

31 January 2020

## December 2019 Quarterly Activities and Cashflow Report

### Summary

- Appointment of Bill Tarantino as CEO of chemicals business
- Strong production increases reported for Texas producer using HCD Multi-Flow®
- On-shore enhanced oil recovery pilot for Oil India commenced
- Field test for large pipeline in India undertaken
- Pilot for large producer in the Gulf of Mexico expected to commence in current quarter
- Well selection for field trial in Kuwait for Kuwait Oil Company completed
- Change of name to Hydrocarbon Dynamics Limited (ASX:HCD) approved at EGM
- Further research, testing and marketing undertaken on diluent reduction opportunities

### CEO Appointment

During the quarter HCD announced that Mr. William Tarantino joined the group on 2 January 2020 as CEO of HCD's chemical business. Mr Tarantino is a very experienced energy executive with a strong background in oilfield chemical sales, operations and marketing.

Mr. Tarantino was a senior executive with Baker Hughes where he worked for eighteen years (1991-2019). His last position was as VP Business Development and Strategic Marketing – Production Chemicals based in Houston. While at Baker Hughes he held numerous positions including Director of Global Accounts as well as Director of Operations & Sales Europe, Africa, and Russia Caspian Region. Prior to his distinguished career at Baker Hughes, Mr. Tarantino was employed by Halliburton for five years and Betz Laboratories for three years.

As CEO of HCD's chemical business, Mr. Tarantino will be responsible for the overseeing the marketing, sales, production and development of HCD's chemical business centred around the Company's key product, HCD Multi-Flow®.

### Texas Production Success

HCD received a follow-up order from a producer in a field in the East Texas Basin for use in a “continuous drip” to maintain increased production and to keep the wellbore clear of paraffin. The order follows the successful treatment of 3 wells where substantial and sustained production increases were reported.

The small Texas producer had reported to HCD that after treating 3 low productivity wells in an oilfield in the East Texas Basin, the average increase in production over the first three months

has been 125%. The results as reported by the customer for each well are set out in the table below:

Well	Before (boe/m)	After (boe/m)	Increase %
ACF#1	23	41	80%
GAS#1	62	204	231%
JSC#2	42	71	68%
<b>Average</b>			<b>126%</b>

These wells produce from the Lower Cretaceous Rodessa Formation and carry very high paraffin levels. The customer performed a Tri-Phase Squeeze with HCD Multi-Flow® on each well to boost production and then maintain higher production with a continual low level HCD Multi-Flow® feed of 200-300 parts per million (PPM) to the backside of the well to keep the wells free from paraffin.

The customer specifically noted, when replacing a down-hole pump in one of the wells to manage the increased production, that the pump remained clear of paraffin and asphaltene build-up (which had not occurred before), allowing a sustained increase in production as a result of a continuous drip feed of HCD Multi-Flow® post the squeeze treatment. Based on the success of the three-well treatment the customer has ordered 5 additional drums of HCD Multi-Flow to maintain production and keep the wells clear of paraffin build-up.

## Field Trials

During the Quarter, and shortly after, HCD undertook two new field trials and was awarded a third.

### 1. Gulf of Mexico.

On 10 October HCD announced that its key product, HCD Multi-Flow®, would be used in a pilot on an offshore platform in the US Gulf of Mexico to clean up wax and asphaltene deposition in a subsea transfer pipeline and prevent them from recurring. The line is owned by a significant oil producer concentrating largely on deep-water US Gulf of Mexico assets.

In the trial, now expected to commence in the current quarter, the producer has recommended a different platform where HCD Multi-Flow® will be applied to a circa 1,000 barrel of oil/day transfer line at dosage rates from 250 PPM up to 1,000 PPM. The objective of the trial will be to reduce the pressure in the line by cleaning the paraffin and asphaltene deposition and to prevent build up of waxes and paraffins in the future. The benefits to the producer will be flow assurance in the line, cost reductions associated with replacing numerous chemicals currently used and improved Health, Safety & Environment outcomes.

