

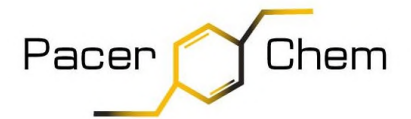


Pacer  Chem

COMPANY PRESENTATION

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## UNIQUE SOLUTIONS



- Proprietary blended products that address a number of current challenges in the oil industry
  - ProLube 210 – Drilling Lubricant
  - ProStim 310 – Stimulation Enhancer
  - ProSolve 110 – Flow Assurance Solvent
  - ProSolve 120 – Aromatic Enhanced Flow Assurance Solvent Ideal for Use in Colder Climates (below -10C) or Offshore
- All extremely stable, environmentally friendly and safe to handle

## DRILLING – PROLUBE 210



**ProLube 210** is a synergistic blend of chemistries reacted together to work as a fluid conditioner providing extreme lubrication properties and superior corrosion inhibition capabilities.

- Friction and Torque Benefits come as a result of:
  - Fluid conditioning properties ensuring a cleaner drilling fluid in the active system
  - A lubricated mud pump reduces fluid end maintenance and down time while improving pump efficiency
  - A better lubricated motor and bit that reduces or eliminates stick slip resulting in better cuttings size and distribution
    - More easily removed from the hole
    - More easily removed by the solids handling system
    - In turn helps reduce damage to the BHA
  - This allows our tenacious boundary film technology to get to the coating surfaces
    - Providing reduced torque and/or increased ROP
    - Overall enhanced system performance

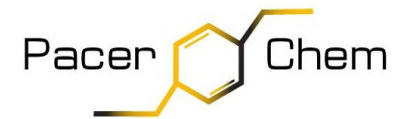
## STIMULATION – PROSTIM 310



ProStim310 is a synergistic blend of chemistries reacted together to work as a surfactant functioning as a wetting agent while improving flowback from the reservoir.

- Its small molecule size allows for ease of flow throughout the reservoir.
- It functions like an inverse micelle (organic versus inorganic) so is not miscible in water
  - as it enters the reservoir it separates from the frac water as it encounters the hydrocarbon, homogenizing with it, and allowing it to be released from the rock face
  - Its strong surface tension capabilities ensure an optimized flowback and phase separation at surface
    - Prevent emulsions within the reservoir
  - The nature of the reaction with the hydrocarbon allows for an overall improvement in oil quality (improved API and elimination of paraffin and asphaltene plugging and deposition) which allows the oil to flow better through the pore space and production system

## PRODUCTION – PROSOLVE 110



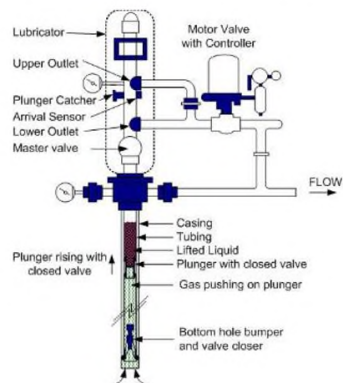
- ProSolve 110 is a multi reactionary chemical liquid compound which was designed to enhance the oil quality
  - The chemistry reduces or eliminates flow blocking depositions such as paraffin, asphaltene and scales
    - Combining dispersion and inhibition capabilities resulting in a slight shift in the carbon chain distribution which is what prevents the depositions and reduces viscosity while improving API
  - Its resilient film strength allows for a surface coating on all exposed surfaces the provides corrosion inhibition and scale inhibition
  - Its incredible surface tension capabilities provide emulsion breaking that improve BS&W results in light and heavy oils
  - These functions lend to it being an excellent cleaning agent for storage and production facilities as well as lending to improved distillation factors, where it could be used as a refinery inlet treating product



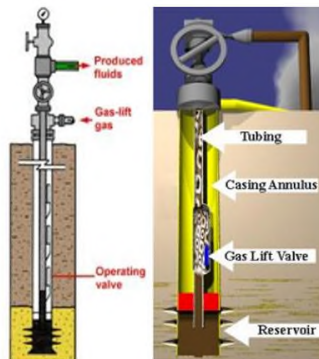
## **PROSOLVE 120 FIELD TRIALS**

# PARAFFIN TREATMENT RESULTS

## 1-22 Free Flow w/Plunger



## 8-36 Gas Lift



- A customer was experiencing significant fouling issues from paraffin resulting in costly hot oiling, knifing and wireline work to maintain production.
- Pacer applied ProSolve 120 treatment to the well.
- Well 1 results
  - No wireline, scissoring or hot oiling required since ProSolve 120 application started on Jan 31, 2019
- Well 2 results
  - No wireline, scissoring or hot oiling required since ProSolve 120 application started on Mar 8, 2019

