-part, re-pressurized, Yamama A/B and lower-part Yamama C/D zones; High-GOR Yamama C/YD crude lifts the upper Yamama YA/YB during puff process. When BHFP reduces to the level of AOP, the new huff-n-puff cycle re-starts. Well production ranges from 4,000 to 6,000 BOPD, high-flow velocity can remove asphaltene deposition within the formation/production string. Results of pilot well FH-49 illustrate that this method can mitigate asphaltene issue (e.g. retrieved PLT tool is clean.), achieving stable well production with productivity index of over 2-fold increase in Yamama A zone. Oil gain is limited by the surface facilities.

From Idle to Productive: Injection Pattern Optimization and Surveillance-Driven Well Conversion in a Large Carbonate Field

Amir Azlan Bin Ahmanul

PETRONAS



PETRONAS

Abstract

Thief zones within the carbonate reservoir of Field X pose a significant challenge to reservoir management and production optimization. These high-permeability features, originating from natural fracturing and stimulation activities, disrupt fluid flow dynamics, resulting in early water breakthrough, uneven pressure distribution, and accelerated decline in oil recovery potential. Wells impacted by thief zones often exhibit elevated watercut and require artificial lift to maintain production.

Comprehensive diagnostic efforts—including injection logging surveys, dynamic reservoir modeling, and analysis of operational data—have been employed to identify and characterize these zones. Model calibration using well-level surveillance data has enabled improved zonal allocation strategies and informed field development planning. Despite these measures, thief zones continue to impair sweep efficiency and pressure support, underscoring the need for targeted mitigation.

This paper synthesizes geological, petrophysical, and operational insights to propose a structured approach for managing thief zones. Recommended strategies include injection conformance improvement, enhanced surveillance programs, and strategic well interventions. The findings aim to assist reservoir engineers in developing resilient production strategies that sustain long-term field performance in the presence of thief zones.

Emulsification and demulsification study of Ahdeb oilfield, Iraq

Liu Xue

Al- Waha Oil Company



Abstract

Ahdeb oilfield is located in the middle of Iraq. Since the oilfield was put into operation in 2012, emulsification has been found in about half of the oil samples, which has seriously affected the production of oil wells and the operation of electric pumps. The study on emulsification and demulsification of the oil field started in 2017. At present, it has completed 4 closed-loop research and demonstration stages: emulsification research, demulsifiers screening, field pilot test and upscale application. In the aspect of emulsification, based on laboratory experiments, the effects of shear mixing, water cut and asphaltene content on emulsification were studied. Secondly, combined with the analysis of a large number of production data, it is further demonstrated that the pump frequency of stable emulsified oil in X oilfield is 45Hz, the water content is 60%~70%, and the asphaltene content is 0.2 wt%~12 wt%. In the aspect of demulsifiers screening, a high-efficiency demulsifier was selected by parallel comparative experiments. The optimal dosing concentration was 100ppm. In the field application, the performance characteristics and demulsification effect are analyzed from the aspects of single well back pressure, production performance and oil samples. Combined with the big data analysis, the emulsification and demulsification of the whole oilfield are further reviewed. As a whole, it can be divided into 3 stages: the non-emulsification period from 2012 to the beginning of 2014, the emulsification intensification period from the beginning of 2014 to 2018, and the emulsification control period from the end of 2018 to the present.

Boosting Iraq Sandstone Acidizing: A Novel Single-Step Fluid Approach for Migratory Clays Damage Removal in South Iraq

Nikita Kiselev / Ilyas Islyamov

SLB



Abstract

Sandstone acid stimulation is a widely employed used as a technique to enhance oil recovery in South Iraq field by improving permeability and removing near-wellbore damage. The process is often hindered by a range of technical and operational challenges. This study introduces a novel approach to overcome these challenges and improve the success rate of sandstone acidizing treatments.

The effectiveness of sandstone acidizing treatments is constrained by:

- The presence of acid-sensitive clays.
- Secondary and tertiary reactions between acid and formation minerals.
- The tendency for sludge and emulsion formation.
- Vertical permeability heterogeneity across the target intervals.

To address these challenges, was developed and implemented a multi-pronged approach designed to optimize sandstone acidizing treatments. Central to this approach is the integration of a software simulator, which combines reservoir petrophysical and treatment fluid chemical data to achieve objectives:

- Selection of formation-safe fluids.
- Optimization of fluid volumes and injection rates.

