

OIL ANALYSIS REPORT

Sample Rating Trend

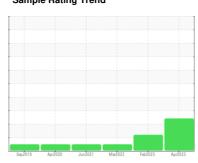
GLYCOL

INTERNATIONAL 42

Component

Diesel Engine

PETRO CANADA DURON HP 15W40 (--- Oz)





DIAGNOSIS

Recommendation

We advise that you check for the source of the coolant leak. Check for low coolant level. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

Sodium and/or potassium levels remain high.

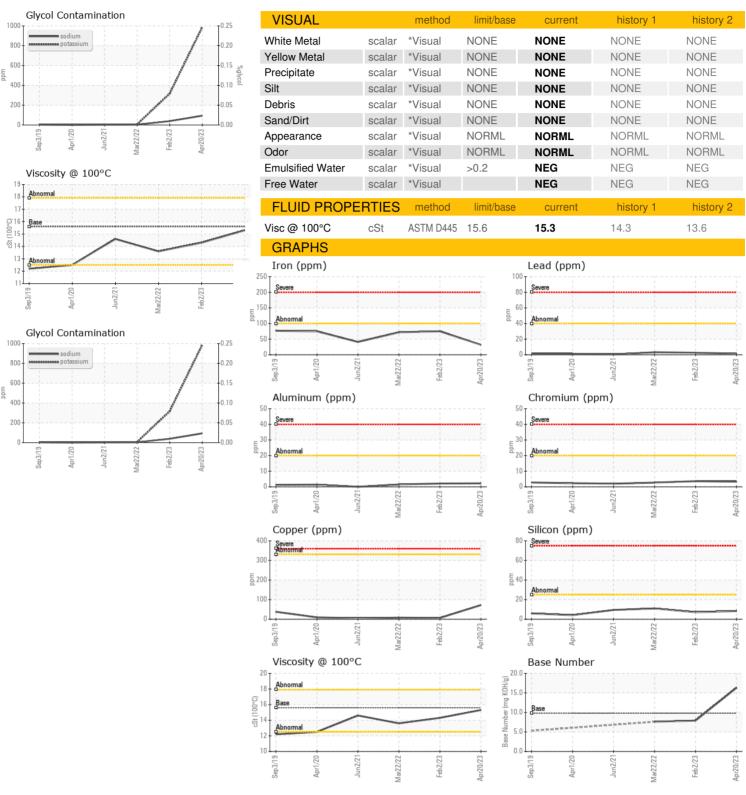
Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil.

