

# Hydrocarbon Dynamics

*Advancing Crude Oil Mobility*



## Rights Issue Presentation

March 2022

# Disclaimer Page

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In addition, there are a number of risks, both specific to HCD and of a general nature, which may affect the future operating and financial performance of HCD and the value of an investment in HCD including but not limited to economic conditions, stock market fluctuations, oil demand and price movements, regulatory risks, operational risks, environmental risks, and reliance on key personnel.

Accordingly, this presentation does not purport to contain all information which may be required in order to make an informed assessment of HCD's prospects. You should conduct your own investigation, perform your own analysis, and seek your own advice from your professional advisor before making any investment decision.

# Corporate Summary

## ASX listed - Energy focused

### Board & Management

Stephen Mitchell	Non-Executive Chairman
Bill Tarantino	CEO - Chemical Division
Nick Castellano	Executive Director
Ray Shorrocks	Non-Executive Director
Andrew Seaton	Non-Executive Director
Julie Edwards	Company Secretary & CFO

### Capital Structure

Cash:	\$1.4m (31 Dec 2021)
Share Price:	\$0.011
Issued Capital:	440.3m Shares
Market Capital:	\$4.8 Million
Options on Issue:	45.3m (expiry 31/10/2022 @ \$0.03)

### Shareholder Summary

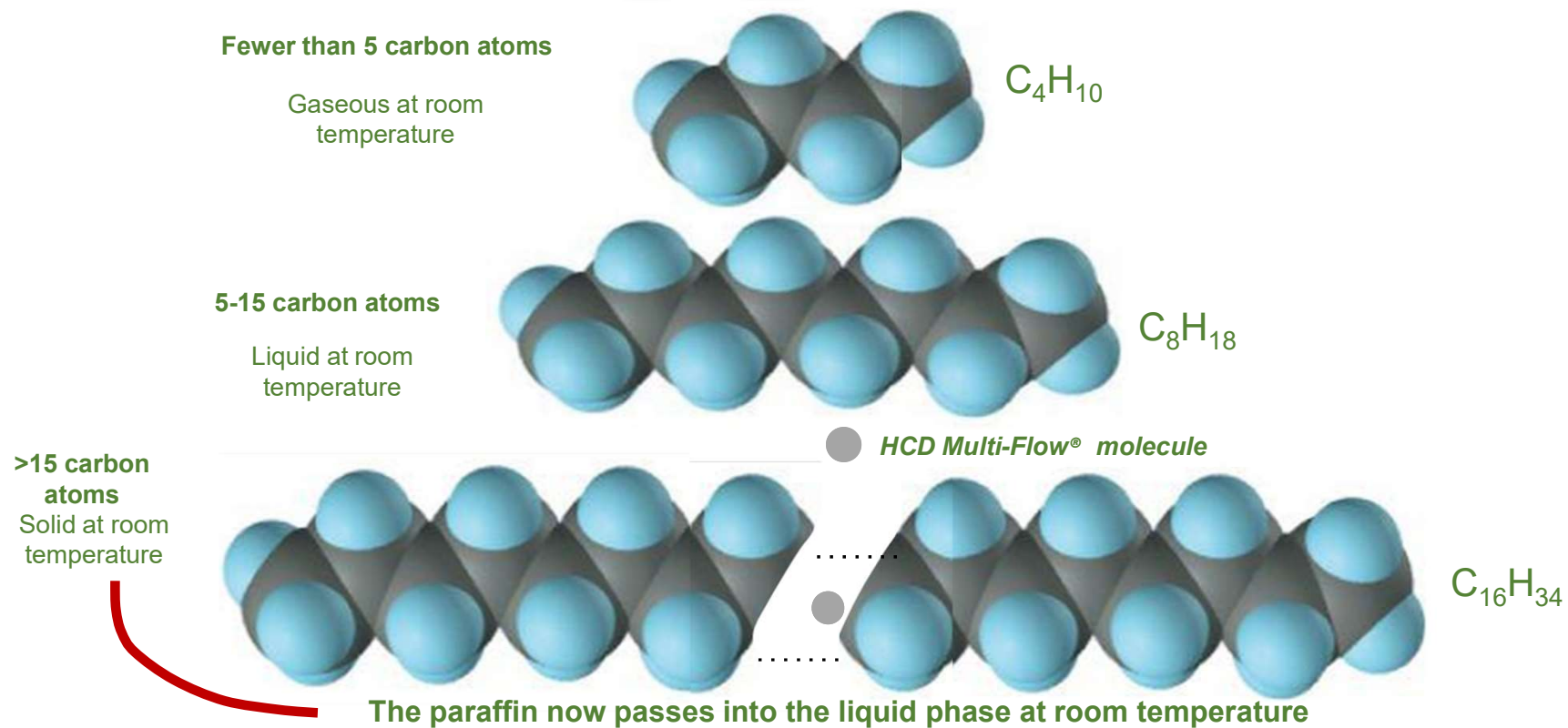
S Mitchell	10.2%
S McGregor Super Fund	8.8%
Lowell Resources Fund	4.0%
Wheelbarrow Investments	3.3%
CHAG Pty Ltd	3.2%
HSBC	2.4%
Top 20 Holders	49.2%