This integrated workflow ensures a comprehensive and data-driven acidizing design, reducing uncertainties and improving treatment outcomes.

Laboratory core flow tests demonstrated that the novel fluid system mitigates the near-wellbore damage typically associated with HF-based systems. Results were validated using field core samples, software simulations and field trials with flowback and post-treatment production monitoring.

The novel fluid system represents a breakthrough in sandstone acidizing by combining advanced chemistry with data-driven design. The integration of laboratory, simulation, and field data underscores the fluid's ability to address long-standing challenges in high-temperature sandstone formations, paving the way for improved recovery rates.

From Spreadsheets to Smart Dashboards: Digital Surveillance of a Giant Carbonate Reservoir Using Power BI and Power Apps

Fahmi Amni Mustafaal Bakeri

PETRONAS



PETRONAS

Abstract

Monitoring a large, complex field like Field-X—with over 150 wells—poses major challenges, particularly as rising water cut and scale formation threaten productivity. Surveillance engineers require a proactive, cost-efficient system to minimize well idling and ensure operational continuity. This paper presents a tailored digital surveillance solution, developed using Microsoft Power BI and Power Apps, that leverages existing enterprise tools and data sources for real-time, data-driven field monitoring.

A key challenge lies in the fragmented nature of surveillance data. Much of the most recent and relevant information resides in engineers' working files—uncaptured by formal databases. To harness this data and enable live monitoring, the team applied a structured five-step process: (a) identifying and storing data, (b) processing data from various formats, (c) modeling it into usable structures, (d) developing intuitive dashboards, and (e) creating an integrated, interactive display.

Three case studies highlight the system's practical benefits. Case 1 used dynamic data maps to optimize choke settings and injection balancing across patterns. Case 2 predicted water cut and scale trends using heat maps, allowing early mitigation through targeted interventions. Case 3 provided real-time tracking of data acquisition efforts, revealing execution gaps and aiding in resource prioritization.

Overall, the project demonstrates how simple, scalable digital tools can modernize surveillance workflows without waiting for enterprise-wide data governance or expensive platforms. By automating updates and integrating commonly used data, the solution minimizes manual tasks and empowers engineers to focus on strategic analysis. It is highly adaptable for other fields with similar technical and operational challenges.

Optimizing Openhole Horizontal Carbonate Stimulation with Real-Time DTS and Engineered Diversion Strategies

Alaa Elkaragi

SLB



Abstract

This paper presents a two-stage stimulation strategy designed to enhance reservoir contact in a horizontal open-hole carbonate well in Block 9, Iraq. The approach integrates real-time distributed temperature sensing (DTS) via fiber-optic-enabled coiled tubing (CT) with advanced diverter systems to improve fluid placement, zonal coverage, and stimulation efficiency.

In the first stage, CT was used to deliver acid precisely to the toe section, targeting low-injectivity zones. The second stage involved high-rate bullheading to stimulate the remaining lateral intervals. DTS data were acquired before and after each stage, enabling real-time diagnostics and dynamic optimization of the fiber-reinforced viscoelastic diverter system. This allowed for effective diversion away from water-bearing zones and improved stimulation coverage.

The intervention led to a 350% increase in injectivity from the toe treatment and an additional 150% from bullheading, resulting in a cumulative 1000% improvement. Post-stimulation production reached 2,000 BOPD with zero water cut. FH-52 is currently the best Mishrif producer in Block 9 Field, highlighting the success of this integrated approach.

This case represents the first deployment of fiber-optic DTS in this field, significantly improving operational confidence and reservoir understanding. The methodology provides a replicable framework for stimulating complex carbonate reservoirs and offers valuable insights for future optimization using advanced fluid systems and real-time data integration.

Water Production Control Methods in Planning The Development System of a Massive Reservoir Under Geological Uncertainties

Ivan Domolazov

Lukoil



Abstract

In the development of oil reservoir in the absence of a natural aquifer, efficient field development and achieving the target oil recovery factor are not feasible without implementing reservoir pressure maintenance (PM). Water injection remains the most widely used PM method for conventional oil reservoirs. However, once waterflooding begins, a gradual increase in produced water is inevitable over time.

