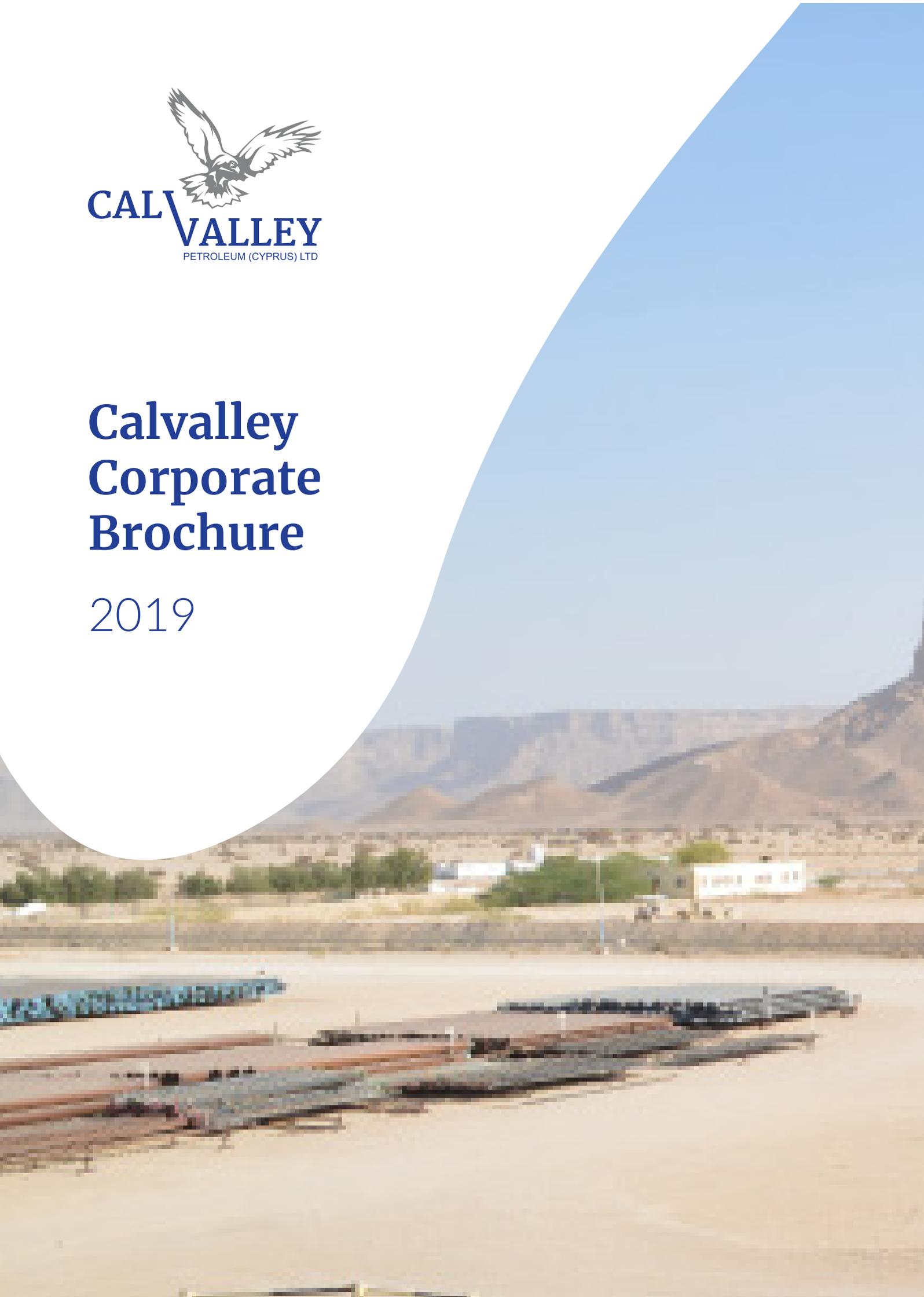




Calvalley Corporate Brochure

2019



Forward-looking statements

Certain statements included in this brochure constitute forward looking information. Such information is intended to provide information about management's current expectations and plans relating to the future. Readers are cautioned that reliance on such information may not be appropriate for other purposes, such as making investment decisions.

Although Calvalley Petroleum Cyprus Ltd. ("Calvalley" or the "Company") believes that the information reflected in such forward looking information is reasonable, undue reliance should not be placed on forward looking information because Calvalley can give no assurance that such expectations will prove to be correct.

Forward looking information is based on current expectations, estimates and projections that involve a number of risks and uncertainties which could cause actual results to differ materially from those anticipated by Calvalley and described in the forward looking information.

The forward looking information contained in this brochure is made as of the date hereof and Calvalley undertakes no obligation to update publicly or revise any forward looking information. The forward looking information contained in this presentation is expressly qualified by this cautionary statement.

Other notes

*Where "Calvalley" or the "company" is referenced in this brochure, it refers to the legal entity 'Calvalley Petroleum Cyprus Ltd.'
Calvalley has 50% of the Production Sharing Agreement for the Block 9 concession in the Republic of Yemen and is operating it on behalf of the joint venture partners. All figures in this brochure represent 100% of Calvalley's working interest.*

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Investing for the future

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Sustainability

Communities
Environment
Health & Safety

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Operations

Production
Appraisal
Exploration
Facilities and technology

Overview

*Place-
holder*

John Doe

LOREM IPSUM DOLOR



Welcome to Calvalley

I am delighted to welcome you to our corporate brochure.

Calvalley is a company with strong potential for growth, underpinned by ambitious plans for a long and successful future. We are very proud of our company's history since 1996 as a highly successful, technically adept operator in oil and gas, enjoying strong finances and excellent community relationships.

What differentiates Calvalley is a unique combination of experience, technical excellence, financial stability and good management. In 2019, more than ever, our distinctive 'Local First' model allows us to operate to high standards at low costs. We implement a lean hiring policy relying on strong communications and secondment of key staff to local offices for efficient management. We also strive to deploy and retain local staff, whose decades of experience in oil and gas have culminated in technical expertise and the close attention to rigorous process which characterises safe and efficient field operations. Knowing that we are only as strong as the people who support us, we are also building a real economic and educational future for the communities in which we work.

Calvalley currently operates in the Republic of Yemen, having recently restarted production in Block 9, one of the highest-potential concessions in the country. We have built and maintained a good relationship with the local communities through difficult times and our employees have many years of experience in Yemen, with this specific asset. Our shareholders also have knowledge of the local economy, the local culture, and the local approach to business.

Conflict situations bring challenges to all oil and gas companies, in many cases relating to the loss of the technical service providers necessary to support production. Not many Western oil companies can operate in these environments. We are proud to have taken on these challenges successfully and be able to resume production in 2019.

A big part of making this happen has been the expertise and loyalty of our teams on the ground. We are proud to have provided high levels of training, safety and job security for all our Calvalley field staff – and to have paid them even for the period in which production was halted by the conflict in Yemen. We considered this our duty, and we have benefited by becoming one of the few oil and gas producers to be able to resume production at this time.

Over the next three years, we expect to be able to increase production significantly through investment, and based on our strong relationships locally we will work to acquire further concessions in Yemen. We also plan to acquire or farm in to other oil and gas assets, focussing on North Africa and the Middle East, where we are currently evaluating fields in Somaliland and Sudan.

We look forward to many more decades of production, expansion, and positive impact on the communities in which we live and work.

Overview

Calvalley at a glance





CALVALLEY AT A GLANCE

Overview

Calvalley Petroleum (Cyprus) Ltd is an international oil and gas company operating in the North Africa and Middle East region. Calvalley has a consolidated working interest of **39.52** MM barrels of proven reserves (McDaniel & Associates, 2014), driven primarily by our largest current area of operation, Block 9 in the Republic of Yemen.

Calvalley has a history of over two decades of exploration, development and commercialisation of oil and gas properties. Our team, primarily based in Calgary, Cairo and the Republic of Yemen, has extensive industry experience combined with proven technical excellence. We maintain low cost, highly efficient operations, supported by deep knowledge and understanding of the often challenging areas we operate within. Our 'local first' approach is optimal for both effective operations and ensuring we work sustainably within our regions and communities, for mutual long-term benefit. We are committed to adding value to our local communities and protecting the natural environments in which we operate.

Calvalley is financed by a strong and experienced group of investors, **Yung Holding**, who have made investment commitments of [quantity, time] to expand and optimise Calvalley's long-term operations. **Yung Holding** draws on a strong bank of experience in oil and gas, underpinned by financial stability from successful businesses across many sectors in the Middle East and beyond.



CALVALLEY AT A GLANCE

Our Vision

To set a long-term standard of excellence for low-cost, highly productive oil and gas operations in North Africa and the Middle East.

Our standard of excellence includes the following important elements:

- 1 Adding value to the people and communities in our areas of operation
- 2 Understanding and respecting local cultures and practices
- 3 Protecting and preserving the environment and surrounding natural ecosystems



Our Mission

We are focusing on two strategic goals:

- 1 Maximise the potential of our primary area of operation, Block 9 in the Republic of Yemen
- 2 Obtain new high-potential prospects in North Africa and the Middle East through acquisitions and farm-ins



CALVALLEY AT A GLANCE

Key facts and figures



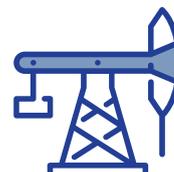
Block 9 Total Proved
(1P) reserves:

39.5 MMbbl



Block 9 Proved plus
Probable reserves (2P):

64.14 MMbbl



Block 9 Exploration
potential:

Unrisked 2C Best estimate resources:

1,705 MMbbl

Risked:

341 MMbbl

Reserves independently verified by McDaniel & Associates in an analysis conducted in 2014. Figures included throughout this document refer to findings in the associated report. Crude oil reserve figures were based on volumetric estimates considering all available data including structural and net pay interpretations, test data, production data, reservoir simulation, performance of analogous reservoirs and economics of development. The reserves were classified into Proved Producing ("PP"), Proved Developed ("PD"), Proved Undeveloped ("PUD"), Total Proved ("1P"), Proved plus Probable ("2P") and Proved plus Probable plus Possible ("3P") classes as defined in the Reserves Classification section of the report. For Contingent Resources, the general cumulative terms low/best/high estimates are denoted as 1C/2C/3C respectively. No specific terms are defined for incremental quantities within Contingent Resources.



