# Indago Energy Limited

**31 January 2019**

## December 2018 Quarterly Activities and Cashflow Report

### Summary

- Modest sales of Multi-Flow commence in China
- Oil production commences from INK owned Kentucky project
- Good results from two wells in China for major national onshore producer
- Preparations advanced for offshore well test in China for major offshore producer
- Preparations for testing INK owned project in Utah commenced – permits applied for
- Post quarter end oil samples from two Colombian fields successfully tested
- Three oil samples from three Middle East sources sent to US for testing
- Testing for three producers in Canada continues with one moving to field trial
- In California preparations are underway to test two wells for major producer
- Cash position at 31st December 2018 of A$2.2m

### Multi-Flow Sales in China

During the Quarter Indago sold $36,000 of Multi-Flow and associated products to its Chinese distributor to conduct tests with two major Chinese producers. Details of these trials follow later in this report.

### Kentucky Update

Swabbing operations at the Weldon Young #1A well took place over a 20 day period from 21st November to 10th December 2018 and 66.5 barrels of crude oil were recovered. The well was swabbed for a total of 28 hours during this period indicating an average crude oil production rate of 57 barrels of oil per day (extrapolated). After 16 days of operation the extrapolated oil production rate was approximately 52 bbls/d. Samples of the recovered crude were collected each day the well was swabbed for subsequent laboratory analysis. Three of the samples collected on 21st November, 24th November and 5th December were then selected and sent to Intertek for laboratory analysis of API gravity and kinematic viscosity.

The laboratory results indicated that the crude oil produced decreased in API gravity and increased in kinematic viscosity with time and production as illustrated in the graph below.

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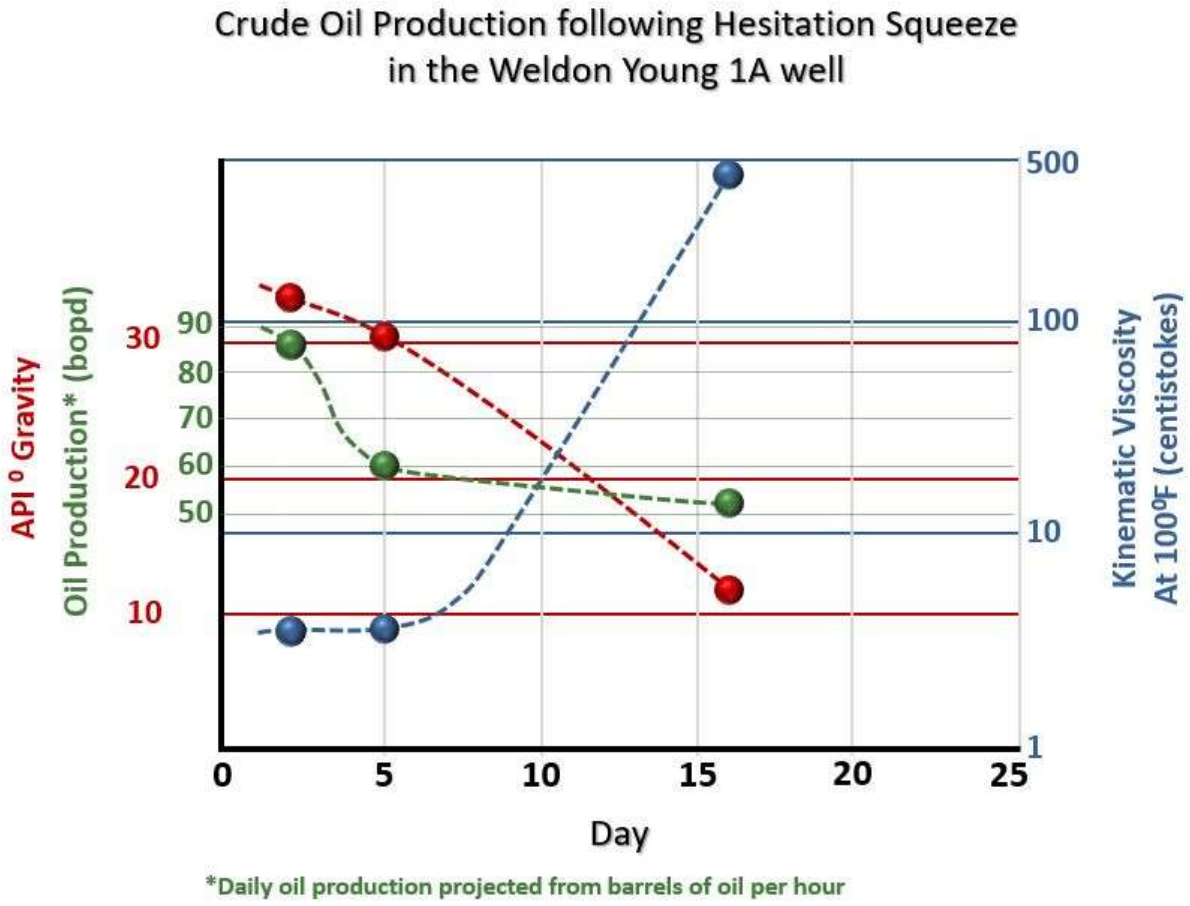


The laboratory results of decreasing API gravity and increasing kinematic viscosity of the crude oil produced with time and production is attributed to the change in percentage of native crude and injected fluid recovered during swabbing operations.