### Rights Issue

Terms:	1 for 3 @ \$0.011
Maximim Capital Raised:	\$1.6m
Directors Underwriting:	\$0.27m
Closure Date:	14 March 2022

# HCD Technology

**HCD PhaseShift** suite of chemistries utilize small, specially engineered carbon-based molecules that reduce the Van der Waals attractive forces between like molecules in order to reliquefy large agglomerations of wax and asphaltene deposits naturally occurring in heavy crude oils.





# Technology Used from Well bore to Refinery

- Improves oil production onshore and offshore by reducing viscosity and mitigating paraffin and asphaltene depositions in production equipment
- Reduces reliance on, and costs of, diluents and chemical treatments
- Provides flow assurance for onshore and offshore pipelines by liquefying paraffin and asphaltene depositions. Reduces reliance on traditional solutions of heat, solvents and mechanical pigging
- Liquefies oil sludge in transport and storage facilities, transforms the way cleaning operations are undertaken and recovers saleable hydrocarbons from the sludge



# Value Creation Strategy

The value creation strategy for Hydrocarbon Dynamics is now threefold:

## **1. Sell HCD Products and Technology to the Oil Industry**

Targeting oil producers, pipeline operators, tank cleaners and refiners.

Established agents & distributors in Canada, China, India, the Middle East, Colombia & parts of Europe.

## **2. Evaluate Additional Energy Technologies for Investment**

Management is actively seeking and evaluation investment opportunities in additional energy technologies including new-age fuels (hydrogen etc), energy generation and energy storage.

## **3. Evaluate Upstream Projects**

Consider investment in known oil accumulations where the application of HCD technology may lead to commercial extraction, reserves growth and cash flow.

# Strategic Plan – Roadmap for Success

The development of a new Strategic Plan, a roadmap for transforming the organization, was adopted in 2020.

It followed a thorough review of Hydrocarbon Dynamics' structure, markets and its method of doing business and highlights key strategic imperatives needed to transform the company.

The strategic plan employs a market-focused business approach to drive strategic and tactical decisions necessary to meet growth forecasts and includes the following four key imperatives:

- redesigned business model
- marketing investment
- pricing and market intelligence
- supplement product offerings



# Executing on Initiatives – Marketing and Testing



## ➤ Distributor Marketing Tools

- Updated presentations, technical and marketing literature



## ➤ Chemical Certifications and Registration

- Gas-lift certification complete
- Capillary string certification complete
- Umbilical certification in progress
- Progressing on Cefas registration required for the North sea