Gross production capability forecast based on 2P will reach max

10,034 bbl/d.

Calvalley is now operating all assigned reserves, comprising four light and three heavy oil fields with

54 development wells.

All pre-existing field facilities (wells, tanks, etc.) have been recently reconditioned and refurbished, with

30 wells ready to produce.

Contingent resources include a number of appraisal wells and

41 exploration targets.



CALVALLEY AT A GLANCE

A strong position

Calvalley is in a strong financial and strategic position . Highlights include:

- Low historical cost structure providing strong netbacks and earnings
- Low-risk, highly promising development potential
- Varied portfolio of prospects and leads
- Strong balance sheet
- Forward-looking management
- Excellent local knowledge and community relationships
- A growing, diversified portfolio across the MENA region
- Currently and historically debt free

Existing discoveries

Recent reprocessing of significant quantities of seismic data has enabled Calvalley to analyse existing discoveries and exploration potential of our largest current area of operation, Block 9 in the Republic of Yemen.

Based on proved producing (PP) fields, as classified by McDaniels (report of 2014), we have calculated that:



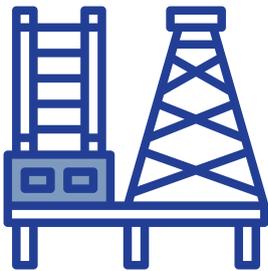
An estimated
22.9%
of known reserves
have been extracted
during the past
14 years.



An estimated
77.1%
remain to be
extracted over the
next decade.

Exploration potential

Calvalley's producing fields are some of the highest-producing and most promising in the Republic of Yemen. If all exploration potential and contingent resources are included in the analysis



It is estimated that as little as **3.7%** of Calvalley's total hydrocarbon potential has been extracted in the last **14 years**, making Block 9 the most attractive asset in Yemen at the present time.

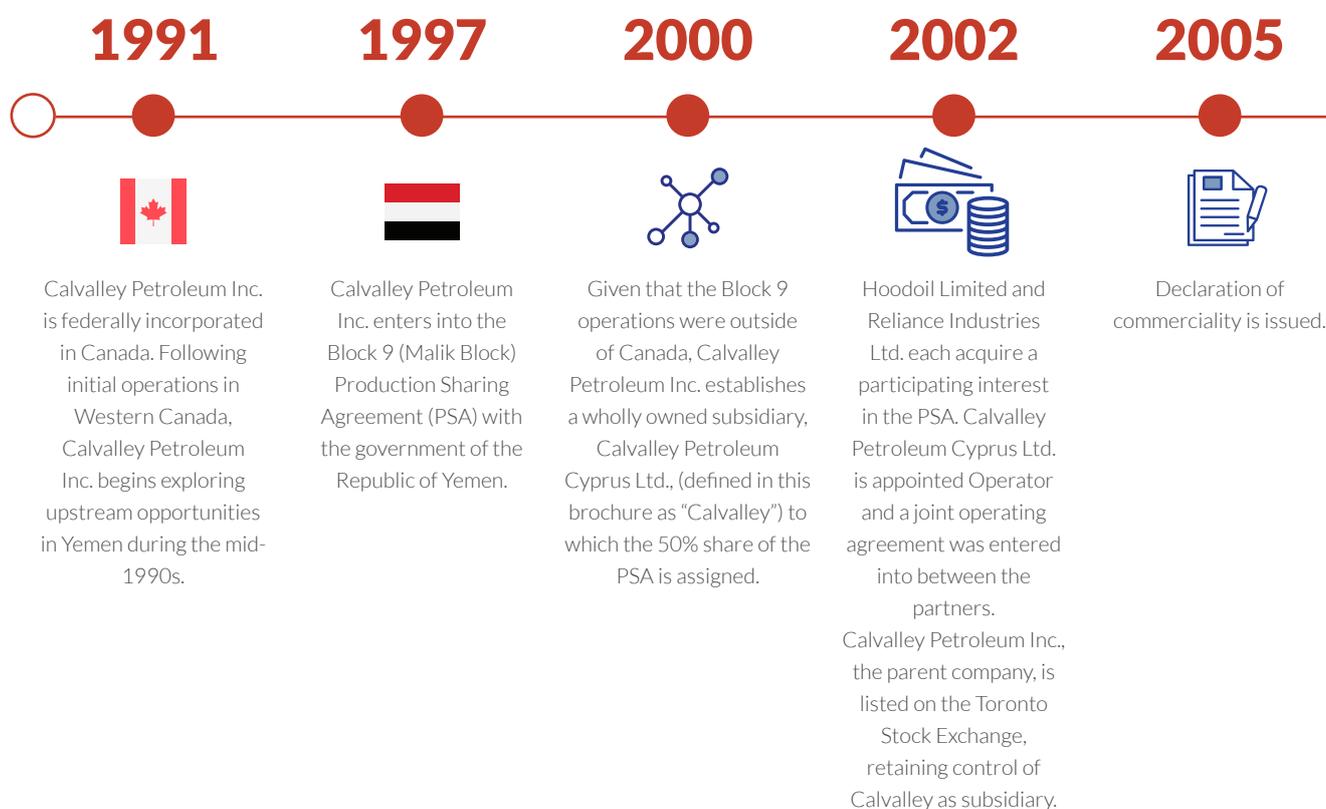
This constitutes a tremendous opportunity and an exciting challenge. Calvalley's technical expertise, strong investor commitment and local knowledge make us well-equipped to produce successful results.



CALVALLEY AT A GLANCE

History of Calvalley

Our history represents the journey we have been on: the experience, the milestones, the value and most importantly the people that make up Calvalley (Calvalley Petroleum Cyprus Ltd.) as it is today.



2012



A subsidiary of Indonesia's Medco Energi purchases a 25% interest in Block 9 from Reliance Industries Ltd.

2014



During 2013 and 2014 the conflict in Yemen made it increasingly difficult for Calvalley Petroleum Cyprus Ltd. to carry out operations. After extensive deliberations, the Board of Directors of Calvalley Petroleum Inc., the parent company, determined that it would be appropriate to provide shareholders with the opportunity to choose whether to continue their investment in Yemen.

2015



Hostilities in Yemen escalate; with operations now impossible, force majeure is declared. Judging it probable that force majeure would continue for an extended period, the Alberta Court of Queen's Bench approves a plan of arrangement offering shareholders the option to receive a cash distribution or remain in the project. Calvalley Petroleum Inc. delists with high levels of working capital, maintaining ownership of Calvalley Petroleum Cyprus Ltd.

2016



Following the plan of arrangement, Yung Holding Ltd. acquires all issued and outstanding shares in Calvalley Petroleum Cyprus Ltd., which remains operator of Block 9. Through this acquisition, the business gains fresh expertise and investment for an exciting phase of expansion and development towards reaching its full potential.

2018



Calvalley Petroleum Cyprus Ltd. initiates steps to resume production on Block 9.

2019



Production is successfully resumed in July 2019.