The producer has purchased ~US\$12,000 of HCD Multi-Flow® for the pilot.

## 2. Oil India Production Boost.

During December HCD commenced a field trial in India for one of India's pre-eminent producers, Oil India, using HCD's key product HCD Multi-Flow®.

After treating a well in the Baghewala oil field in northern India using HCD Multi-Flow®, the well responded quickly demonstrating a circa 65% boost in production during the first week post treatment. The well was later shut-in for maintenance and has subsequently been placed back on production with results pending.

The Baghewala field currently has seven wells in production with a further 15 development wells planned. The existing wells currently produce approximately 40 barrels of oil/day each, having encountered significant declines over several years. The objective of the trial is to re-liquefy paraffinic deposits in the formation and salt scales in order to improve production rates over a six-month period.

## 3. Pipeline trial in India.

In December HCD commenced a trial to test the efficacy of HCD Multi-Flow® for one of India's largest pipelines.

In a staged trial HCD Multi-Flow® was applied to a circulation pipeline and storage tank containing 2,400 barrels of oil within a terminal associated with a 175,000 barrel/day pipeline operated by a major producer in India. The objective of the trial was to reduce the pour point and wax appearance temperature (WAT) in order to reduce the substantial costs of transporting and managing the waxy oil produced.

The effect of Multi-Flow® on pour point, WAT and viscosity was inconclusive. The HCD technical team believe that most of the Multi-Flow was absorbed cleaning sludge in the tank (as the product works on the largest molecules first). The tank in question had not been cleaned in 7 years and consequently had significant sludge accumulation.

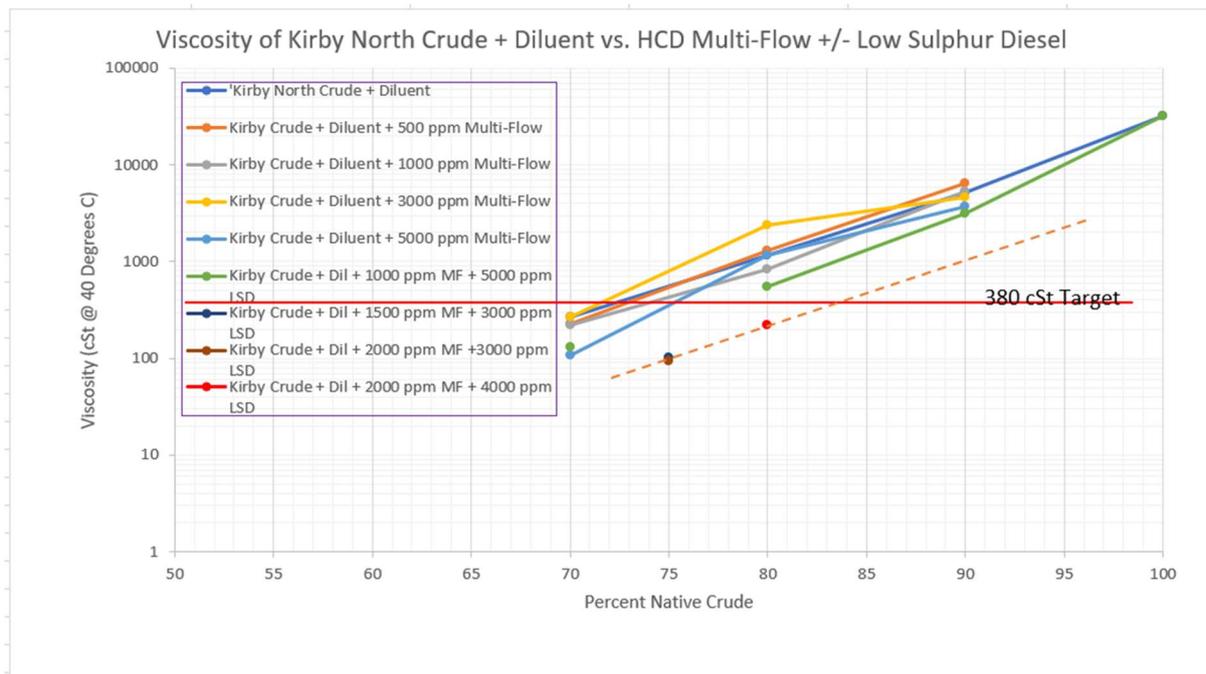
HCD will now concentrate on securing a second trial in an environment where the product can demonstrate its capabilities directly associated with its intended use being flow assurance in this instance.