## GC RESULTS SHOWING HYDROCARBON SHIFT

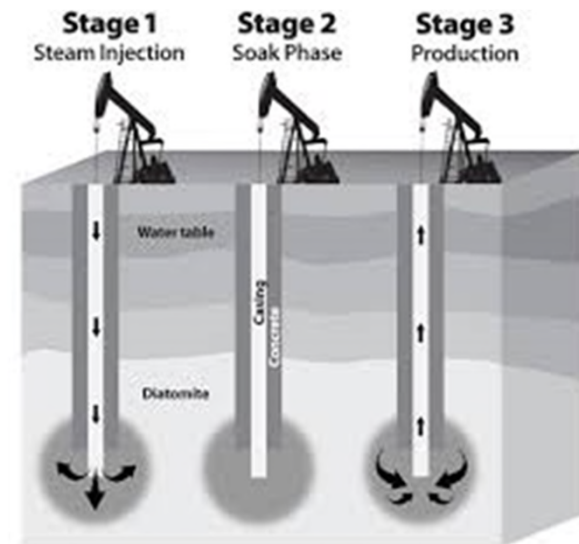
|                      | Mass (mg/g)                     |                                  |                  |
|----------------------|---------------------------------|----------------------------------|------------------|
|                      | C <sub>5</sub> -C <sub>17</sub> | C <sub>18</sub> -C <sub>50</sub> | C <sub>50+</sub> |
| 1-22 Blank           | 537                             | 54                               | 185              |
| Jan 31 <sup>st</sup> | 467                             | 44                               | 264              |
| Feb 1 <sup>st</sup>  | 414                             | 27                               | 333              |
| Feb 2 <sup>nd</sup>  | 560                             | 52                               | 157              |
| Feb 3 <sup>rd</sup>  | 575                             | 68                               | 123              |
| Feb 4 <sup>th</sup>  | 548                             | 53                               | 163              |
| Feb 5 <sup>th</sup>  | 564                             | 50                               | 151              |
| Feb 6 <sup>th</sup>  | 512                             | 45                               | 210              |
| Feb 7 <sup>th</sup>  | 572                             | 48                               | 146              |
| Feb 8 <sup>th</sup>  | 503                             | 28                               | 234              |
| Feb 10 <sup>th</sup> | 562                             | 79                               | 125              |
| Feb 14 <sup>th</sup> | 533                             | 110                              | 114              |
| Feb 15 <sup>th</sup> | 565                             | 116                              | 88               |
| Feb 19 <sup>th</sup> | 592                             | 152                              | 47               |

- As evidenced by the GC data you can see a shift from the longer chain to the shorter chains



## CYCLIC STEAM TREATMENT

- Last Produced 240 BBL heavy oil
- Before last steaming cycle 300L of Prosolve 110 was pumped into the well and let soak for 48hrs
- After the soak the steam cycle took 50% less time than previous cycles
- Current production is 990bbls/cycle and projections are for the rate to be increased to 1100bbl/cycle





# COLD HEAVY OIL WELL STIMULATION

- Vertical well completed into the Cummings and McMurray Zone
- Progressive Cavity Pump (PCP) placed at 82 joints with fluid level at 79 prior to treatment.
- Field operations were loading the well with 5 m3 of hot oil daily to temporarily reduce torque.
- 800L Initial ProSolve 120 Squeeze followed by 12LPD Continuous

|                                 | Total Pumped Fluid (m3) | New Pumped Fluid (m3) = Total Pumped Fluid - WL - COL | Est Oil Produced 45% Cut | 7 Day Avg. Fluid Prod. (m3) | WL (m3) | RPM    | Torque  |
|---------------------------------|-------------------------|---|--------------------------|-----------------------------|---------|--------|---------|
| Production Data Before Chemical | 9.61                    | 4.49  | 2.02                     | 31.28                       | 5.13    | 144.00 | 2893.75 |
| Production Data After Chemical  | 11.0                    | 10.8  | 4.8                      | 75.6                        | 0.3     | 185.7  | 2580.0  |
| % Improvement                   | 14.6%                   | 139.9%  | 139.9%                   | 141.7%                      | -95.1%  | 29.0%  | -10.8%  |