Our operations around the world

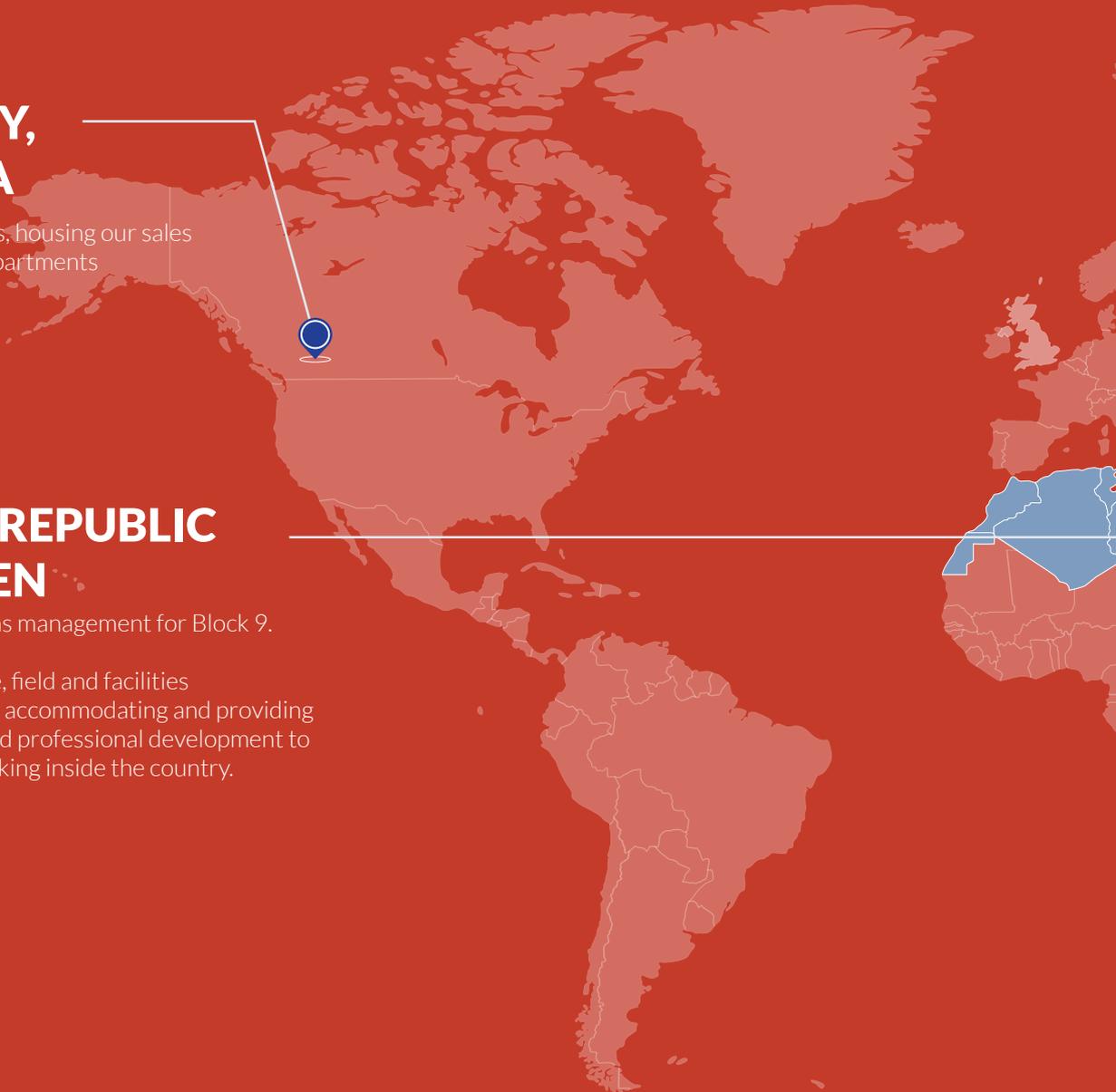
CALGARY, CANADA

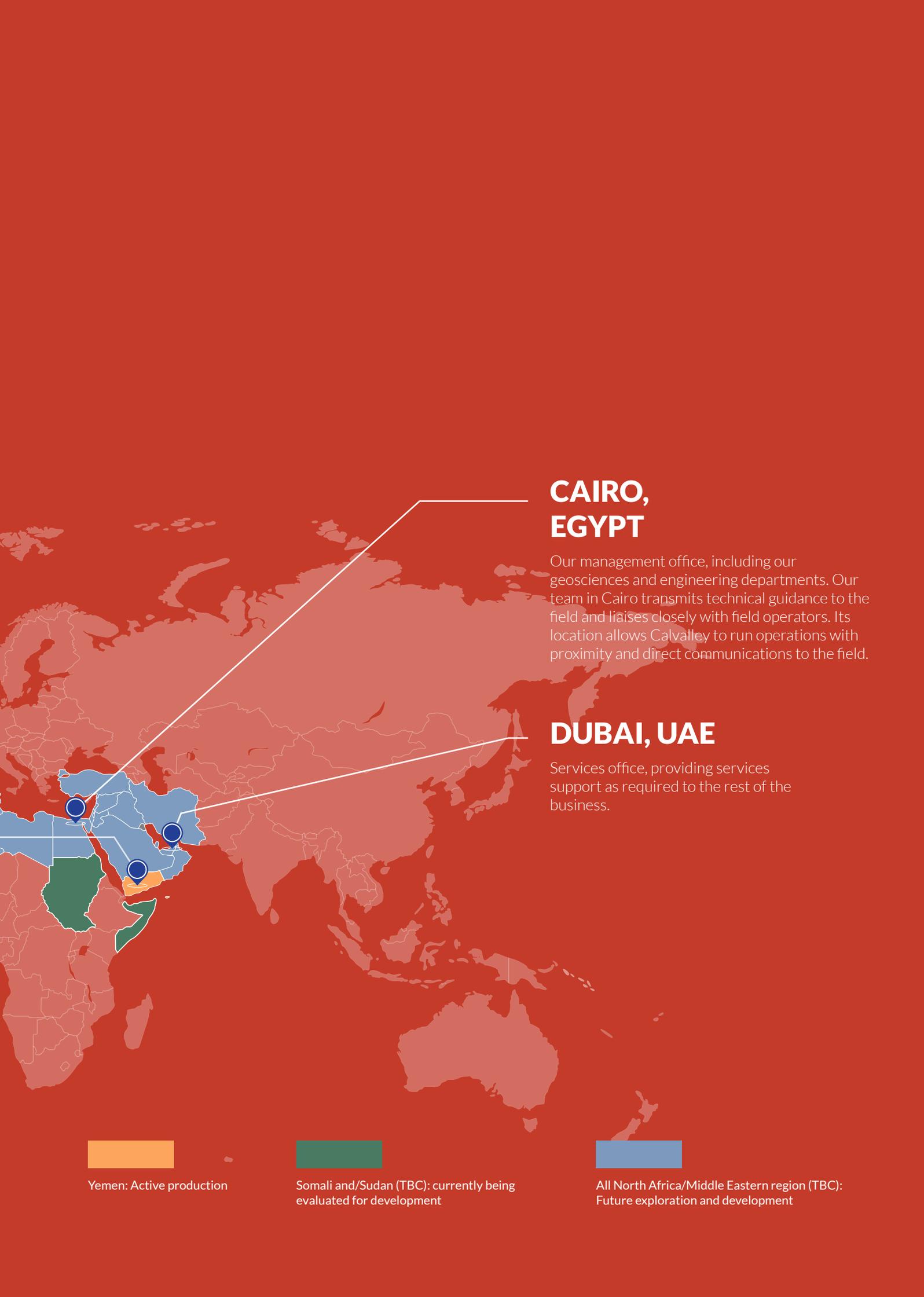
Our Headquarters, housing our sales and marketing departments

SANA'A, REPUBLIC OF YEMEN

Sana'a - Operations management for Block 9.

Block 9: Site office, field and facilities management, plus accommodating and providing on-site training and professional development to all employees working inside the country.





CAIRO, EGYPT

Our management office, including our geosciences and engineering departments. Our team in Cairo transmits technical guidance to the field and liaises closely with field operators. Its location allows Calvalley to run operations with proximity and direct communications to the field.

DUBAI, UAE

Services office, providing services support as required to the rest of the business.



Yemen: Active production



Somali and/Sudan (TBC): currently being evaluated for development



All North Africa/Middle Eastern region (TBC): Future exploration and development

The background of the page is a photograph of industrial machinery, likely from a mining or processing plant. It features large, dark-colored pipes, valves, and structural components. A large, curved blue shape is overlaid on the left side of the image, containing the text. The overall color palette is dominated by blues and greys.

Corporate Governance

Calvalley leadership
Our Board of Directors and
Management Team



CORPORATE GOVERNANCE

Corporate governance at Calvalley

Calvalley's leadership bring high levels of industry experience and expertise, dynamism, and a willingness to set well-informed and ambitious strategy to enable Calvalley to excel and extend into new frontiers for rapid gains and long-term expansion.

In conjunction with its listing on the Toronto Stock Exchange in 2002, Calvalley Petroleum Inc. developed a Code of Conduct, Reserves Evaluation policy, Health & Safety and Environmental policies along with other governance mandates to ensure appropriately high levels of performance. As a private company since 2015, we are proud at Calvalley to continue to govern ourselves by these high standards.

Board of directors



Ahmed Nabil Saeed
Board of Directors

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Alex Maleas
CEO & General Manager,
Board of Directors

Alex Maleas brings more than a decade of successful management at the level of General Manager/CEO in oil and gas exploration and production, with proven ability to build, inspire and motivate a strong and reliable team of professionals and to maintain low cost operations.

His experience includes 39 years of energy sector experience, including ten in refinery planning and 29 in oil & gas exploration and production, having served as senior manager and technical expert as well as in key positions in planning and economics. His expertise includes reservoir engineering and petrophysics, oil and gas reserves evaluation and, in due diligence, leading teams of experts for the purpose of asset acquisitions.

Alex gained more than half his technical experience with industry giants Shell and Saudi Aramco, and has worked in Libya, Saudi Arabia and Egypt as well as handling assets in Yemen and the USA from head office technical positions.

His educational background includes a BSc in Engineering (National Technical University of Athens, Greece) and MSc in Energy Economics (McGill University, Montreal, Canada).



Thomas E. Valentine
General Counsel

Tom Valentine has more than 30 years of experience in the oil and gas industry, both as a barrister and a solicitor.

In 2002 and 2003, Mr. Valentine lived in Doha, Qatar, where he was senior counsel (projects) with Qatar Petroleum. While in Qatar, Mr. Valentine was responsible for a number of international gas and LNG projects, including projects in the United Kingdom (Qatargas II), India (RasGas) and Spain (Endesa Generacion).

Since returning to Canada Mr. Valentine's work continues to focus on oil, gas (including LNG) and project development work, including fiscal regime analysis and negotiations, E&P work, joint venture structuring, joint operations issues, purchase and sale agreements, and decommissioning obligations.

He currently provides legal advice to various gas and LNG projects (both upstream and downstream) in Asia, Nigeria, South America, North America and the Middle East. Each year Mr. Valentine delivers lectures and teaches workshops on natural gas and LNG contracts in Perth, Doha, London, Dubai, Singapore, Seoul, Algeria, Brunei, Johannesburg, Rio and Mozambique.

CORPORATE GOVERNANCE: BOARD OF DIRECTORS



New Member
Chief Financial Officer

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New Member
Chief Financial Officer

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Harant Shimoon
Operations
General Manager

Harant Shimoon is currently Calvalley's acting General Manager in Sana'a, having joined the Yemen team in 2003 for the construction of its central processing facility after a decade working with Calvalley Petroleum Inc. in Canada.

Harant builds on a long and successful career working hands-on in various oil and gas related construction projects and management, beginning with Power Plant in Ft. McMurray in 1974, then moving to Bechtel Canada for the construction of the Syncrude oil sand plant. In 1993, he joined CPI, later the parent company of Calvalley, on projects for the construction and operation of a sour gas plant and related oil production facilities in Rainbow Lake, Alberta.

Harant Shimoon is a graduate of Southern Alberta Institute of Technology.



Tarek Yousri
Chief Financial Officer

Tarek Yousri has over 29 years' experience in auditing and accounting with almost a quarter of a century dedicated to oil and gas accounting, encompassing extensive sector-specific experience of international Production Sharing Agreement projects and finance and a long record of accomplishments in upstream operations in the Egyptian market.

Tarek joined Calvalley from Edison International S.p.A. Exploration & Production (formerly under EDF Group), where he worked as Deputy Finance General Manager in its joint operating company, Abu Qir Petroleum Co., for over three years in Alexandria. Mr. Yousri also previously held senior positions at OMV and LUKOIL, and has worked with Cargill, Johnson & Johnson and Arthur Andersen S.C.

Tarek is a Chartered Accountant (Egypt) and holds a BSc in Accounting and Auditing from Alexandria University.

CORPORATE GOVERNANCE: MANAGEMENT TEAM

Management Team



Galina Markarova
MSc, PhD
Exploration & Development
General Manager

Galina Markarova leads the company's exploration and development team, having made a number of oil discoveries in Block 9, Yemen and built a strong exploration portfolio for Calvalley over 14 years. She brings over 35 years of oil and gas industry experience to Calvalley, having previously worked with North American and Russian oil companies including EnCana and Rosneft.