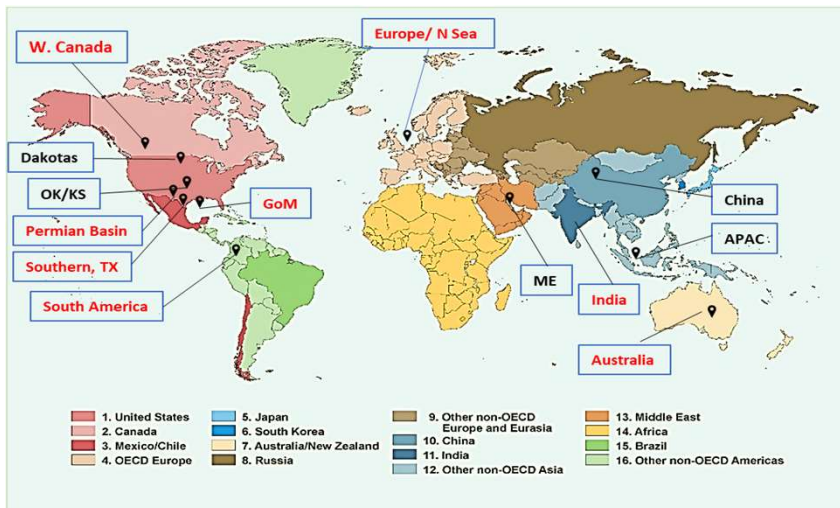


# HCD Current Priorities

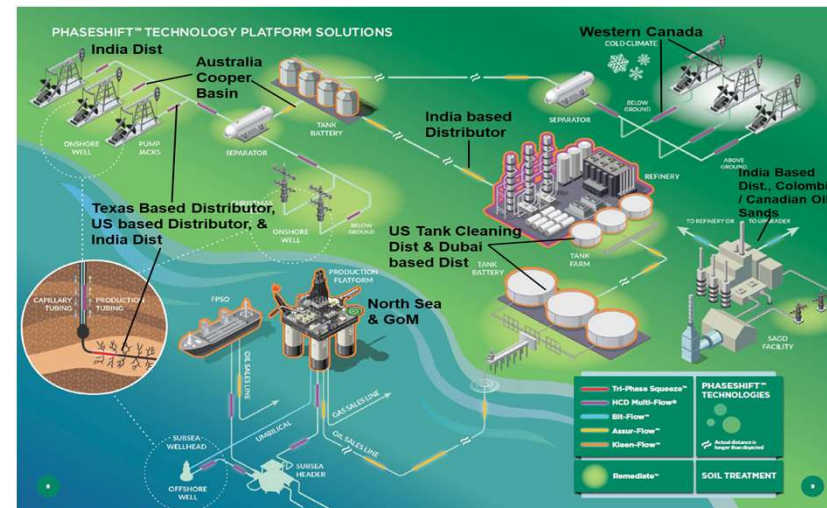
Focus driving current active priorities

- Distributor Base – drive & strengthen the existing distributor base while adding critical new ones in strategic areas of geography and business.
- Direct Sales – enhance direct sales efforts to accelerate opportunities.
- Trials and Treatment – focus on delivering successful trials that develop into continuous applications and use them as a springboard to additional opportunities.

## Active Priorities by Geography



## Active Priorities by Application Type



# Trials: Australian Cooper Basin Paraffin Control

A 6-month pilot was successfully completed in 2021 utilising HCD Multi-Flow to control paraffin deposition in flowlines, tanks and an export line for a large Australian producer. HCD MF was injected into the flowlines directly into three 'trouble' wells, and into the inlet of two produced oil tanks.

- Significant improvement in downtime and oil losses were observed in the period HCD Multi-Flow was trialed at the three 'trouble' wells.
- The two produced oil tanks trialed were 30% full of sludge prior to the start of HCD Multi-Flow. No additional buildup was noted during the addition of HCD Multi-Flow.
- Export pipeline team reported positive impacts on pigging operations from the addition of HCD Multi-Flow, even with only half of the crude treated.

HCD has received very positive feedback and await final word on the disposition of the 2022 chemical treatment season.

HCD is connecting with other producers in the region with similar production issues to communicate the success of our technology and look for additional opportunities.