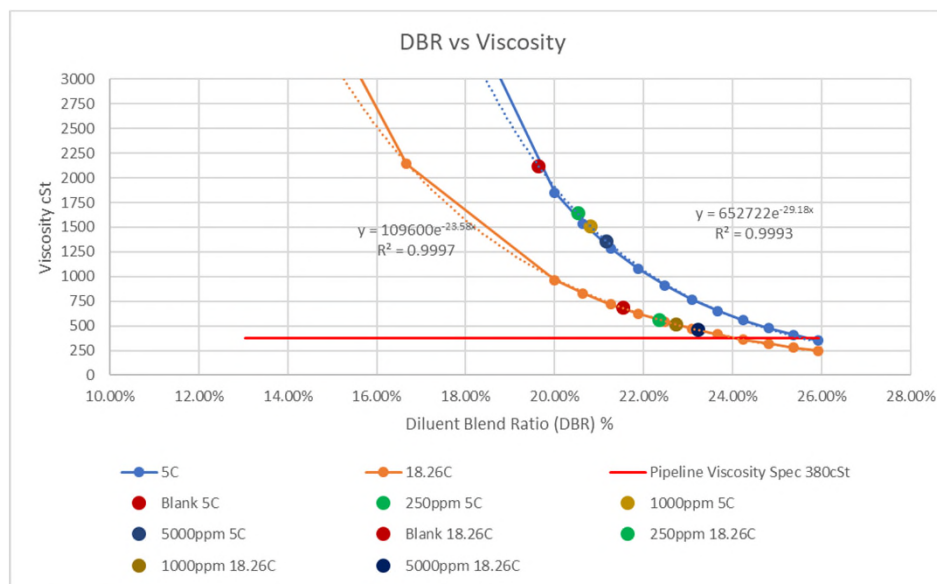
| Temperature | Sept 18 Viscosity (cSt) | Sept 23 Viscosity (cSt) | % Vis Reduction | Sept 27 Viscosity (cSt) | % Vis Reduction |
|-------------|-------------------------|-------------------------|-----------------|-------------------------|-----------------|
| 10 C        | 281200 cSt              | 240700 cSt              | 14.4%           | 226000 cSt              | 19.6%           |
| 20 C        | 69110 cSt               | 59710 cSt               | 13.6%           | 60090 cSt               | 13.1%           |

# THERMAL TESTING RESULTS

- Diluent Blend Ratio (DBR) = Diluent Volume / (Diluent Volume + Bitumen Volume)
- First time observing viscosity impact at low dosage in field testing due to use of a pressurized sample header.
- Supports Fort McMurray Thermal Trial observations seen at 250ppm.

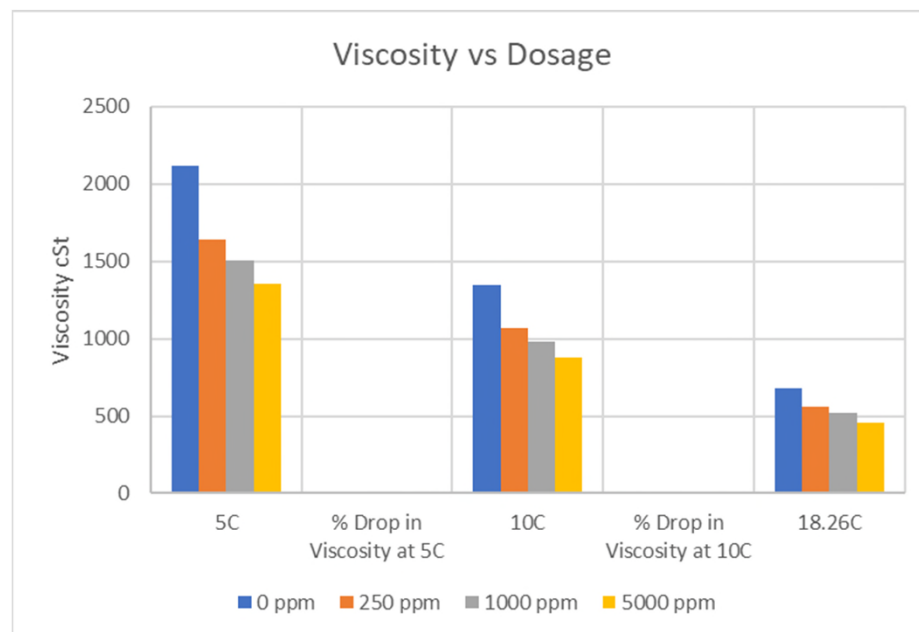
| Dosage | Temp | % DBR  | cSt  | DBR Difference |
|--------|------|--------|------|----------------|
| 0      | 5C   | 19.64% | 2115 |                |
| 250    | 5C   | 20.52% | 1639 | 0.88%          |
| 1000   | 5C   | 20.81% | 1506 | 1.17%          |
| 5000   | 5C   | 21.17% | 1354 | 1.53%          |

| Dosage | Temp   | % DBR  | cSt   | DBR Difference |
|--------|--------|--------|-------|----------------|
| 0      | 18.26C | 21.54% | 682.4 |                |
| 250    | 18.26C | 22.35% | 563.2 | 0.81%          |
| 1000   | 18.26C | 22.72% | 516.5 | 1.18%          |
| 5000   | 18.26C | 23.22% | 459.3 | 1.68%          |



## THERMAL TESTING RESULTS

- Largest Drop in Viscosity Observed in first 250ppm however, the viscosity continues to drop with increased dosage.