Galina's expertise includes seismic acquisition, geophysical and geological interpretation and sedimentary basins analysis, with a proven track record in exploration, exploitation and new business development. She has discovered 17 commercially viable hydrocarbon fields in the Middle East, Central Asia and Europe, and identified and led evaluations of new exploration and production ventures worldwide.

Galina Markarova's qualifications include a doctorate in Geophysics and Geology from Moscow State University and an MSc degree in Geophysics, Geology and Petrochemistry from Gubkin University of Oil and Gas. She is a registered Professional Geoscientist in Alberta, a member of the Canadian Society of Exploration Geophysicists, and a member of the European Association of Geoscientists and Engineers.



Ashraf Abdelkhalek
Projects & Facilities General
Manager

Ashraf Abdelkhalek has extensive and varied knowledge in managing oil and gas projects and facilities, with over 30 years of industry experience in offshore and onshore construction and pipeline management, including production operations and the design and installation of new facilities.

Ashraf's roles have included responsibility for the devising of innovative solutions and implementation of new facilities and services in oil and gas operations, in particular the installation of production equipment, well flow lines, trunk lines and shipping pipelines for Egyptian oil and gas fields. Ashraf Abdelkhalek joined Calvalley in August 2018. His previous roles include 12 years in construction projects mostly gained at Vegas Oil & Gas S.A., NPIC and SDX Energy. Prior to that, he worked with Apache and RWE.



Dr Ahmed Hadi
Advisor to the CEO

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Financials

Financial performance and forecasts

Investing for the future





Financial structure, strength and backing



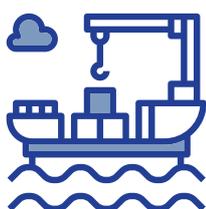
The company presently holds assets totalling approximately

\$366 million

comprising

\$35 million

in infrastructure,



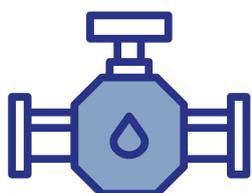
\$21 million

in inventory

and consolidated proven reserves of

\$310 million

based on estimates by McDaniel & Associates (report of December 2014)



equivalent to

62 MMbbl

(at \$5 per barrel).



Yung Holding

Yung Holding acquired Calvalley Cyprus Ltd. in 2016 with the intention of optimising and pursuing Calvalley's existing and future potential in oil and gas.

Yung Holding was created as a consortium of individual investors from one of the largest family business groups in the MENA region, to serve as an investment arm to the oil and gas industry. The investors draw on a strong bank of experience in oil and gas, underpinned by financial stability from successful businesses across many sectors in the Middle East and beyond.

Historically, Calvalley has always been debt-free, and this continues today.

INVESTING FOR THE FUTURE

Investing for the future

Decision to re-enter Yemen

In 2016, Calvalley's Board of Directors approved institutional restructuring of Calvalley Cyprus Ltd. to bring in a consortium of new investors.

In combination with the company's excellent local relationships, this has enabled the resumption of Yemen operations, even during this difficult time, through the financing of a work programme and budget of **35-45 million USD in surface and subsurface investments**, which brought the facility back into operation in 2019, with 30 wells ready to produce.

Near-term investment



Our budget for next year (2020) is in the range of

\$40-45 million

Priority activities to optimise the concession include:

- 1 Installing a new water injection system.
- 2 Drilling selected wells.

An ambitious programme of planned investments



Calvalley is set to invest approximately

\$200million

during the next five years, to ensure increased production and storage capacity, develop new wells and pursue potential acquisitions as listed above. This investment could grow even higher if stability returns to Yemen.

With the expectation that the exploitation of Calvalley's considerable remaining reserves will proceed rapidly over the next decade, as intended, the company is prioritising an increase in its reserve replacement rate. Calvalley is therefore actively evaluating opportunities along three lines:

- Acquisition of new fields in the North Africa and Middle East region.
 - In particular, we are currently evaluating fields in Somaliland and Sudan for potential development.
- M&A deals.
- Farming in to regional or international concessions, as a technically and financially proficient non-operator.

¹ Calvalley is 50% owner of the concession (owned by Calvalley and its joint venture partners) and is operating it on behalf of all partners. All figures represent 100% of the Calvalley's investment, reserves & production.

Financial forecasts

By producing **18% of consolidated proven reserves**, Calvalley has generated approximately **\$800 million** cash flow over the past **10** years of its production, running from 2005 until 2015 when force majeure was declared in Yemen.

Based on an investment model producing 2P reserves only, a conservative estimate places Calvalley in a production range of approximately

1.4 million barrels during its first year of production following resumption of operations in August 2019.



Ten-year production scenarios

Scenario 1

Continue as today, with minimum investment in three out of seven discovered fields

38 million barrels over 10 years

Scenario 2

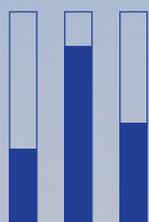
Pursue all 2P reserves in all seven discovered fields (no exploration)

67 million barrels over 10 years

Scenario 3

Pursue all reserves and contingent resources, including all exploration potential (maximum achievable)

300+ million barrels over 10 years



Projected returns are cautious in light of the lack of service industries and the existing political situation in Yemen, alongside fluctuations in oil prices.

P/1 P/2 P/3



Managing costs



Calvalley maintains a highly cost-efficient enterprise with competitive tendering, lean manpower and hiring policies including our successful 'Local First' approach, and low overheads through strategic location of regional offices for efficient communications and minimal day-to-day running costs.

Finance



We use industry-standard finance and accounting software for reliable and secure generation and analysis of financial processes and projections, maintaining of accounts, and secure storage of records.

Note: Calvalley is 50% owner of the concession (owned by Calvalley and its joint venture partners) and is operating it on behalf of all partners. All figures represent 100% of the Calvalley's investment, reserves & production.



Our People





OUR PEOPLE

Our people

We are proud of our people and their many decades of combined expertise in reservoir engineering, geology, geophysics, facilities and project operations. We recognise that a company-wide attitude which embraces consistent high standards and respect for good process is one of our most valuable assets. We seek out excellence, train rigorously, reward on the basis of merit, and listen to our employees.

The Calvalley corporate functions – administration, finance, Human Resources and IT – are a highly qualified and close-knit team. Procurement staff are currently located in Cairo for ease of communications and access to the main operating fields.

Calvalley has safeguarded the invaluable expertise the company built up in its workforce over the years by continuing to pay local field operators and maintenance crews during the period of paused production between 2015 and 2019.

Field maintenance staff include the Calvalley electricians and mechanics who keep the operating infrastructure functioning safely, smoothly and efficiently every day.

Our local field operators know their often-challenging work environments very well. We listen to their suggestions and comments, and by incorporating their knowledge we optimise not only our effectiveness and efficiency as an oil company but also our valued role as a respected local partner in the community.

Diversity

Currently there are 125 people working for Calvalley, with a diverse range of backgrounds and nationalities.

For our field operations, we prioritise hires from the local area. We employ people from across the local spectrum, without differentiation on the basis of different factions in the communities in which we operate, or any other basis or form of bias.

Calvalley embraces a rule of non-discrimination in the workplace. This, along with other principles of ethical conduct, is enshrined in our Ethics and Integrity policy. Everybody working at Calvalley, at every level of the organization, is required regularly to review this policy and is personally accountable for learning, endorsing, promoting and applying it to their own conduct and field of work.

Career advancement at Calvalley



As well as job security and training, we empower our employees to challenge the status quo and propose better methods. Communication is open between head office and the field. This strengthens employee participation and project ownership as well as enriching team knowledge and enhancing opportunities for career advancement. On this basis we have recently promoted some very capable people to higher positions with a better salary, actively demonstrating the message that intelligent performance is rewarded, in a merit-based work community.

In Calvalley's Block 9 operations in Yemen, Calvalley has invested heavily in training local employees and retaining their expertise, including offering pay for non-operative (conflict) years. As of 2019, all employees in Yemen are Yemeni with long experience in the field, including local management running operations.

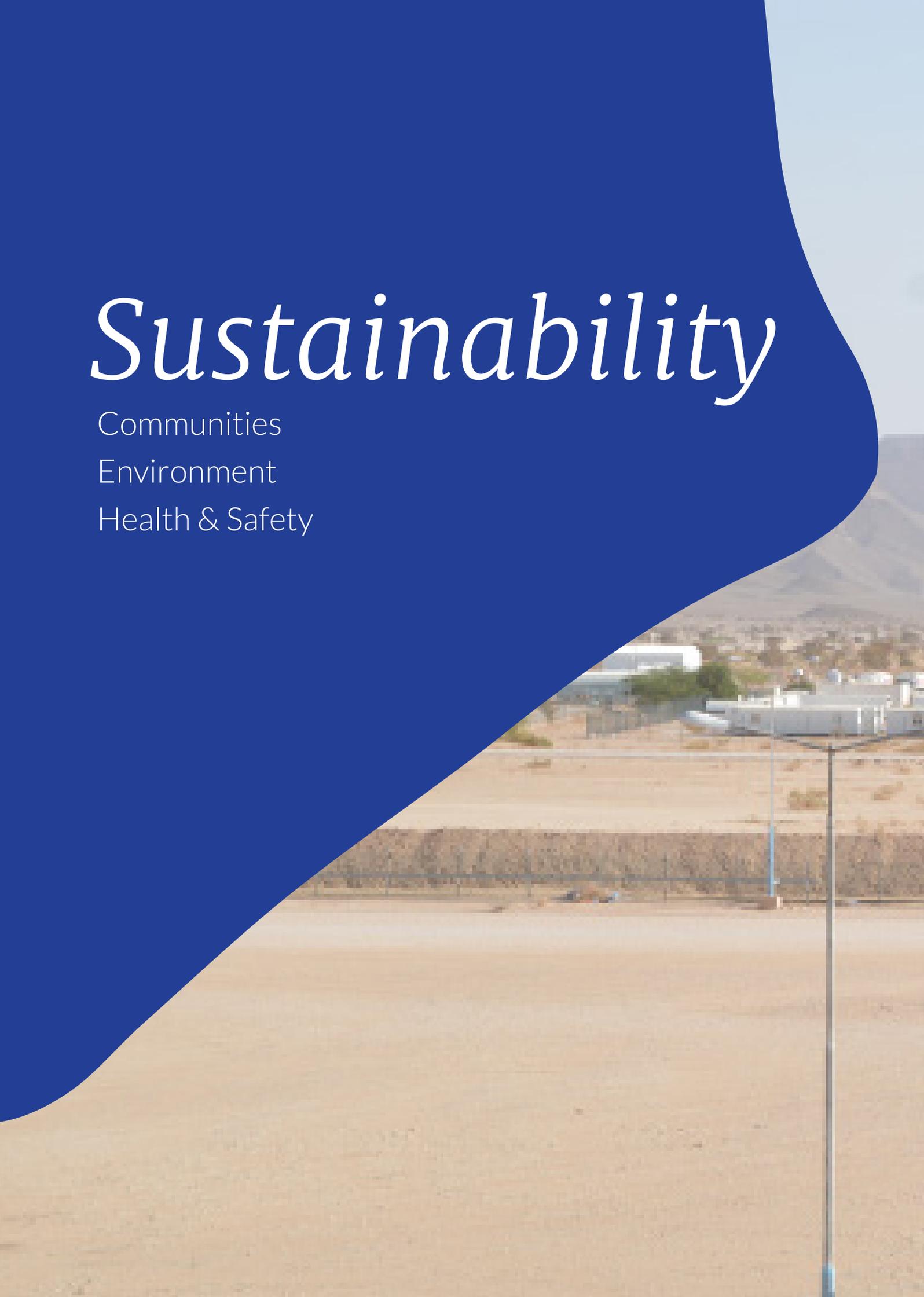
We are also committed to training Yemeni engineers, geoscientists and other specialised disciplines on a rotation programme.