# Trials: North Central Texas Flowline Paraffin Control

**Mid-Sized Texas Based Distributor** – is a major player in the Permian Basin with significant operations in the Bakken, Eagle Ford, Delaware and Permian Basins.

## North Central Texas Trial

One of HCD's Texas based distributors kicked off a paraffin control trial in a North Central Texas oil field on 23 December 2021. Imperative trialed HCD Multi-Flow on a well in North Central Texas. Startup of a second well (untreated with chemical) into the flowline downstream resulted in pressure increase. The distributor was unaware that two additional wells, not part of the trial, were tied into the flowline being tested, interfering with the HCD trial. The trial was therefore suspended after 3 weeks and the team are searching for a better, isolated trial location.

A paraffin coupon used to monitor the trial was pulled and observed to be clean.

The Distributor's Vice President of Technical Services and Manager of Technology Development remain excited about HCD's technology. They are actively looking for multiple locations to trial HCD's technology and we expect another trial to start in the next few months.



# Distributor Highlights and Current Priorities – USA

**Mid-Sized Texas Based Distributor (continued)** – is actively in search of multiple locations to trial our technology:

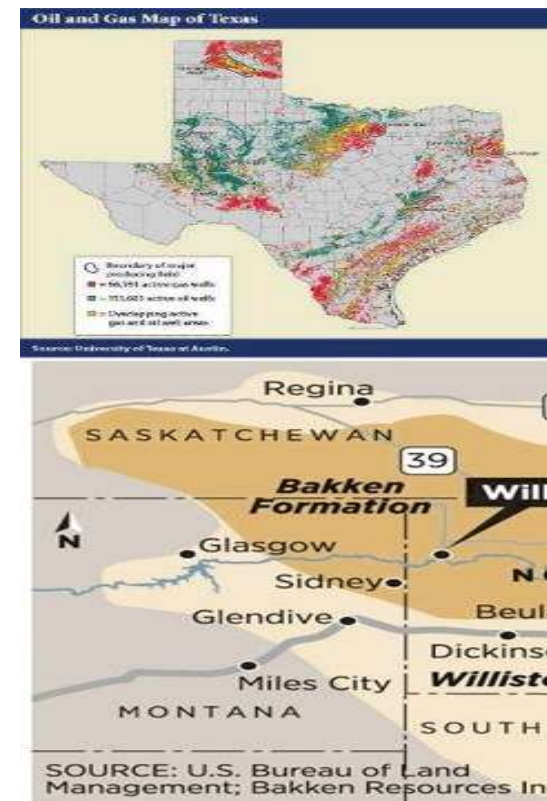
- Eagle Ford Shale paraffin control
- Permian Basin Tri-Phase squeeze & paraffin control
- North Dakota pipeline and well paraffin control

A trial is expected to be awarded in the next few months.

HCD has additional US distributors focused on Texas based opportunities in the Permian Basin and Eagle Ford Shale.

Discussions have commenced a US supermajor oil and gas company to identify an asset to trial our technology for paraffin control including land based (Permian) and offshore fields.

New distributor working an opportunity with HCD Multi-Flow in a Gas-Lift field in the DJ Basin of Colorado.

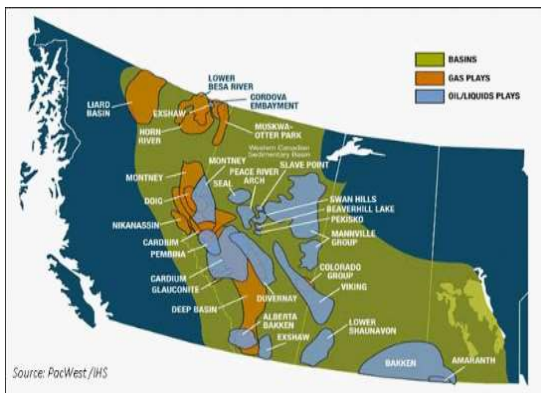




# Distributor Activity and Progress – Alberta, Canada

## Alberta Oil Sands

- A US supermajor oil and gas company is testing HCD's chemistry for viscosity reduction of heavy oil from their Athabasca region oil sands. The purpose of the testing is to evaluate HCD's chemistries ability to lower crude oil viscosity and reduce diluent requirements.
- There is a potential second opportunity in the oil sands for cleanout of flowlines partially plugged with bitumen.



