



### H3750

| Customer: PTRHTF20058   | System Information  | Sample Information   |
|---|---|--|
| CNRL<br>LSD 14-23-58-26 W5<br>LELAND, AB Canada<br>Attn: KEN SHAKOTKO<br>Tel: (780)865-2742<br>E-Mail: ken.shakotko@dvn.com | System Volume: 3000 ltr<br>Bulk Operating Temp: 428F / 220C<br>Heating Source:<br>Blanket:<br>Fluid: PETRO CANADA PETRO-THERM<br>Make: WIESLOCH | Lab No: 02213408<br>Analyst: Clinton Buhler<br>Sample Date: 03/09/18<br>Received Date: 05/01/18<br>Completed: 05/09/18 |

Recommendation: Please note severely reduced flash point and reduced viscosity and 10% distillation point. % boil off less than 335C is 2x new fluid value. All of these values can be an indication of ongoing thermal degradation, too high of blanket gas pressure or contamination with another fluid. Thorough venting of the expansion tank is required to release the low boiling vapors from the fluid to help restore the properties noted above. During venting, please turn off blanket gas but turn back on in-between venting sessions. Ensure blanket gas pressure is between 2-3 psi. After very thorough venting, please re-sample in 6 months. Reduced flash point can be a safety concern.

Comments: COC Flash Point was tested two times and is severely low (84°C and 106°C).

| Sample Date   | Received Date | Fluid Age | Sample Location | Flash Point (COC) | Water (KF) | Viscosity (40°C) | Acid Number | Solids | GCD 10%   | GCD 50%   | GCD 90%   | GCD % < 335°C |
|---------------|---------------|-----------|-----------------|-------------------|------------|------------------|-------------|--------|-----------|-----------|-----------|---------------|
|               | mm/dd/yy      |           |                 | °F/°C             | ppm        | cSt              | mg/KOH/g    | %wt    | °F/°C     | °F/°C     | °F/°C     | %             |
| 03/09/18      | 05/01/18      | 10y       |                 | 223 / 106         | 42.9       | 26.7             | 0.02        | 0.061  | 714 / 379 | 816 / 436 | 908 / 487 | 2.22          |
| Baseline Data |               |           |                 | 433 / 223         |            | 34.2             | 0.03        |        | 720 / 382 | 817 / 436 | 900 / 482 | 1.00          |