Accurate forecasting of water production from production wells is essential for enhancing operational efficiency and has a significant impact on the design of downhole equipment, surface facilities and field development capital expenditures. In carbonate reservoirs, predicting when and how quickly water will break through to production wells is particularly uncertain. Several key factors influence this process, including:

How evenly PM is implemented;

Production rate strategy, reservoir drawdown intensity;

Heterogeneity of geological properties (porosity, permeability);

Presence of permeability anisotropy, especially crucial for inclined or horizontal wells;

Existence of high-permeability streaks or "super-k" zones and their thickness.

The subject of this study is oil reservoir, which is mainly composed of reefal carbonate deposits and characterized by a massive reservoir type with thicknesses of up to 120 meters across main development area. OWC was not observed during the exploration phase. Well pattern is an inverted 9-spot, with 126 wells planned for the Contract term.

The primary objectives of this work are:

To provide a detailed assessment of how the above-listed factors affect water production forecasting; to demonstrate practical methods for managing water production to optimize oil recovery rate in line with international best practices.

Hydrogen Sulfide (H₂S) Risk Management in Siba Gas Field

Ali Al-Rehaimi

Kuwait Energy Basra Limited



PETRONAS

Abstract

Siba Gas Field in southern Iraq, operated by Kuwait Energy Iraq (KEI), produces over 50 MMSCFD of gas with hydrogen sulfide (H₂S) concentrations reaching 600 ppm. H₂S is toxic, flammable, and heavier than air, making it a critical safety risk. Exposure above 100 ppm is immediately dangerous to life and health.

To manage this risk, Siba has implemented a multi-layered control strategy. Engineering measures include fixed and portable gas detectors, integration with the Fire and Gas System, emergency shutdown capabilities, SCBA stations, and scheduled maintenance. Procedural controls cover permit-to-work systems, real-time gas monitoring, emergency response plans, and specific H₂S management procedures.

Training is mandatory. All personnel complete H₂S awareness and SCBA certification. Drills and behavioral audits support ongoing readiness. KEI also uses gas dispersion modeling for high-risk scenarios.

Several incidents have led to improvements, such as adding detectors and increasing calibration frequency. Future enhancements include telemetry-linked monitors, drone inspections, and RFID-based muster systems.

KEI's approach aligns with IOGP standards and emphasizes continuous improvement. Lessons from Siba confirm that effective H₂S risk management relies on proactive systems, trained people, and a strong safety culture.

Injection Profile Control and Water Shutoff for Enhanced Oil Recovery in Heterogeneous Reservoirs: A Case Study from Ahdeb Oil Field, Iraq

Xue Heng

Al- Waha Oil Company



AL-WAHA PETROLEUM CO. LTD.

Abstract

This study presents the first successful implementation of injection profile control (IPC) and water shutoff (WSO) in Iraq. Water breakthroughs in horizontal wells are a big challenge for the development of heterogeneous carbonate reservoirs. For plugging water channels and improving oil recovery of Ahdeb oil field, IPC and WSO were conducted.

To realize the goal of blocking water but not oil, a polyacrylamide-based gel system was selected. To ensure the smooth injection of agent and protect the reservoir, the stepwise injection approach was proposed, and selective placement was achieved via controlled injection rates and pressure management. To accurately evaluate the effectiveness of IPC, DTS was utilized before and after the operation of IPC.

After the IPC operation in injector, Well A, the injection conformance was improved, and the injection pressure was increased. There are 6 adjacent producers around Well A. Among them, the obvious decrease of water cut was observed in 4 wells. However, water cut of the other 2 wells kept stable. After the WSO operation in producer, Well B, the water cut reduced from 81% to 65%, and the oil production improved. In general, the actual water decrease effect is better than the forecasting by simulation.

The application results in Ahdeb oil field demonstrated the effectiveness of gel-based IPC & WSO strategy for heterogeneous reservoirs. Meanwhile, the first successful implementation of chemical IPC & WSO in Iraq, also provided valuable insights for future water control and stable production of other carbonate reservoirs in Middle East.