## Alberta Paraffinic O&G Fields

- A new distributor is evaluating HCD Multi-Flow in their lab prior to pushing for an opportunity in the Cardium field.
- A second distributor is tendering HCD Multi-Flow in the Montney and Cardium fields.

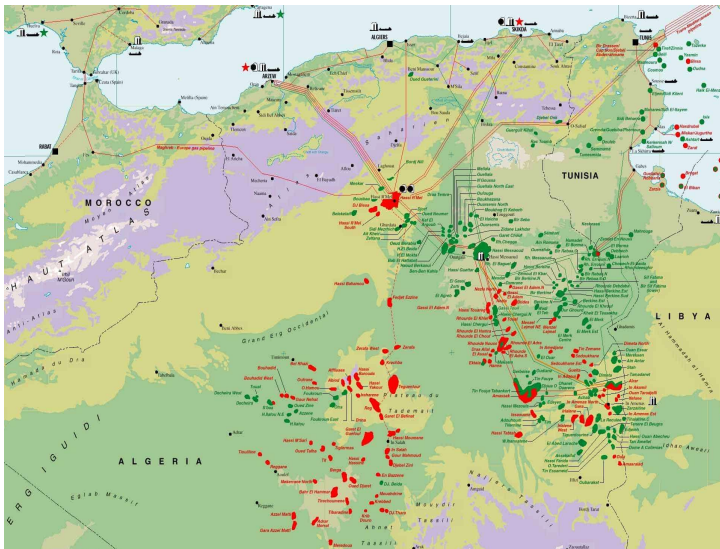
# Distributor Highlights and Current Priorities– India and Colombia

**Mid-sized International Distributor** – Dorf Ketal is an India based organisation with Global operations in upstream and downstream oil and gas chemicals with a focus on India and South America.

- Colombia Heavy Oil – The distributor is making progress toward a trial to eliminate the costly diluent added to the Colombian operator's heavy oil needed for pipeline mobility.
- Large crude oil pipeline in India – a large private sector producer in India remains interested in HCD Multi-Flow technology to reduce the high viscosity effects of severe paraffinic crude to reduce or eliminate the heat needed to maintain flow in their pipeline. This producer has request laboratory testing before proceeding to a trial and wax flow loop testing is being considered as it better replicates actual field conditions.
- Our India focused agent is close to closing a pilot test with a national O&G company in India for paraffin control.



# Distributor Activity and Progress – Middle East & Africa



- HCD's new Dubai based distributor is targeting opportunities in the Middle East and Africa with a focus on tank cleaning, paraffin & asphaltene well remediation and inhibition.

This distributor is in discussions with a North African national oil company with a focus on HCD's Kleen-Flow tank cleaning technology. They have also expressed interest in other areas of application in their production, transportation, and storage systems.

- Other opportunities this distributor is actively pursuing includes tank cleaning in Iraq.