The results indicate that the initial crude oil flowed back on 21st November was 76% native crude and 24% injected fluids. Three days later on 24th November the percentage of native crude had increased to 79% and the injected fluids reduced to 21%. After a further 11 days (5th December) the percentage of native crude had increased to 98.2% and the injected fluids were 1.8%. The changes with time and production in API gravity and percentage of native crude to injected fluids were an expected outcome of the trial, but the reduction in kinematic viscosity of the 11.6$^0$API gravity crude (or 98.2% native crude) to 490.5 centi-Stokes (cTs) is particularly noteworthy when compared to the native *in situ* crude oil viscosity of 50,000-100,000 cTs.

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It is evident that the extra heavy crude in the Weldon Young #1A responded extremely well to the injected Multi-Flow and the crude oil production rate of a little more than 50 barrels of oil per day extrapolated from the swabbing results justified putting the well on pump, which a local operator subsequently installed.

Figure 1. Recently installed pump on the Weldon Young # 1A well.

Inclement weather consisting of heavy rain, snow, ice and sub-zero temperatures hampered the installation of the equipment and thus the testing schedule. A recent start-up of the pump had to be suspended with the local operator concerned that sub-zero temperatures would damage the equipment. The brief start-up of the pump on 26th January was not of sufficient duration to pump the water off with the well producing 72 bbls of water that day and 6 bbls of oil (extrapolated from a 6 hour test) and the operator will consider insulation and additional equipment to deal with the freezing temperatures. The well is expected to be back on pump in early February.

Results to date from The Weldon Young #1A well have clearly and successfully demonstrated that HCD Multi-Flow can cause viscous heavy oil to be produced to the surface, which was the primary aim of the test. Production from this well will cease once all oil contacted by Multi-Flow has been produced at which time it is anticipated that several low cost trials will follow aimed at prolonging production via a continual drip of Multi-Flow as well as the application of bacteria used in HCD's Tri-phase Squeezes.

INK will use information from this first well to design the most effective completion techniques to promote oil production using HCD Multi-Flow and any necessary enhancements, such as carrier fluids, floods, horizontal wells, stimulation techniques and bacteria aimed at maximising the rate and longevity of production.

## China Update

Indago undertook two trials for a major onshore producer in China. The first well was a diluent reduction trial and the second a Tri-Phase Squeeze. The oilfield in which the tests occurred produces approximately 14 million barrels of heavy crude oil per year from approximately 1,000 wells. The field experiences myriad problems in production, transport, handling and storage commonly associated with heavy oilfields. Crude oil viscosity is high and significant quantities of diluent (in this case light oil) are required to produce and transport the oil.

In a well test aimed at reducing oil viscosity and the volume of diluents required to keep the viscous oils mobile (thereby reducing production and transportation costs) and increasing production rates, HCD Multi-Flow was added at 2,000 parts per million (ppm) to the diluent tank feeding into the well. The test duration was 8 days. The results were highly successful with daily oil production increasing by 21%, the injection pressure being reduced by 12% from 3.4 megapascals (Mpa) to 3.0 Mpa and the crude oil viscosity was reduced by 65%. The result also provided evidence that a significant reduction in diluent was possible.

The potential for diluent reduction with the addition of Multi-Flow is profound. With the addition of Multi-Flow the viscosity may be substantially reduced by up to 65%, which strongly indicates the addition of Multi-Flow should result in a diluent reduction of 40%. Indago is now in discussions to capitalise on the success of the trial and expand to a pilot of multiple diluent wells.

In a separate test Indago implemented a Tri-Phase Squeeze (Multi-Flow, Salt Reducer and Microphase) on a second well for the same producer in the same field in order to increase oil production. After the treatment the well's production rate increased by 50% for approximately four weeks before production returned to its pre-treatment levels. Indago initially recommended that a continuous drip of Multi-Flow into the well would also assist in prolonging the enhanced production and will recommend this again as a next step.

## Utah Project Update

Following on from an announcement last quarter of substantial independently certified oil resources for its 100% owned oil sands project in Utah, Indago undertook geological analyses in the December Quarter and identified areas under lease where the Rimrock Sandstone is sufficiently close to the surface to enable bulk sampling for testing with Multi-Flow. Permit applications required by the State of Utah for bulk sample collection were lodged in December 2018 and should be awarded in the first quarter of 2019.