## **Canada Diluent Reduction Update**

Work continued in Canada on securing further field trials for several producers. Significant effort was directed toward opportunities to use HCD Multi-Flow® to reduce diluent usage within the Canadian oil sands and heavy oil industries where large quantities of diluent (often light oil, condensate, naphtha, syncrude etc.) are used to assist in the production, handling and transport of

Alberta's viscous oils. Typically, producers of these heavy oils require a diluent to native crude ratio of 30%:70%.

Based on previously reported success of Multi-Flow in reducing diluent in heavy oil production in California and China, HCD has been testing its product in independent laboratories alongside several Canadian oil sand producers with early results suggesting Multi-Flow, when used with a carrier fluid such as low sulphur diesel, has the potential to reduce diluent requirements by up to 50% (see table below).



Graph above depicts the potential of HCD Multi-Flow to reduce diluent needs by up to 50%

Further lab testing with 3 Canadian producers is planned for the current quarter. HCD also expects to publish a short report on the Canadian diluent industry and the opportunities it presents for HCD Multi-Flow.

## China Update

HCD's distributor in China reports slow progress despite excellent field trial results, but they remain in discussions with CNPC for both additional field trials and also a pipeline trial.

## Middle East Update

HCD and its Middle East distributor, Gulf Green Crude Dynamics (GGCD), have continued to work on converting successful laboratory tests to field trials and tank cleans with oil producers in the UAE, Kuwait, Iraq and Oman.

As previously reported GGCD and HCD staff recently met with representatives at ADOC, ADNOC, Kuwait Oil Company and Saudi Aramco to progress field trial proposals.

In Kuwait, several drums of HCD Multi-Flow have been delivered to Kuwait Oil Company and HCD's distributor reports a proposal for a downhole treatment in the Greater Burgan field has been agreed (trial switched from the Abduliyah Oilfield). No start date has been given.

In Iraq the Basrah Oil Company have invited GGCD back to discuss the requirements for a specific tank with paraffin issues. In early February our distributor will visit the tank farm to consider the paraffin problems ahead of refining a proposal for the task.

In Saudi Arabia Aramco have received a team from HCD and our distributor twice in the last quarter. Aramco have provided details of a tank at Ras Tanura terminal and HCD have provided a proposed solution.

For ADOC, GGCD continue to work on securing a 3-month preventative maintenance programme designed to avoid future sludge build-up in tank storage facilities and pipeline infrastructure.

In ADNOC's case GGCD is pursuing tank cleaning contracts after a successful test on liquefying sludge with the addition of Multi-Flow®.

## **South America Update**

HCD's agent in South America continues to work towards converting highly encouraging independent laboratory tests into field pilots with two companies. In previous quarterly reports it had been noted that the heavy crude oils of Colombia consistently respond well to treatment with HCD Multi-Flow® in laboratory tests with meaningful uplifts in API gravity and reductions in viscosity. Given the significant viscosity issues associated with these crudes, the laboratory results strongly indicate substantial cost savings can be achieved by producers in both enhanced oil recovery, and especially for diluent replacement.

## **Kentucky Project Update – HCD Owned (100% WI 81.25%NRI)**

No work undertaken during the Quarter.

## **Utah Project Update - HCD Owned (100% WI 81.25%NRI)**

As foreshadowed in the September quarterly report, HCD has sourced samples from a nearby operator to its Ashphalt Ridge oil sands deposit and will now work on determining the oil characteristics and the ability of HCD Multi-Flow® to liberate the oil and to assist in early design of processes needed to extract oil at the pilot stage.