Sustainability

Communities

Environment

Health & Safety





SUSTAINABILITY AT CALVALLEY

Sustainability at Calvalley

Local First: Adding value to our communities

Calvalley operates a 'Local First' strategy in training and hiring for technical operations and related services. We work actively with the communities in which we operate to create a local economic multiplier effect not only through direct hires but also, importantly, by creating indirect employment opportunities.

We see our community responsibility in terms of a strategic intervention for truly long-term mutual benefit, and so we strive for economic empowerment and sustainable networks.

Thanks to our strong financial position, Calvalley has been able to implement a considerable community program. In line with further investment in existing and potential operations, we expect to extend and expand this in the immediate future.

Owing to its 'Local First' policy and initiatives, Calvalley has played a leading role in building civil society in its fields of operation during the past few years, with contributions to the local community including:

- 1 Making basic resources available as a first priority (eg fresh water supply in hardship areas),
- 2 Primary and secondary education preparing learners for further vocational training
- 3 In-field and in-office training in geophysics, geology, and technical and support services for the oil and gas industry
- 4 'Above and beyond' commitment to job stability and security for Calvalley employees

We honour all agreements with the community of our workers and seek where possible to go above and beyond:

- Calvalley paid our workforce in the Republic of Yemen 30% of full salary during four years of ceased operations owing to force majeure although in no way obliged to do so
- Calvalley's new management also exhibited goodwill beyond the call of duty in rehiring the vast majority of workers from our Yemen operation on terms maintaining all their previous rights while providing an increase in salary
- We have further committed to rehire the remainder of local workforce as and when our activities in Yemen increase



SUSTAINABILITY AT CALVALLEY

Supporting community initiatives

Calvalley brings a real message of hands-on competence, commitment and better futures to the learners and workforces in our communities because by doing so we invest directly in the future of local people who are going to be providing us services and sustaining our own success in future.

In addition, Calvalley has supported many local projects in Yemen such as:

- 1 Building the Elementary school in Essaim
- 2 Drilling water wells and building hygienic storage tanks for drinking and domestic-use water in the village of Shooroge Al Bader water
- 3 Building hygienic water-storage tanks and running galvanized pipes to supply drinking and domestic-use water in the village of Raqa
- 4 Supporting the hospital in the town of Horaidha by subsidizing doctors' wages

Diversity

According to the terms of our 'Local First' policy, we prioritise hires mainly from the area. We employ people from across the local spectrum, without differentiation on the basis of different factions in the communities in which we operate, or any other basis or form of bias.

Calvalley embraces a rule of non-discrimination in the workplace. This, along with other principles of ethical conduct, is enshrined in our Ethics and Integrity policy. Everybody working at Calvalley, at every level of the organization, is required regularly to review this policy and is personally accountable for learning, endorsing, promoting and applying it to their own conduct and field of work.

Health and Safety

In conjunction with its listing on the Toronto Stock Exchange in 2002, Calvalley Petroleum Inc. developed Health & Safety and Environmental policies along with other governance mandates to ensure appropriately high levels of performance. As a private company since 2015, we are proud at Calvalley to continue to govern ourselves by these high standards.

Calvalley's experienced HSE manager and staff hold regular drills, meetings and training for all employees to ensure their workplace safety and continuing health in accordance with company policy.

Calvalley maintains safe and sustainable environmental practices as a vital element in the viability of today's oil and gas industry:

- Calvalley has maintained a record of zero spills on any of our sites.
- All water and gas produced are injected back into the reservoir in a closed system, in order to support the pressure.
- No waste water is left exposed on the ground
- Two lined ponds are used during excavations to prevent soil contamination.

Operations

Production

Appraisal

Exploration

Facilities and technology





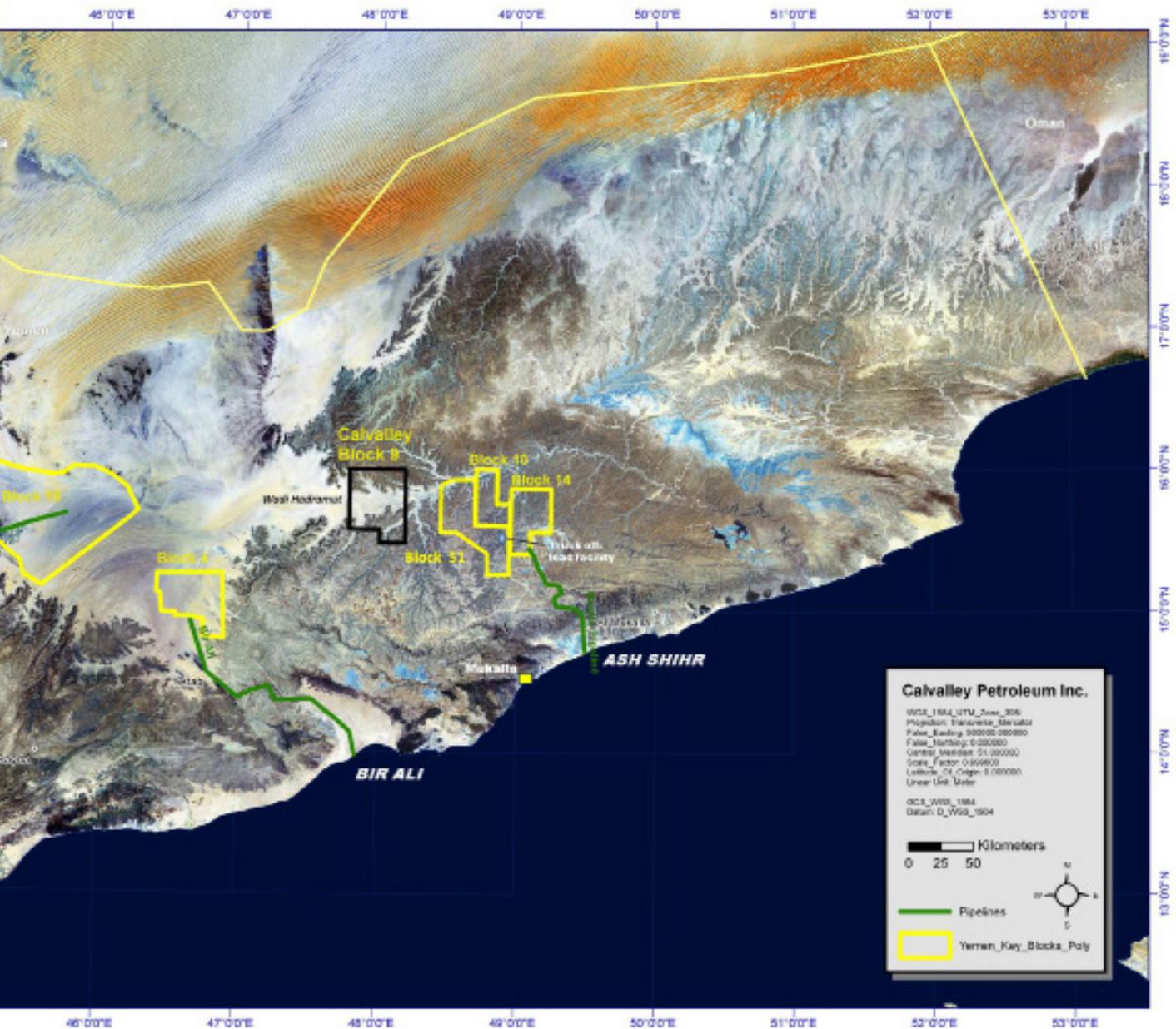
CALVALLEY OPERATIONS IN YEMEN

Calvalley's operations in Yemen

The Block 9 concession is located within the western margin of the Sayun-Masila Basin in the province of Hadramout, in the Republic of Yemen, approximately 350 kilometres east of the capital city Sana'a.

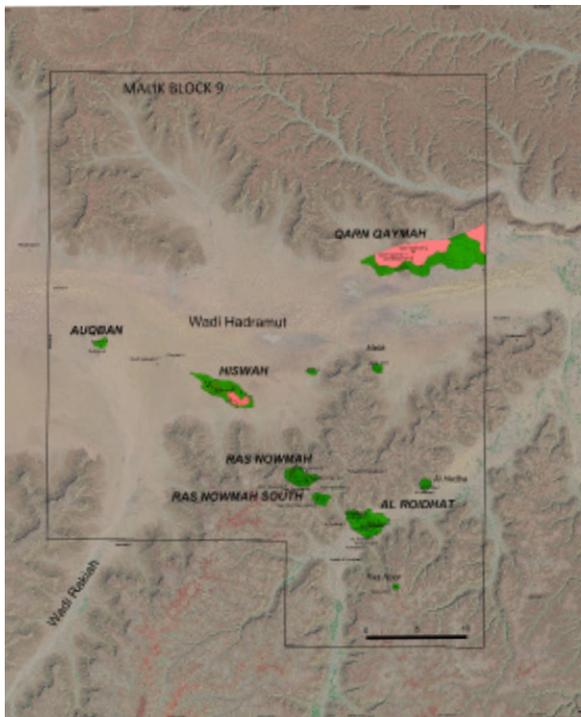
This inland area has not been reached by recent conflict in Yemen and therefore is not materially affected by unrest elsewhere in the country.