Smarter, Smaller, Stronger: Deploying Gen 4.0 Dual Frequency Desalting in Iraq's Upstream Sector

Arun Goel / Marshal John Philip / Yi Liu

SLB



Abstract

Dual Frequency (DF) is an advanced electrostatic desalting technology that applies a high-frequency modulated AC-DC field to improve droplet coalescence. This enables more compact vessel designs and drives significant reductions in CAPEX, operational footprint, and emissions—critical advantages in facility design and production operations. DF has a strong installation base in the Rumaila field, Basra, Iraq, where it supports reliable salt removal under variable field conditions.

The latest Generation 4.0 DF, launched in 2019, features enhanced waveform control and a high-efficiency power unit, extending its operating envelope to accommodate higher fluid temperatures and voltage fluctuations. Optional cloud-enabled monitoring enables real-time performance optimization. Compared to conventional AC-based treaters, DF systems have demonstrated up to 82% lower power consumption, reducing OPEX and CO₂ emissions.

Deploying DF Gen 4.0 in Iraq required targeted stakeholder engagement to overcome initial unfamiliarity. SLB conducted technical workshops, pilot trials, and collaborated with national and international oil companies and EPCs to validate performance and ensure seamless integration into existing facilities. The technology has since received approval and is now being commissioned in multiple projects.

This presentation provides a comprehensive overview of the DF Gen 4.0 deployment process in Iraq—from technology evaluation and system design to operational startup. It highlights the critical role of electrostatic technology innovation in enhancing production operations and facility performance while aligning with long-term sustainability goals.

Advanced Asphaltene Characterization and Integrated Modeling in the Yamama Reservoir, Iraq: Unlocking Flow Assurance and Production Reliability in a Complex Carbonate System

Khursund Salman

Dragon oil



Abstract

The Yamama reservoir in Block 9, Iraq, is a prolific carbonate system currently producing under a plateau strategy of 90,000 BOPD. However, persistent asphaltene-related flow assurance challenges—particularly in the near-wellbore region, reservoir matrix, and surface flowlines—threaten the sustainability of production. Field surveillance has revealed that pressure depletion below the asphaltene onset pressure (AOP) is triggering precipitation and deposition across Yamama sublayers A through D, resulting in frequent downtime and reduced output, especially in zones near the Iran border.

Successful Commingled Production of Two Carbonate Reservoirs With 1200psi Pressure Difference and Prone to Asphaltene Deposition

Mehdi Seyyedsar

Pasargad Energy Development Company (PEDC)



Abstract

Several solutions were considered for producing from two isolated reservoirs with a 1,200 psi pressure difference. The most straightforward solution is drilling a well for each reservoir. While this would offer the best reservoir management option, it doubles the cost of production.

Producing from the deep reservoir first and then the shallow one was a simpler option, but it would delay production and harm the project's economics.

Another approach was using intelligent completions for independent control. However, this was not viable due to the pressure of our deep (8,800 psi) and shallow (10,000 psi) reservoirs. The 900 psi inlet pressure of the separation unit allows a varying range of 3000 to 5000 psi drawdown from both reservoirs which exceeds the 1,500 psi limit of intelligent completions. Therefore, it would limit production rates and increase the risk of asphaltene deposition.

Dual completion systems were also ruled out because the 7-inch production liner is too narrow for a dual packer system.

Eventually, we used a single commingled completion to produce from both reservoirs at once. Response to the concerns about cross-flow, stimulation, flow assurance, and reservoir management were carefully detailed by our team. A successful pilot was conducted, achieving a production rate over 8,000 BOPD, which is double the average rate of our single-reservoir wells. This work details the strategies that enabled our success.

Optimizing Financial Auditing To Achieve Operational Cost Savings

Doaa Abed

PETRONAS



PETRONAS

Abstract

Effective financial auditing in upstream operations is often underestimated as a source of cost-saving potential. This paper presents a structured and systematic approach implemented within one of the operating assets in Iraq to enhance financial oversight in contractor invoice processing. The result is measurable cost savings and improved process transparency.

The existing invoice processing cycle required coordination across multiple departments, including operations, contracts, engineering, and finance. This often led to delays and errors due to incomplete or mismatched supporting documents, improper tax deductions for Iraq-based contractors, lack of real-time tracking for PR/RO and SCC status, and inconsistent compliance with LOA guidelines. These issues resulted in invoice disputes, delayed payments, potential overpayments, and audit findings. The lack of a uniform system for internal tracking further compounded the inefficiencies.