## **Financial**

The Company received revenues of \$34,000 for sale of products for the Quarter bringing annual revenues to \$175,000. At 31 December 2019, HCD had cash resources of approximately \$1.6m.

## Oil and Gas Tenements as at 31 December 2019

<b>Project</b>	<b>Location</b>	<b>Interest acquired or disposed of during the quarter net to HCD</b>	<b>Total acres owned net to HCD</b>	<b>Working Interest held as at 31 December 2019</b>
<b>Newkirk</b>	Kay and Noble Counties,	558	-	100%
<b>Kentucky</b>	Butler and Warren Counties, Kentucky	-	1,843	100%
<b>Utah</b>	Uintah, County	-	3,459	100%

For further information please contact:

**Stephen Mitchell**  
**Chairman**  
 Hydrocarbon Dynamics Limited

**Julie Edwards**  
**Company Secretary**  
 Hydrocarbon Dynamics Limited

Telephone: +61 3 9642 2899  
 Website: [www.hydrocarbodynamics.com](http://www.hydrocarbodynamics.com)

ASX Code: HCD

## Appendix 5B

# Mining exploration entity and oil and gas exploration entity quarterly report

Introduced 01/07/96 Origin Appendix 8 Amended 01/07/97, 01/07/98, 30/09/01, 01/06/10, 17/12/10, 01/05/13, 01/09/16

### Name of entity

Hydrocarbon Dynamics Limited

### ABN

75 117 387 354

### Quarter ended ("current quarter")

31 December 2019

Consolidated statement of cash flows	Current quarter \$A'000	Year to date (12 months) \$A'000
<b>1. Cash flows from operating activities</b>		
1.1 Receipts from customers	34	142
1.2 Payments for		
(a) exploration & evaluation	(104)	(663)
(b) development	-	-
(c) production	(26)	(74)
(d) staff costs (including marketing)	(213)	(1,194)
(e) administration and corporate costs	(158)	(786)
1.3 Dividends received (see note 3)	-	-
1.4 Interest received	1	12
1.5 Interest and other costs of finance paid	-	-
1.6 Income taxes paid	-	(146)
1.7 Research and development refunds	-	-
1.8 Other - Royalties	(70)	(300)
<b>1.9 Net cash from / (used in) operating activities</b>	<b>(536)</b>	<b>(3,009)</b>

<b>2. Cash flows from investing activities</b>		
2.1 Payments to acquire:		
(a) property, plant and equipment	-	-
(b) tenements (see item 10)	-	-
(c) investments	-	-
(d) other non-current assets (Patent)	-	(5)

Appendix 5B  
Mining exploration entity and oil and gas exploration entity quarterly report

<b>Consolidated statement of cash flows</b>		<b>Current quarter \$A'000</b>	<b>Year to date (12 months) \$A'000</b>
2.2	Proceeds from the disposal of:		
	(a) property, plant and equipment	-	-
	(b) tenements (see item 10)	-	-
	(c) investments	-	-
	(d) other non-current assets	-	-
2.3	Cash flows from loans to other entities	-	-
2.4	Dividends received (see note 3)	-	-
2.5	Other (cash purchased on acquisition)	-	-
<b>2.6</b>	<b>Net cash from / (used in) investing activities</b>	<b>-</b>	<b>(5)</b>
<b>3. Cash flows from financing activities</b>			
3.1	Proceeds from issues of shares	-	2,468
3.2	Proceeds from issue of convertible notes	-	-
3.3	Proceeds from exercise of share options	-	-
3.4	Transaction costs related to issues of shares, convertible notes or options	-	(63)
3.5	Proceeds from borrowings	-	-
3.6	Repayment of borrowings	-	-
3.7	Transaction costs related to loans and borrowings	-	-
3.8	Dividends paid	-	-
3.9	Other (provide details if material)	-	-
<b>3.10</b>	<b>Net cash from / (used in) financing activities</b>	<b>-</b>	<b>2,405</b>
<b>4. Net increase / (decrease) in cash and cash equivalents for the period</b>			
4.1	Cash and cash equivalents at beginning of period	2,133	2,206
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(536)	(3,009)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	-	(5)
4.4	Net cash from / (used in) financing activities (item 3.10 above)		2,405
4.5	Effect of movement in exchange rates on cash held		
<b>4.6</b>	<b>Cash and cash equivalents at end of period</b>	<b>1,597</b>	<b>1,597</b>