Block 9 includes:

- Four light and medium oil fields: Hiswah Field, Ras Nowmah Field, Auqban Field and Qarn Qaymah Field.
- Three heavy oil fields: Al Roidhat Field, Ras Noor Field and Ras Nowmah South Field.



Block 9 is the second-largest producing block in the Republic of Yemen by area. It contains several existing discoveries as proven reserves, as well as 41 exploration targets.

Block 9 includes the Hiswah, Al Roidhat, Auqban, Ras Noor, Ras Nowmah, Ras Nowmah South and Qarn Qaymah fields.

Past production during the period 2005–2015 amounted to approximately 16m bbl at an average production rate of 4,000 bbl/day.

Status:

Hiswah: currently producing 3200-3400 bbl of oil per day

Ras Nowmah and Ras Nowmah South: expected to start producing in November 2019 with approximate rate of 1100-1500 bbl of oil per day.

Al Roidhat: expected to start producing in 2020.

Auqban: expected to start producing in September 2020.

Qarn Qaymah:



SURFACE OPERATIONS

Surface operations

The journey to re-starting production

Following the outbreak of conflict, force majeure was declared in 2015 and production ceased. In the following year, a consortium of investors banded together to enable Calvalley to rehabilitate its producing wells and resume production in Block 9.

Calvalley has made investments of \$35–45m to rehabilitate Block 9 through surface and subsurface work including a pressure maintenance program, upgraded facilities, water injection and other improvements. Calvalley is the only oil and gas company in the Republic of Yemen to have maintained its workforce on pay while the conflict paused oil production.

One major challenge is a lack of oil and gas service providers in Yemen owing to security considerations. Through our strong relationships with local communities we have been able to contract the services required.

Today, we are actively producing

Crude oil is evacuated from Block 9 by secured, 500-barrel truck to either of three pipeline terminals at other blocks, each approximately 250–300 km distant, each supplying storage terminals on the coast. Calvalley is currently using the terminal at Block 51, Ash-Shihr.

Contracts with operators of other blocks ensure that Block 9 production volumes are securely metered and signed off on daily as part of a custody transfer arrangement before being piped to the coast. Oil is lifted from the sea terminal by tanker at six-weekly intervals with any unlifted Block 9 crude credited to the Calvalley balance maintained at the storage terminal.

On-site, approximately 100 employees are deployed in two shifts of 50 on a twenty-eight-day rotation. Apart from the field manager and some other key personnel and service staff, these consist of the field operators and maintenance crews.

The field reports its activities back to the head engineering and geosciences office in Cairo every day and key information on technical and financial progress is conveyed to the other stakeholders including our shareholders and partners, MedcoEnergi and Hood Oil. Every day, fine tuning of operations and processes is achieved through constant communication between engineering and geosciences in Cairo and the implementers: the field manager, the operators and the maintenance crews.



FACILITIES AND TECHNOLOGY

Facilities and technology in Block 9

Our facilities in Block 9 are modern, clean and safe. Many areas have been freshly refurbished for the production re-start in 2019. All pre-existing field facilities (eg. wells and tanks) have been reconditioned and refurbished.

Central Processing Facility

The facility at Block 9 is comprised of a gathering system that collects the produced well fluids from individual wells, and then transports them through a flow line to one of three satellite manifold systems.

At the manifold system, the crude from the individual wells is then transported through the single trunk line, of greater diameter than the flow lines, to the Inlet of the main manifold of the Central Processing Facility.

The produced well fluids are then separated at the three phase production separator into **crude oil, produced water and associated gas.**

Crude Oil

The crude oil is washed with source water and treated through the Heater Treater, to further separate the emulsion from the crude and to ensure the salt content is reduced to a minimum. The crude is then delivered to the crude oil storage tank farm, comprising of **six 10,000 BBL capacity tanks.**

Shipment of crude oil from the Central Processing Facility is carried out by trucking where the crude is loaded on to the tankers from the sales crude oil tanks via the sales oil line, using the truck loading pumps.

Produced Water

The associated water from the separation vessel is delivered through the produced water line to the produced water tanks, comprising of **two 5,000 BBL capacity tanks.**

Following the settlement of the associated water in the first produced water tank, the associated water is cascaded to the other produced water tank, whilst the separated oil is skimmed back to the separation vessels for reprocessing, via the oil recovery pumps.

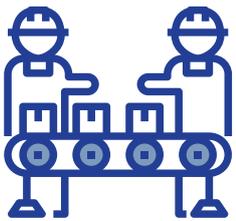
At the water injection facility, the associated water comes from the produced water tanks and source water wells and is then treated through a two-stage filtration system, pressurized to a certain pressure, before re-injecting back into the water injectors for pressure maintenance of the reservoir.

Associated Gas



The associated gas is delivered from the separation vessel to the gas compression unit, where the gas pressure is raised to a pressure more than **1,000 psi** through the four-stage compression unit. The gas is then re-injected back into the reservoir gas cap for pressure maintenance, through two gas injectors which are connected to the high pressure gas injection line.

Trucking In and Blending

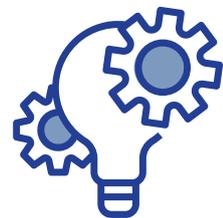


Produced well fluids from the Ras Nowmah and Al Roidhat fields are delivered to **two 5,000 BBL capacity truck-in tanks** via the truck off-loading pumps. (Ras Nowmah and Al Roidhat fields crude has a different gravity compared to Hiswah field crude.) The crude is then processed through the dedicated Heater Treater and is delivered to a storage tank at the tank farm.

The crude from **Hiswah field** categorized as 'light crude blend stream' is then blended with the processed crude coming from the other fields, which is categorized as 'heavy crude blend stream'.

Through the respective blending pump system, the two crude streams are mixed through a static mixer. The blended crudes' density and water content is then measured, and, if meeting the export specification requirements, it is delivered to the sales oil tanks. If not, the crude is recycled back to the off-spec crude oil storage tank for reprocessing.

Technology



We have invested in state-of-the-art technology to optimise our future development plans and evaluation of assets. All surface processes are monitored using **automated PLC (Programmable Logic Controller) systems** which offer industry-standard reliability and flexibility at low costs.

Advanced industry software enables us swiftly and accurately to monitor inventory and movements in and out of the warehouse and to manage material and procurement pathways efficiently.

Employee Accommodation



We have newly-installed, clean and safe accommodation for our site employees.

FACILITIES AND TECHNOLOGY

In detail: Block 9 Facilities and Equipment

Manifolds

- 1 Three satellite manifolds located outside the CPF; each have ten (10) slots to receive the well production through the individual flow line
- 2 The main gathering manifold consists of test and production headers that receive the production from the satellite manifolds through 30 slots

Production Vessels

- Test separator (V-200) - 3 phase - Capacity 6,000 bbls
- Production separator (V-420A) - Capacity 20,000 BPD oil, 60 MMSCFD gas and 4,000 BPD water
- Oil treater (V-201 & V-202) – indirect heater treater
- Flare knockout drum (V-301 A/B/C)

Storage Tanks

- Crude oil storage tanks (TK-300 A/B/C/D/E/G):
10,000 bbls capacity each
- Truck-in tanks (TK-401 & TK-402):
5,000 bbls capacity each
- Produced water tanks (TK-301 A/B):
5,000 bbls capacity each
- Firefighting water tanks (TK-500 A/B):
5,000 bbls capacity each

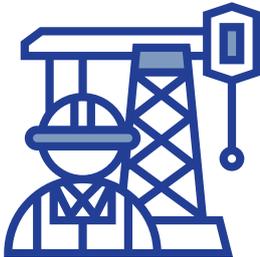
Gas Compressors

Two gas compressor packages were installed to condition the gas and raise the gas pressure **to exceed 1,000 psi, for re-injection** to the reservoir formations

Water Injection System

Two filtration/pumping water injection skids are located downstream of the produced water tanks, in order to inject the produced water into injector wells

Control Room



All surface processes are monitored using **automated PLC systems**, which enables us to monitor and control the process equipment in a safe manner



Storage Tanks



Warehousing



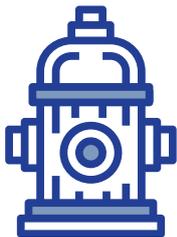
Field main office

Truck Loading Dock



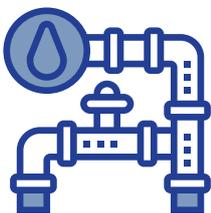
Two truck loading docks, equipped with loading pumps, are in place. They have remote control devices installed to ensure safety procedures are correctly applied without accidents

Firefighting Network



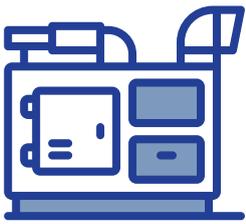
A pressurized firefighting water network is in place, covering all facilities and operating automatically through sensors (hydrant/foam)

Process Piping System



Piping lines cover all process commodities such as: well flowlines from produced wells to the satellite manifolds, production lines between the main gathering manifold and the process equipment, crude lines from the process facilities to the crude storage tanks, produced water lines from the process facilities and storage tanks to the produced water tanks and utility lines.

Electrical System



The Central Processing Facility is covered by two main diesel generators equipped with mains switch gear panels for disturbing the required loads for each area.

Three pads are located outside the Central Processing Facility, each equipped with two diesel generators for wells pumps.