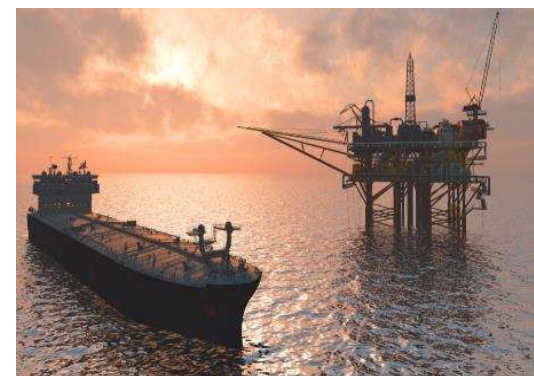




# Highlights and Current Priorities – North Sea

## North Sea Paraffinic Crude Opportunity

- HCD has presented its technology to a large cap producer in the North Sea who is dealing with serious paraffin deposition in two platforms with a production rate of around 4500 BOPD of waxy crude. Test results confirmed that HCD Multi-Flow is effective at removing existing paraffin deposits and inhibiting the formation of new deposits for this waxy North Sea crude.
- HCD is in negotiations to a trial the technology on a platform producing over 2000 bopd. This will require Cefas registration, UK REACH approval, and umbilical approval, for which much of the work has been completed.
- If successful on this platform, HCD expects to be granted a trial on a second platform of similar production rate with similar paraffin issues.
- HCD Multi-Flow is now UK REACH approved. We are making headway with Cefas registration.





# Other Highlights and Current Priorities

## **Gulf of Mexico**

- Working with a mid-cap producer towards trialing our technology on paraffinic wells in the Gulf of Mexico.

## **Colorado DJ Basin**

- New distributor working an opportunity with HCD Multi-Flow in a Gas-Lift field in the DJ Basin of Colorado.

## **APAC**

- HCD APAC based agent is screening our chemistry for sludge treatment effectiveness for onshore hydrocarbon recovery for a national oil company.

# The Year Ahead

## 2022 Focus and Path Forward

### HCD Technology

- Distributor Base - drive & strengthen existing distributor base while adding critical new ones in strategic areas.
- Direct Sales Efforts - enhance direct sales efforts to accelerate opportunities.
- Product Approvals - complete product approvals and certifications required to do business in specific types of production and as required by discrete regions of the world.
- Product Screening - develop testing protocol to effectively evaluate the performance of HCD chemistry and generate literature data for distributors and customers.
- Trials and treatment - focus and build on current trials and potential trials in the Gulf of Mexico, other US basins, Canada, Australia, India, the North Sea, Colombia, Indonesia and China.

### New Energy Technologies

- Seek and evaluate investment opportunities in energy technologies including new-age fuels (hydrogen etc), energy generation and energy storage.

### Upstream Projects

- Consider investment in known oil accumulations where the application of HCD technology may lead to commercial extraction, reserves growth and cash flow.

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## Appendix



# Testing Implications on Dosage Rates

- Tests and trials indicate dosage rates of HCD products for use in pipelines and continuous down-hole applications on viscous crudes are typically between 250 - 750 ppm
- Tests and trials indicate dosage rates of HCD products for use in heavy, extra heavy and viscous crudes are in the 1,000 – 2,000 ppm range
- Dosage rates will always vary considerably depending on individual applications and oil composition
- New product range and pricing to be confirmed before June 30<sup>th</sup> but indicative cost to producers for baseline product follows:

Multi-Flow Dosage Rates (ppm)	250	500	750	1000	2000
End User Cost/bbl of oil treated (US\$)*	\$0.36	\$0.72	\$1.08	\$1.45	\$2.90

\* Based on the North American recommended retail price of HCD standard Multi-Flow. Other MF based products will have different pricing



# Executing on Initiatives – Distributors and Agents

## Distributors & Agents

Hydrocarbon Dynamics List of Distributors		
Entity Name	Region	Country / Area
Imperative Chemical Partners	North America	North America
Platinum Chemical Services	North America	Western Canada
OG Chemical	North America	Colorado
Perfex Chemical Solutions	North America	Oklahoma & Wyoming
Striker Hydralink	North America	US & Europe
AZT Glogal LLC	North America	Western Canada
Chemics	North America	Western Canada
Iron Horse Group	North America	Western Canada
Smart Chemical Services	North America	Texas
Deepwater Technical Services	North America	Gulf of Mexico
Dorf Ketel	India/ South Africa	India / Brazil
Miridual Pathak	India	India
Mont International	Dubai	Middle East / Africa / Iraq
GGCD	Middle East	Middle East
Qinghua	China	China