<b>5. Reconciliation of cash and cash equivalents</b> at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts	<b>Current quarter \$A'000</b>	<b>Previous quarter \$A'000</b>
5.1 Bank balances	89	333
5.2 Call deposits	1,508	1,800
5.3 Bank overdrafts	-	-
5.4 Other (provide details)	-	-
<b>5.5 Cash and cash equivalents at end of quarter (should equal item 4.6 above)</b>	<b>1,597</b>	<b>2,133</b>

**6. Payments to directors of the entity and their associates**

- 6.1 Aggregate amount of payments to these parties included in item 1.2
- 6.2 Aggregate amount of cash flow from loans to these parties included in item 2.3
- 6.3 Include below any explanation necessary to understand the transactions included in items 6.1 and 6.2

**Current quarter  
\$A'000**

(226)

Directors fees, Consultancy and Royalties

**7. Payments to related entities of the entity and their associates**

- 7.1 Aggregate amount of payments to these parties included in item 1.2
- 7.2 Aggregate amount of cash flow from loans to these parties included in item 2.3
- 7.3 Include below any explanation necessary to understand the transactions included in items 7.1 and 7.2

**Current quarter  
\$A'000**

-

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8. <b>Financing facilities available</b> <i>Add notes as necessary for an understanding of the position</i>	Total facility amount at quarter end \$A'000	Amount drawn at quarter end \$A'000
8.1 Loan facilities	-	-
8.2 Credit standby arrangements	-	-
8.3 Other (please specify)	-	-
8.4 Include below a description of each facility above, including the lender, interest rate and whether it is secured or unsecured. If any additional facilities have been entered into or are proposed to be entered into after quarter end, include details of those facilities as well.		

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9. <b>Estimated cash outflows for next quarter</b>	\$A'000
9.1 Exploration and evaluation (includes India trial)	125
9.2 Development	-
9.3 Production (primarily inventory for sale)	145
9.4 Staff costs (including marketing)	260
9.5 Administration and corporate costs	145
9.6 Other - Royalties	70
Other - recruitment services	50
<b>9.7 Total estimated cash outflows</b>	<b>795</b>

10. <b>Changes in tenements (items 2.1(b) and 2.2(b) above)</b>	Tenement reference and location	Nature of interest	Interest at beginning of quarter	Interest at end of quarter
10.1 Interests in mining tenements and petroleum tenements lapsed, relinquished or reduced	Newkirk, USA	100% working interest	558	-
10.2 Interests in mining tenements and petroleum tenements acquired or increased				

**Compliance statement**

- 1 This statement has been prepared in accordance with accounting standards and policies which comply with Listing Rule 19.11A.
- 2 This statement gives a true and fair view of the matters disclosed.

Sign here:

  
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Company secretary

Date: 31 January 2020

Print name: Julie Edwards

**Notes**

1. The quarterly report provides a basis for informing the market how the entity's activities have been financed for the past quarter and the effect on its cash position. An entity that wishes to disclose additional information is encouraged to do so, in a note or notes included in or attached to this report.
2. If this quarterly report has been prepared in accordance with Australian Accounting Standards, the definitions in, and provisions of, AASB 6: Exploration for and Evaluation of Mineral Resources and AASB 107: Statement of Cash Flows apply to this report. If this quarterly report has been prepared in accordance with other accounting standards agreed by ASX pursuant to Listing Rule 19.11A, the corresponding equivalent standards apply to this report.
3. Dividends received may be classified either as cash flows from operating activities or cash flows from investing activities, depending on the accounting policy of the entity.