## Field Trials Update

One well test in British Columbia for a major Canadian producer concluded with successful results. The test required Multi-Flow to clean (and keep clean) a well bore beset by wax problems and to thus permit continuous production. While the test was successful and the operator was pleased with the performance of HCD Multi-Flow in this well, due to current oil market conditions in Canada, the entire field was shut-in until the local oil price recovers.

A 10-month test of a well and tank in Saskatchewan was suspended in the Quarter. The objective of this test was to lower the raw heavy oil density and viscosity with Multi-Flow, allowing for lower heating temperatures in the tank and outflow lines and an increase in the sales value of the crude due to lower density. Multi-Flow succeeded in lifting API gravity from 14.4º API to 15.5º, reducing the density from 969.3 kg/$m^3$ to 962.2 kg/$m^3$ and reduced the kinematic viscosity from 1001 cTs @ 30º C down to 586.7. However the improvements were not considered sufficient enough in the current oil market conditions.

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## Distributor and Agent Update

In California, Indago's sales and marketing agent arranged two down-hole trials in a large heavy oilfield with a major Californian producer. The heavy oil field currently uses a competitor product to reduce the viscosity of the crude to enable artificial lift and pipeline transport of the crude oil produced.

These trials are planned to substitute the existing chemical treatment with Multi-Flow utilising the same down-hole chemical delivery system and compare efficacy. Several drums of Multi-Flow are already onsite and the trial should commence in the current quarter.

In China, Indago's distributor has arranged for offshore trials in several wells with a major offshore Chinese producer. The trials are scheduled to take place after Chinese New Year and will address technical problems including bitumen plugging in gravel pack completions and wax deposition in perforations and production tubulars. Indago engineers have designed a number of squeeze programs to address these technical issues.

In Colombia, HCD's sales partner collected samples from two large oilfields and, subsequent to the December Quarter, successfully tested two of these samples in an Intertek Laboratory demonstrating meaningful reductions in crude oil viscosity. An API gravity uplift from $13.8^0$ API to $15^0$API was achieved in both fields and kinematic viscosity significantly reduced. The next step is to go to field trials and if the same viscosity reductions are achieved in the field trials then these crudes would be pipeline compliant without the need for any addition of expensive diluents. The National Oil Company currently transports up to 400,000 barrels of oil per day and spends approximately $US1 Billion per annum on diluents to enable this transport, representing an exciting opportunity for Multi-Flow.

In the Middle East HCD's distributor identified three large potential customers for Multi-Flow and collected samples from each for laboratory testing in the US.

## Laboratory Testing & Product Update

Laboratory testing during the Quarter included reducing heavy crude oil kinematic viscosity in two wells from the Athabasca area for a major Canadian producer. The objective was to ascertain that Multi-Flow could reduce the kinematic viscosity below a certain value at reservoir temperature. This was achieved, with Multi-Flow reducing the initial kinematic viscosity of 6220.6 cTs @ 25° C to 2764.9 cTs. This result is significant, and the operator is selecting a suitable nearby vertical well in which to conduct a field trial with Multi-Flow.

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Laboratory analyses for the same producer have commenced on two wells each from two other areas in Alberta, both with wax and asphaltene issues in light crudes.

Laboratory testing is ongoing at OEC Laboratories in California on heavy Athabasca crude and water emulsion from a major Canadian oil sands producer. The testing to date shows that diluent usage may be reduced by utilizing Multi-Flow, but testing is still ongoing to define optimal Multi-Flow dosage rate and possible diluent reduction.

## Newkirk Project, Kay County Oklahoma (100% WI 81.25%NRI)

No work was conducted during the quarter. INK currently holds 1,473 acres with 1,675 acres expiring in the December Quarter.

## Financial

At 31st December 2018, Indago Energy had cash resources of $2.2 million.

## Oil and Gas Tenements as at 31 December 2018

| Project | Location | Interest acquired or disposed of during the quarter net to Indago | Total acres owned net to Indago | Working Interest held as at 31 December 2018 |
|---|---|---|---|---|
| **Newkirk** | Kay and Noble Counties, Oklahoma | (1,675) | 1,473 | 100% |
| **Kentucky** | Butler and Warren Counties, Kentucky | - | 1,786 | 100% |
| **Utah** | Uintah, County | - | 3,459 | 100% |

For further information please contact:

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**ASX Code: INK**

*+Rule 5.5*

# 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**

Indago Energy Limited

| **ABN** | **Quarter ended ("current quarter")** |
|---|---|
| 75 117 387 354 | 31 December 2018 |

| **Consolidated statement of cash flows** | | **Current quarter $A'000** | **Year to date (12 months) $A'000** |
|---|---|---|---|
| **1.** | **Cash flows from operating activities** | | |
| 144 | Receipts from customers | 36 | 46 |
| 1.2 | Payments for | | |
| | (a) exploration & evaluation | (235) | (816) |
| | (b) development | - | - |
| | (c) production | (18) | (18) |
| | (d) staff costs (including marketing) | (343) | (1,368) |
| | (e) administration and corporate costs | (217) | (847) |
| 1.3 | Dividends received (see note 3) | - | - |
| 1.4 | Interest received | - | 11 |
| 1.5 | Interest and other costs of finance paid | (1) | (3) |
| 1.6 | Income taxes paid | - | - |
| 1.7 | Research and development refunds | - | - |
| 1.8 | Other - Royalties | (68) | (282) |
| **1.9** | **Net cash from / (used in) operating activities** | **(846)** | **(3,277)** |

| **2.** | **Cash flows from investing activities** | | |
|---|---|---|---|
| 2.1 | Payments to acquire: | | |
| | (a) property, plant and equipment | - | (1) |
| | (b) tenements (see item 10) | - | (168) |
| | (c) investments | - | - |
| | (d) other non-current assets | - | (7) |

| Consolidated statement of cash flows | | Current quarter $A'000 | Year to date (12 months) $A'000 |
|---|---|---|---|
| 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 | 3 | 29 |
| 2.4 | Dividends received (see note 3) | - | - |
| 2.5 | Other (cash purchased on acquisition) | - | - |
| **2.6** | **Net cash from / (used in) investing activities** | **3** | **(147)** |

| | | | |
|---|---|---|---|
| **3.** | **Cash flows from financing activities** | | |
| 3.1 | Proceeds from issues of shares | - | 2,748 |
| 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 | (23) | (113) |
| 3.5 | Proceeds from borrowings | - | 64 |
| 3.6 | Repayment of borrowings | (20) | (67) |
| 3.7 | Transaction costs related to loans and borrowings | - | - |
| 3.8 | Dividends paid | - | - |
| 3.9 | Other (provide details if material) | - | - |
| **3.10** | **Net cash from / (used in) financing activities** | **(43)** | **2,632** |

| | | | |
|---|---|---|---|
| **4.** | **Net increase / (decrease) in cash and cash equivalents for the period** | | |
| 4.1 | Cash and cash equivalents at beginning of period | 3,059 | 2,947 |
| 4.2 | Net cash from / (used in) operating activities (item 1.9 above) | (846) | (3,277) |
| 4.3 | Net cash from / (used in) investing activities (item 2.6 above) | 3 | (147) |
| 4.4 | Net cash from / (used in) financing activities (item 3.10 above) | (43) | 2,632 |
| 4.5 | Effect of movement in exchange rates on cash held | 33 | 51 |
| **4.6** | **Cash and cash equivalents at end of period** | **2,206** | **2,206** |

| 5. | Reconciliation of cash and cash equivalents at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts | Current quarter $A'000 | Previous quarter $A'000 |
|---|---|---|---|
| 5.1 | Bank balances | 497 | 3,059 |
| 5.2 | Call deposits | 1,709 | - |
| 5.3 | Bank overdrafts | - | - |
| 5.4 | Other (provide details) | - | - |
| **5.5** | **Cash and cash equivalents at end of quarter (should equal item 4.6 above)** | **2,206** | **3,059** |

| 6. | Payments to directors of the entity and their associates | Current quarter $A'000 |
|---|---|---|
| 6.1 | Aggregate amount of payments to these parties included in item 1.2 | (186) |
| 6.2 | Aggregate amount of cash flow from loans to these parties included in item 2.3 | 3 |

6.3 Include below any explanation necessary to understand the transactions included in items 6.1 and 6.2

6.1 - Directors fees, Consultancy and Royalties
6.2 - Director loan repayment (acquired with HCD purchase)

| 7. | Payments to related entities of the entity and their associates | Current quarter $A'000 |
|---|---|---|
| 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

| **8.** | **Financing facilities available**<br>*Add notes as necessary for an understanding of the position* | **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.

| |
|---|
| |

| **9.** | **Estimated cash outflows for next quarter** | **$A'000** |
|---|---|---|
| 9.1 | Exploration and evaluation | 180 |
| 9.2 | Development | - |
| 9.3 | Production | 20 |
| 9.4 | Staff costs (including marketing) | 300 |
| 9.5 | Administration and corporate costs | 200 |
| 9.6 | Other - Royalties | 65 |
| | Other - Tax | 135 |
| **9.7** | **Total estimated cash outflows** | **900** |

| **10.** | **Changes in tenements (items 2.1(b) and 2.2(b) above)** | **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 | 100% Acreage | 3,148 | 1,473 |
| 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: ..... Date: 31 January 2019
Company secretary

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.