A revised auditing workflow was implemented, focusing on five key areas: i) Invoice Pre-Check System, ii) Stamping and SAP Entry, iii) Multi-Tiered Verification, iv) Contractor Confirmation and Final Release, and v) Internal Records. This initiative prevented payment errors, reduced turnaround time, and supported better fiscal governance. It improved the auditing process of contractor invoices by plugging financial leakages, reducing errors, ensuring tax compliance, and ultimately shortening the invoice lifecycle.

Within the first 12 months of applying this approach, a 35% reduction in invoice processing time was observed, decreasing from an average of 20 days to 13 days. Additionally, the avoidance of duplicate payments for at least three contractor submissions, totalling an estimated USD 190,000, was achieved.

Advancing Upstream Industry with Pasargad Energy's UIA: RAG-Powered Intelligent Assistant

Alireza Shahpouri

Pasargad Energy Development Company (PEDC)



Abstract

The Pasargad Energy's Upstream Intelligent Assistant (UIA) introduces cutting-edge AI tailored for oil and gas exploration and production activities. Historically, experts in this field have invested countless hours manually searching through massive number of technical guides, operational documents and reports by hand. While the approach was wasteful and prone to errors. Since now, there hasn't been a specialized, conversation-based tool designed specifically for upstream challenges. As the challenges in exploration, drilling, and extraction grow more intricate, there's a growing need for intelligent tools that improve access to data, increase efficiency, and support decision-making grounded in reliable insights.

The UIA operates as a cutting-edge, digital aide—resembling modern chat interfaces, yet precisely customized for upstream industry insights. It harnesses a Retrieval-Augmented Generation (RAG) architecture to supply accurate, situational appropriate responses pulled from curated, domain-specific data vaults. Its core language models are refined with industry-specific terminology and adapted to handle both Persian and English materials, ensuring effective understanding and output in both. Individuals can communicate using natural language, adjust their queries step by step, and get prompt, targeted feedback, which boosts process efficiency, user-friendliness, and data exchange across office staff and fieldwork crews.

By minimizing data clutter and expediting searches, the UIA frees up experts to focus on deeper evaluations and hands-on tasks. Its flexible design supports future growth into downstream, utility, and other related fields. Upcoming enhancements will adopt advanced customized models, extend language capabilities, and cover more specialized areas, positioning the UIA as a vital, adaptable element in smart energy operations.

Digital Integration for Operational Excellence: Case Study of a Partial Oil Field Shutdown in a Oilfield Gathering System

Haider Waleed

Kuwait Energy Basra Limited



Abstract

Summary: This case study examines the execution of critical maintenance activity by planning software during a partial shutdown of an oil field's pipeline system, impacting approximately 30,000 barrels of oil per day (KBOPD) of production from one of three field wells manifolds. The planned downtime was strategically utilized to perform multiple high-priority tasks, including cleaning a 20-km, 20-inch crude pipeline via pig launcher/receiver, replacing a faulty pipeline indicator, and conducting wellhead valve replacements on two separate wells.

Historically, shutdown preparation required two to three days for assembling documentation P&IDs, 3D models, equipment tags, and ERP work orders due to manual workflows. By integrating a specialized digital documentation platform, the preparation process was reduced to 15 minutes. The system enabled instantaneous compilation, review, and distribution of work packages to all operational teams, improving coordination and minimizing human error risk.

The approach delivered measurable gains in planning accuracy, reduced manpower idle time, and optimized resource allocation. Furthermore, digital integration enhanced safety compliance by ensuring real-time access to verified technical data. This operational model establishes a replicable benchmark for future partial or full-field shutdowns, demonstrating how digital transformation can significantly enhance efficiency, safety, and cost-effectiveness in high-throughput oilfield operations.

STAY CONNECTED!

Interested in discussing any of the abstracts presented in this volume? Or would you like to connect with a presenter or explore collaboration opportunities? Please contact us using the contact details below, and we will help facilitate the connection.

STAY TUNED FOR IPIW2027!

Stay tuned for the next edition of the Iraq Petroleum Industry Workshop (IPIW) in 2027, where industry leaders and experts will once again come together to share knowledge, innovation, and insights shaping the future of the energy sector.

Event Organizer

The Society of Petroleum Engineers International

Central Iraq Section

E | ipiw@spe-centraliraq.org

M | +9647878101664