Fire water station



Loading dock



Piping Lines

SUBSURFACE OPERATIONS

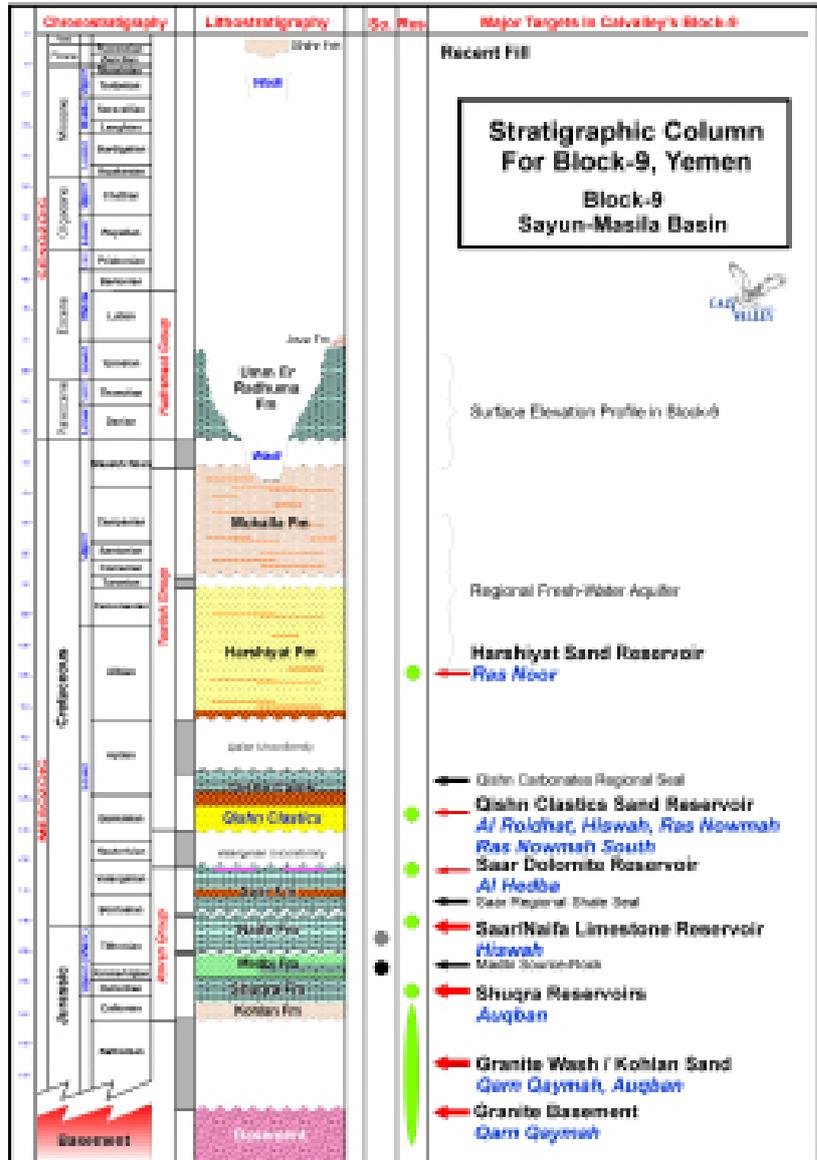
Subsurface operations: Producing fields

The geology of Block 9

Block 9 in the Republic of Yemen is located within the western margin of the Sayun-Masila Basin, a classic rift basin initiated by movement of basement blocks. Reserves totalling seven oil accumulations and one gas pool have been assigned to this block:

Hiswah	light oil in the Saar-Naifa carbonates	1
Auqban	light oil in the Shuqra	1
Ras Nowmah	light/medium oil in the Qishn clastic reservoir	2
Al Roidhat, Ras Nowmah South	relatively heavy oil in the Qishn	4
Ras Noor	relatively heavy oil in the Harshiyat clastic reservoir	4
Qarn Qaymah	gas in the deep Kohlan sand deposited on the top of the Basement gas, condensate and crude oil in the fractured granitic Basement	5

The crystalline igneous and metamorphic Basement rocks in the basin date from the Proterozoic Age and are overlain by prerift clastic sediments of the Kohlan and carbonates of the Shuqra Formation. The initial rifting processes of the Late Jurassic created horst and graben blocks, and partly uplifted and eroded the Shuqra, Kohlan and Basement. During the Kimmeridgian Age, deposits of syn-rift marine carbonates and clastic sediments (the Madbi and Naifa formations) filled out the relatively deep Late Jurassic–Early Cretaceous marine basin. During the Early Cretaceous period (Middle Berriasian/ Lower Valanginian), a predominance of carbonates (Saar Formation) was deposited in shelf to slope settings. The post-rift sedimentary sequence is represented by the Lower Cretaceous fluvial Qishn Formation (divided on Lower and Upper Clastic units) overlain by marine Qishn carbonates, followed by the thick sands and shales of the Albian Harshiyat Formation and capped by Cenozoic rocks. Various tectonic and sedimentary events in the area up to the Mid Eocene have generated new faults and re-activated old ones, resulting in a very complicated structure in Block 9.



The main source rock in the area is reported to lie in the Madbi Formation, with maturity sufficient to generate both oil and gas. Block 9's main reservoirs are located both above the Madbi (the Saar-Naifa, Qishn and Harshiyat formations) and below (the Shuqra, Kohlan Formation and fractured Basement). Oil generation is likely to have started during the Late Cretaceous period and probably continues today. The potential oil and gas reservoirs consist of limestones and dolomites (the Shuqra and Saar-Naifa formations), sandstone (the Kohlan, Qishn and Harshiyat formations), and fractured granitic Basement. The seals are formed by tight carbonates and shales. Of the several generations of faults, some are permeable, while some can form hydrocarbon traps – mostly relating to broken anticlinal structures and tilted fault blocks.

Hiswah

Oil-in-Place (2P)

- 229.4 MMbbl (36° API sweet crude)
- 3D seismic and well control.

Reservoir (Saar/Naifa Carbonates)

- 65m hydrocarbon column
- 14-20% avg porosity; 5-20 mD permeability.
- Reservoir naturally fractured .

2015 production

- Approximately 3,200 bbl/d
- 23 producing wells

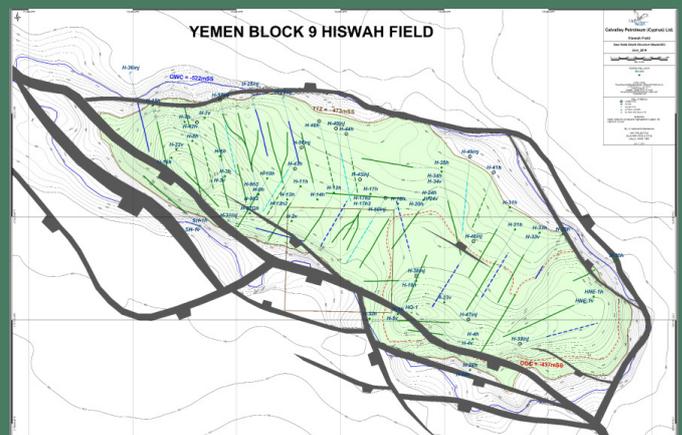
Hiswah is Block 9's largest producing field, with **39 development wells today.**

These have proven excellent producers in response to our improved reservoir modelling and completion techniques; owing to their success, reserves recoverable from the field were revised upwards by independent reserve engineers.

An additional 18 future development wells have been identified in the Simulation Reservoir Model.

Full field pressure maintenance (+11 water injection wells and +2 gas reinjection wells) will further enhance recovery:

- A pressure maintenance project for water injection, initiated in late 2010, yielded positive results. The 2015 water injection rate of 4,000 bwpd will be increased to 20,000+ 20,000 bwpd in 2019/20.
- The reinjection of produced gas will reduce flaring and further increase oil recoveries. Current gas injection is 2.1 mmcf/d; full injection potential is 5mmcf/d.



Ras Nowmah

Oil-in-Place (2P)

43 MMbbl (29° API sweet crude)

Reservoir (Qishn Sands)

35m oil column in the Qishn Sands (S1+S2+S3 Sand Units)

Excellent reservoir quality

Discovery Well

RN-2 test showed 3,000 bbl/d of 29° API sweet crude with only 9.5% drawdown

2014/2015 production

2,600 bbl/d

3 producing wells

Calvalley completed its drilling of the Ras Nowmah-1 exploration well on November 3, 2009. The wellbore was side-tracked with a 30-degree deviation, due to technical difficulties encountered while drilling. The well encountered a total of 45 meters of gross oil pay in high-quality reservoir rock including 35 meters in the Qishn and 10 meters in the Saar formation.

The Ras Nowmah-2 appraisal well, offsetting Ras Nowmah-1, was successfully drilled in July, 2010. This well encountered pay sections similar to those of the first and came online in Q3 2011. In 2012, two further wells, Ras Nowmah-4 and Ras Nowmah-5 were drilled in the southern part of the structure, both encountering net pay as expected.

Maximum net oil pay thickness in Ras Nowmah was interpreted as 24.5 metres (in Ras Nowmah-2). Based on a petrophysical analysis of all four wells, the average porosity and water saturation of the Qishn sand were estimated at

23.1% and 23.2% respectively.

Development of this oil field will continue with up to two new development wells.



Ras Nowmah South

Oil-in-Place (2P)

3.8 MMbbl (19o API sweet crude)

Reservoir (Qishn Sands)

12m of oil net Pay meters of oil column

Good porosity and permeability

Discovery Well

Ras Nowmah South-1

Appraisal Ras Nowmah South-2 (2013)

2014 production

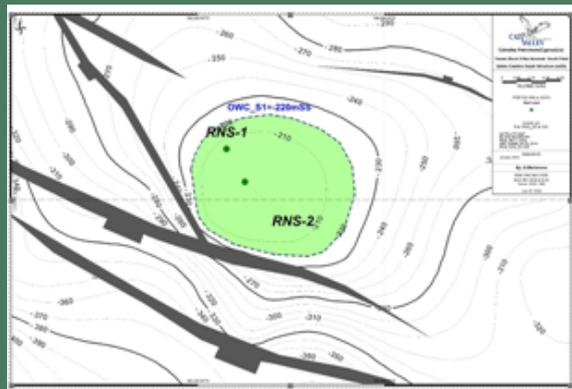
292 bbl/d

2 producing wells

The Ras Nowmah South Field is situated between the Ras Nowmah and Al Roidhat fields. The discovery well, RNS-1, was drilled in 2013 approximately 1.5 kilometres to the southeast from the Ras Nowmah Field and three kilometres northwest of Al Roidhat.