# Field Successes

PROJECT	PURPOSE	DOSAGE RATE IN FIELD	RESULTS/STATUS
Cooper Basin	Increase production in 3 wells and reduce wax plugging	250 - 500ppm	Achieved objective, awaiting formal report
Petalis(Texas)	Increase Production in 3 wells. 10 well potential	5 drums of MF/1 drums SR 7 lbs MicroPhase per Well	5-month avg oil production increase 186% /Gas increase of 316%
Oil India (India)	Increase Well Production Rates (Tri-Phase Squeeze)	10 drums MF/1 drums SR/10lbs MicroPhase per Well 500– 5000 ppm MF	64% Increase in oil production before Pump Failed for 11-week shutdown (retrial requested)
Cairn Energy (India)	Reduce Pour Point of oil in 105,000bopd pipeline		Modest decrease in pour point due to wrong equipment and sludge filled holding tank utilized in trial (retrial requested)
Petronas Platform	Restore production to 9,000 bopd		Pdn resumed for 5 years after 2 yr shut-in with PP reduction and emulsions broken
Kuwait	Viscosity Reduction in 1 well	20 drums used	Results Pending – Greater Burgan Field
China CNPC	Diluent Reduction in 1 well	38,000 bopd field @ 2,000ppm	Diluent may be reduced by 40%, viscosity by 65%, production increased 22%.
California 1 & 2	1.Diluent Reduction waterline 2.Clean-up of	1,000 bopd field @ 2,000ppm	Diluent requirement reduced by 40% and organic deposition successfully removed from water pipe
Canada - Alberta	Improve Production of waxy oil	<200ppm continuous feed	4 wells treated. Pdn increase @ 150% over 6 months
Utah 1 & 2 (Newfield)	Pour Point Reduction	23,000 bopd @ 1,000ppm	Pour Point reduced by 14°C (25F). Company taken over

# Lab & Bench-Top Success- Seeking Field Trials

PROJECT	LAB RESULT	STATUS
Gulf of Mexico USA # 1	Oils showed large reduction in viscosity and API increase	Postponed offshore trial in 3 undersea flowline wells (1300BOPD) at MF feed rate of 250-2000 ppm (40 drum trial)
Gulf of Mexico USA # 2	As above	Trial postponed until field success elsewhere demonstrated
CNRL (Diluent) (Canada)	Viscosity Reduction 90% @40C	Awaiting a trial (COVID DELAY)
Petro China (Diluent reduction Canada)	Well AD05 Viscosity Reduction 90% and API increase 7.01-8.98 Tested at 15C/40C	Awaiting approval for trial (COVID DELAY)
Nexen SAGD Crude (Diluent Canada) (72,000 BOPD)	API increase 5.5 to 19.3 with 50/50 Blend of Diluent/crude & 1000 PPM MF	Will pursue after industry conditions improve
Valkor (Trinidad)	Results on other Valkor oils sufficient	Well cleaning for 5 wells. Potential for hundreds of wells (1-2 drums/well. Goal is to replace "Hot Oiling"  Expecting ~6 drum order for trial. Potential for 250 drums/month
Valkor (Unita Basin)	Success in liquifying yellow & black waxes	
Valkor (Ukraine)	Results on other Valkor oils sufficient	
Colombia (SELVA)– oil from 10 wells tested & 1 tank tested	Many tests on many fields/wells and tanks API increase in all at least at least 1.2 API units	Awaiting Colombian distributor
ADOC 45,000 bopd pipeline, Abu Dhabi	Liquefied paraffin-rich sludge with slight agitation	Proposal Submitted
NESL (Belarus tank cleaning) (8-350,000-barrel tanks on site all require cleaning)	Distributor reports successful testing on sludge reliquification (Bench Test)	Distributor made inquiry for 182 drums in mid- May. Proposal submitted (PO PENDING)
Colombia well 713 (CRC Montalvo/Grubb)	Lab reports MF inhibits deposition of asphaltenes and paraffin.	Awaiting Colombian Distributor
Quifa Field (Colombia)	API increase 13.4-14.7 . Viscosity drop 50%, BS&W drop 50%	Awaiting Colombian distributor for next step

# Technology Platform Solutions