## SAGD PREDICTED COST SAVINGS AT 250PPM

| % Diluent Reduction | bopd bitumen | bopd diluent | DBR           | % DBR Reduction | Savings per year   | Chemical Cost per Year | Annual Savings     | ROI            |
|---------------------|--------------|--------------|---------------|-----------------|--------------------|------------------------|--------------------|----------------|
| 0.0%                | 20000        | 6800         | 25.37%        | 0.00%           | \$0                | \$2,573,692            | (\$2,573,692)      | -100.00%       |
| 0.5%                | 20000        | 6766         | 25.28%        | 0.09%           | \$842,267          | \$2,573,692            | (\$1,731,425)      | -67.27%        |
| 1.0%                | 20000        | 6732         | 25.18%        | 0.19%           | \$1,684,533        | \$2,573,692            | (\$889,159)        | -34.55%        |
| 1.5%                | 20000        | 6698         | 25.09%        | 0.29%           | \$2,526,800        | \$2,573,692            | (\$46,892)         | -1.82%         |
| 2.0%                | 20000        | 6664         | 24.99%        | 0.38%           | \$3,369,067        | \$2,573,692            | \$795,375          | 30.90%         |
| 2.5%                | 20000        | 6630         | 24.90%        | 0.48%           | \$4,211,334        | \$2,573,692            | \$1,637,642        | 63.63%         |
| 3.0%                | 20000        | 6596         | 24.80%        | 0.57%           | \$5,053,600        | \$2,573,692            | \$2,479,908        | 96.36%         |
| 3.5%                | 20000        | 6562         | 24.70%        | 0.67%           | \$5,895,867        | \$2,573,692            | \$3,322,175        | 129.08%        |
| 4.0%                | 20000        | 6528         | 24.61%        | 0.77%           | \$6,738,134        | \$2,573,692            | \$4,164,442        | 161.81%        |
| <b>4.5%</b>         | <b>20000</b> | <b>6494</b>  | <b>24.51%</b> | <b>0.86%</b>    | <b>\$7,580,400</b> | <b>\$2,573,692</b>     | <b>\$5,006,708</b> | <b>194.53%</b> |
| 5.0%                | 20000        | 6460         | 24.41%        | 0.96%           | \$8,422,667        | \$2,573,692            | \$5,848,975        | 227.26%        |
| 5.5%                | 20000        | 6426         | 24.32%        | 1.06%           | \$9,264,934        | \$2,573,692            | \$6,691,242        | 259.99%        |
| 6.0%                | 20000        | 6392         | 24.22%        | 1.15%           | \$10,107,200       | \$2,573,692            | \$7,533,508        | 292.71%        |
| 6.5%                | 20000        | 6358         | 24.12%        | 1.25%           | \$10,949,467       | \$2,573,692            | \$8,375,775        | 325.44%        |
| 7.0%                | 20000        | 6324         | 24.02%        | 1.35%           | \$11,791,734       | \$2,573,692            | \$9,218,042        | 358.16%        |
| 7.5%                | 20000        | 6290         | 23.93%        | 1.45%           | \$12,634,001       | \$2,573,692            | \$10,060,309       | 390.89%        |
| 8.0%                | 20000        | 6256         | 23.83%        | 1.55%           | \$13,476,267       | \$2,573,692            | \$10,902,575       | 423.62%        |
| 8.5%                | 20000        | 6222         | 23.73%        | 1.64%           | \$14,318,534       | \$2,573,692            | \$11,744,842       | 456.34%        |
| 9.0%                | 20000        | 6188         | 23.63%        | 1.74%           | \$15,160,801       | \$2,573,692            | \$12,587,109       | 489.07%        |
| 9.5%                | 20000        | 6154         | 23.53%        | 1.84%           | \$16,003,067       | \$2,573,692            | \$13,429,375       | 521.79%        |
| 10.0%               | 20000        | 6120         | 23.43%        | 1.94%           | \$16,845,334       | \$2,573,692            | \$14,271,642       | 554.52%        |

\* Estimated savings at 250ppm



Literally solutions tailored for your problems!