Ras Nowmah South-2 was also drilled in 2013, approximately 200 metres southeast from the discovery well, and brought online in April 2014 with an initial production rate of 211 bbl/d and water cut of 0.2%. In the S-1 unit of the Upper Qishn, the net oil pay thickness in both wells was interpreted as 10 metres. Total production from both wells before shut-in in April 2015 was 130 bbl/d with water production of 180 bbl/d.

An oil/water contact for the S-1 unit was encountered at a depth of 220 meters below the surface. Average porosity and water saturation of the Qishn sand were estimated at 25% and 33% respectively.



Al Roidhat

Oil-in-Place (2P)

- 61.6 MMbbl (15o API sweet crude)
- Discovery well tested over 600 bbl/d

Reservoir (Qishn Sands)

- 49m oil column (S1, S2, S3 Units)
- High porosity (20-25%) and excellent permeability (500 mD-5D)

Development

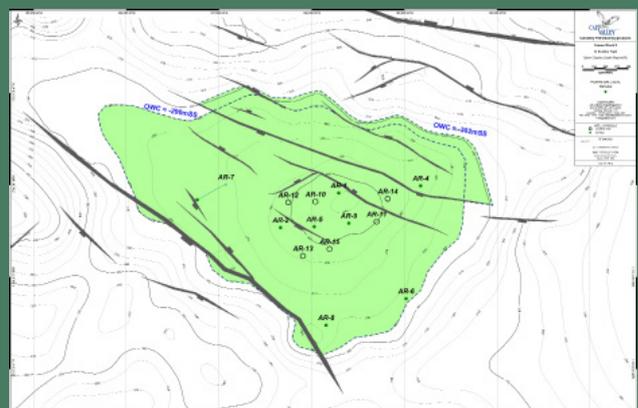
- 9 wells drilled
- 6 producing wells

Capability approximately
1,200-1,500 bbl/d

The Al Roidhat Field was discovered in 2003. Wells AR-01 and AR-02 penetrated oil-saturated reservoir in **Qishn sands at a depth of 1,020 to 1,040 metres.** Two more step-out wells (AR-03 and AR-04) were drilled in 2004 and four more (AR-05, AR-06, AR-07 and AR-08) in 2007, to delineate the field. Well AR-09 was drilled in 2010, close to the crest of the structure, and showed results in line with prognosis.

More recently, Calvalley has continued development of the Al-Roidhat field, including working over four previously completed and tested wells. Five wells are now fully equipped and producing crude which is accumulated at field storage tanks and then trucked to the CPF for blending with lighter oil produced by other fields.

A total of 20 or more production wells is planned for Al Roidhat, based on 30 acres spacing unit.



Auqban

Oil-in-Place (2P)

3.1 MMbbl (38° API sweet crude)

Reservoir (Qishn Sands)

44m oil column

Good porosity but low permeability

Potential of column extending into a fractured basement

Discovery Well

Auqban-1

Shuqra Formation: 9m net oil pay – production capability 150 bbl/d

Kohlman Formation: 2m net oil pay – not tested

Further development potential for the Auqban field includes installing a new pump in the Auqban-1 well, designed for low permeability formations. Drilling a new, Auqban-3 development well at a near-crest location will enable testing of the contribution from Kohlan and possibly fractured basement rock.





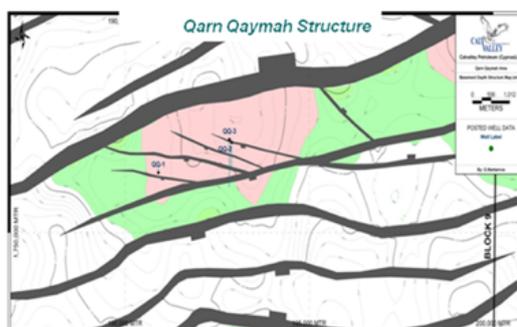
SUBSURFACE OPERATIONS

Subsurface operations: Appraisal discoveries

Appraisal discoveries in Block 9 include Qarn Qaymah and Ras Noor, both designated as contingent resources.

Qarn Qaymah

One of the most interesting discoveries in Block 9, the Qarn Qaymah field is located in its northeastern part, extending over an area of 85 km² within the block and into the adjacent Block 72. The Qarn Qaymah field contains two discoveries:



Kohlman Sandstone Reservoir

12m blanket sand over an area covering more than 34 km²
Tested gas condensate in both QQ-1 and QQ-2 wells.
QQ-1: 10 mmcf/d and 657 bcpd.
QQ-2: 3.5 mmcf/d and 200 bcpd.

Fractured Granitic Basement Reservoir

Proven 380m+ of hydrocarbon column.
Tested condensate + oil (43° API).
QQ-2 flowed up to 2,350 bbl/d.
Unable to put into production due to wellbore damage.

Three wells drilled between 1994 and 2011 and testing programs conducted during 2009 established the presence of condensate-rich gas and light oil in the Kohlman sandstone and Fractured Granitic Basement (FGB) of the Qarn Qaymah area. The seismically defined structure covers an area exceeding 34km².

Initial tests of the FGB confirmed that the Qarn Qaymah structure lies within a high-quality oil system with an estimated hydrocarbon column at Qarn Qaymah 2 (QQ-2) exceeding 380 meters. The zone naturally flowed a significant volume of light oil, with rates fluctuating up to maximum of 2,350 bbl/d. However, these test flow rates were not sustainable due to a lack of appropriate downhole equipment.

The second stage of QQ-2 completion and testing involved the isolation of the FGB and testing the Kohlan Sands, which display regional blanket sand characteristics over the 34+km² of the Qarn Qaymah fairway. The well flowed condensate-rich natural gas over an extended period with rates ranging up to 3.5 MMcf/d with a condensate yield of approximately 70 bbl per MMcf of gas.

To finalize the assessment of the fractured basement, an appraisal well, Qarn Qaymah-3, was drilled to a total depth of 4,460 meters, including a highly deviated open-hole section of approximately 1,000 meters in the FGB. Independent petrophysical evaluations also highlighted average levels of fracture porosity (a direct indicator of storage capacity or reserve potential of the reservoir). However, oil production was unsustainable, due to limited inflow (see below).

During the QQ-3 initial testing phase, the test recovered a significant volume of drilling fluid which had been used in drilling the adjacent well (QQ-2), indicating open communication between the two and confirming the presence of an extensive network of interconnected natural fractures in the FGB. However, as intermittent flow and build-up testing proceeded, the permeability of the formation gradually declined, indicating impairment to fluid inflow to the well-bore from the formation.

While Calvalley is encouraged by the significant size of the Qarn Qaymah reservoir and the presence of the fracture network in the basement of the structure, a key challenge ahead is to remedy any impairment to oil inflow. The Company is optimistic that results of pending lab analyses of formation fluids will indicate the potential of down-hole chemical treatment to prevent future depositing of paraffinic compounds and asphaltenes, a common production-impairment phenomenon in many oil fields worldwide.

Ras Noor

The Ras Noor Field was discovered in 2004. The first well drilled in the area penetrated 3.5 metres of oil-saturated sand in the upper part of the thick Harshiyat Formation (Albian-Cenomanian Age). The main exploration targets were the deeper Qishn and Saar zones, but these did not appear to offer any potential pay, probably due to the trap breach at the Qishn level.

The Harshiyat interval has not been tested, but its oil gravity is expected to be similar to or even heavier than that yielded by the Al Roidhat Field.

Based on the well logs, the Harshiyat sand was interpreted to have a porosity of 25% and a water saturation of 40%.

SUBSURFACE OPERATIONS

Seismic Acquisition and Prospect Drilling

Seismic quality can be enhanced substantially with modern equipment. This justifies a more detailed investigation utilizing modern seismic data with greater density and resolution. This will provide additional data for interpretation, prospect identification and potential field development – an essential part of the decision-making process towards exploration of future prospective locations.

Calvalley is planning to proceed with the acquisition of additional seismic data:

325 km² of 3D seismic data over the Qarn Qaymah area.

1000 km of 2D seismic data over Block 9.

Challenges relating to exploration include service company and equipment availability, necessary approvals, and increased logistics and planning needs.

3D seismic program

For the Qarn Qaymah area, Calvalley has proposed a 3D Seismic Acquisition Program with final field parameters approved by PEPA and Operating Committee. The 3D is designed to cover approximately 18 km x 18 km of the Qarn Qaymah area which has flowed oil, gas and condensate to the surface in the

QQ-1 and QQ-2 wells.

This survey will enable new wells to be planned in the optimal location to enable field development and cover follow up potential in structures to the east and south within the basement.

In the case of the Ras Nowmah and Al Roidhat areas, it is impossible to acquire a 3D data with the regular offset distributions – an important attribute in data acquisition – because irregularity in offset, azimuth and non-redundancy space causes severe deviation from the normal orthogonal survey¹. Ras Nowmah, located on the Plateau, is not large enough to build seismic lines with the required offset to image the reservoir.

The solution for such areas is to shoot high-density 2D seismic and process the data using the anisotropic depth migration technique. Therefore, in order to better delineate existing prospects similar to Ras Nowmah structure, Calvalley proposes to undertake a 2D seismic program in addition to its existing survey data for its Yemen concession.

2D seismic program

1000 kilometres of 2D seismic data will be acquired to further evaluate under-explored regions of the highly prospective Block 9, Malik. The new survey will target structures that have been mapped but need more seismic control to de-risk and mature them.

Specifically, this seismic acquisition program will eliminate data voids in the southeast portion of Block 9, adjacent to the producing oil fields of Ras Nowmah and Al Roidhat. Additional data will also encompass more northern portions of the block including and/or surrounding El Aldwi, Wadi El Ban North and El Gadafir. These programs are designed to target mainly the Qishn sands, the Saar/Naifa carbonates, and fractured basement.

SUBSURFACE OPERATIONS

Subsurface operations: Exploration Potential

The Ras Noor Field was discovered in 2004. The first well drilled in the area penetrated 3.5 Calvalley has a large and varied prospect portfolio in Block 9, comprising 41 prospects and leads in Block 9 with drill-ready prospects (multiple proven play types on the existing 2D seismic data set) located across five sites: Rashedah, Gadafir, Lokhaymer, Saghira and Ras Noor South.



Contact details

Calvalley Petroleum (Cyprus) Ltd.
POSTAL ADDRESS
CONTACT NUMBER