SAMPLE INFORMATION method limit/base current history 1 history 2 Sample Number Client Info PCA0083480 PCA0083496 PCA0068172 Sample Date Client Info 3373 11877 10964 Oil Age mls Client Info 3373 11877 10964 Oil Changed Client Info Changed Changed<)		Sep2019	Apr2020 Jun202	Mar2022 Feb2023	Apr2023	
Client Info	SAMPLE INFOR	MATION	method	limit/base	current	history 1	history 2
Machine Age mls Client Info 3373 11877 10964	Sample Number		Client Info		PCA0083480	PCA0083496	PCA0066172
Dil Age	Sample Date		Client Info		20 Apr 2023	02 Feb 2023	22 Mar 2022
Client Info	Machine Age	mls	Client Info		3373	11877	10964
ABNORMAL ABNORMAL ABNORMAL ABNORMAL ABNORMAL ABNORMAL CONTAMINATION method fimit/base current history 1 history 2	Oil Age	mls	Client Info		3373	11877	10964
CONTAMINATION	Oil Changed		Client Info		Changed	Changed	Changed
WEAR METALS	Sample Status				ABNORMAL	ABNORMAL	NORMAL
WEAR METALS method limit/base current history 1 history 2 Iron ppm ASTM D5185m >100 32 75 72 Chromium ppm ASTM D5185m >20 3 4 3 Nickel ppm ASTM D5185m >4 0 <1	CONTAMINAT	ION	method	limit/base	current	history 1	history 2
Pop	-uel		WC Method	>5	<1.0	<1.0	<1.0
Chromium	WEAR METAL	.S	method	limit/base	current	history 1	history 2
ASTM D5185m	ron	ppm	ASTM D5185m	>100	32	75	72
Description	Chromium	ppm	ASTM D5185m	>20	3	4	3
Silver ppm ASTM D5185m >3 0 0 0 0 0 Aluminum ppm ASTM D5185m >20 2 2 2 2 Aluminum ppm ASTM D5185m >20 2 2 2 2 Aluminum ppm ASTM D5185m >20 2 2 2 2 Aluminum ppm ASTM D5185m >330 72 7 8 Aluminum ppm ASTM D5185m >15 <1 1 1 <1	Nickel	ppm	ASTM D5185m	>4	0	<1	0
Atuminum ppm ASTM D5185m >20 2 2 2 2 3 3 3 3 2 2 2 2 2 2 2 2 2 3 3 3 3 3 2 2 3	Γitanium	ppm	ASTM D5185m		0	<1	0
Lead ppm ASTM D5185m >40 2 3 3 Copper ppm ASTM D5185m >330 72 7 8 Fin ppm ASTM D5185m >15 <1 1 <1 Antimony ppm ASTM D5185m 0 <1 0 Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 35 2 4 4 Barium ppm ASTM D5185m 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	Silver	ppm	ASTM D5185m	>3	0	0	0
Description	Aluminum	ppm	ASTM D5185m	>20	2	2	2
Antimony ppm ASTM D5185m >15 <1 1 <1 <1 <1 <1 <1 <	_ead	ppm	ASTM D5185m	>40	2	3	3
Antimony ppm ASTM D5185m 0 <1 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 56 66 63 Manganese ppm ASTM D5185m 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	Copper	ppm	ASTM D5185m	>330	72	7	8
Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 35 2 4 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 56 66 63 Manganese ppm ASTM D5185m 1 <1 <1 <1 Magnesium ppm ASTM D5185m 938 1062 1187 Phosphorus ppm ASTM D5185m 917 940 1090 Zinc ppm ASTM D5185m 917 940 1090 Zinc ppm ASTM D5185m 3088 3353 2742 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >25 <th< td=""><td>Γin</td><td>ppm</td><td>ASTM D5185m</td><td>>15</td><td><1</td><td>1</td><td><1</td></th<>	Γin	ppm	ASTM D5185m	>15	<1	1	<1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 35 2 4 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 56 66 63 Manganese ppm ASTM D5185m 1 <1	Antimony	ppm	ASTM D5185m				
ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 35 2 4 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 56 66 63 Manganese ppm ASTM D5185m 1 <1	/anadium	ppm	ASTM D5185m		0	<1	0
Soron ppm ASTM D5185m 35 2 4	Cadmium	ppm	ASTM D5185m		0	0	0
Barium	ADDITIVES		method	limit/base	current	history 1	history 2
Molybdenum ppm ASTM D5185m 56 66 63 Manganese ppm ASTM D5185m 1 <1	Boron	ppm	ASTM D5185m		35	2	4
Manganese ppm ASTM D5185m 1 <1 <1 Magnesium ppm ASTM D5185m 865 940 1062 Calcium ppm ASTM D5185m 938 1062 1187 Phosphorus ppm ASTM D5185m 917 940 1090 Zinc ppm ASTM D5185m 1165 1235 1265 Sulfur ppm ASTM D5185m 3088 3353 2742 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >25 8 7 11 Sodium ppm ASTM D5185m >25 8 7 11 Sodium ppm ASTM D5185m >20 986 316 6 Glycol *ASTM D5185m >20 986 316 6 Megalization *ASTM D5185m >20 NEG NEG NEG NEG NEG <td< td=""><td>Barium</td><td>ppm</td><td>ASTM D5185m</td><td></td><td>0</td><td>0</td><td>0</td></td<>	Barium	ppm	ASTM D5185m		0	0	0
Magnesium ppm ASTM D5185m 865 940 1062 Calcium ppm ASTM D5185m 938 1062 1187 Phosphorus ppm ASTM D5185m 917 940 1090 Zinc ppm ASTM D5185m 917 940 1090 Zinc ppm ASTM D5185m 1165 1235 1265 Sulfur ppm ASTM D5185m 3088 3353 2742 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >25 8 7 11 Sodium ppm ASTM D5185m >25 8 7 11 Sodium ppm ASTM D5185m >20 986 316 6 Glycol % *ASTM D5185m >20 NEG NEG NEG INFRA-RED method limit/base current history 1 history 2 Soot %	Molybdenum	ppm	ASTM D5185m		56	66	63
Calcium ppm ASTM D5185m 938 1062 1187 Phosphorus ppm ASTM D5185m 917 940 1090 Zinc ppm ASTM D5185m 1165 1235 1265 Sulfur ppm ASTM D5185m 3088 3353 2742 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >25 8 7 11 Sodium ppm ASTM D5185m >20 4986 316 6 Glycol % *ASTM D5185m >20 4986 316 6 Rilycol % *ASTM D5185m >20 NEG NEG NEG INFRA-RED method limit/base current history 1 history 2 Soot % % *ASTM D7844 >3 0.4 0.8 1 Nitration Abs/cm *ASTM D7415 >30 18.1 23.4 <td< td=""><td>Manganese</td><td>ppm</td><td>ASTM D5185m</td><td></td><td>1</td><td><1</td><td><1</td></td<>	Manganese	ppm	ASTM D5185m		1	<1	<1
Phosphorus ppm ASTM D5185m 917 940 1090 Zinc ppm ASTM D5185m 1165 1235 1265 Sulfur ppm ASTM D5185m 3088 3353 2742 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >25 8 7 11 Sodium ppm ASTM D5185m >20 494 39 3 Potassium ppm ASTM D5185m >20 4986 40 316 6 Glycol % *ASTM D5185m >20 4986 40 8 NEG INFRA-RED method limit/base current history 1 history 2 Soot % % *ASTM D7844 >3 0.4 0.8 1 Nitration Abs/cm *ASTM D7624 >20 9.7 10.6 11.3 Sulfation Abs/.1mm *ASTM D7415	Magnesium	ppm	ASTM D5185m		865	940	1062
Zinc ppm ASTM D5185m 1165 1235 1265 Sulfur ppm ASTM D5185m 3088 3353 2742 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >25 8 7 11 Sodium ppm ASTM D5185m >20 4 94 39 3 Potassium ppm ASTM D5185m >20 4 986 4 316 6 Glycol % *ASTM D5185m >20 4 986 A 316 6 Rilycol % *ASTM D2982 NEG NEG NEG NEG INFRA-RED method limit/base current history 1 history 2 Soot % % *ASTM D7844 >3 0.4 0.8 1 Nitration Abs/cm *ASTM D7415 >30 18.1 23.4 25.9 FLUID DEGR	Calcium	ppm	ASTM D5185m		938	1062	1187
Sulfur ppm ASTM D5185m 3088 3353 2742 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >25 8 7 11 Sodium ppm ASTM D5185m >20 94 39 3 Potassium ppm ASTM D5185m >20 986 316 6 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history 1 history 2 Soot % % *ASTM D7844 >3 0.4 0.8 1 Nitration Abs/cm *ASTM D7624 >20 9.7 10.6 11.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 23.4 25.9 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25	Phosphorus	ppm	ASTM D5185m		917	940	1090
CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >25 8 7 11 Sodium ppm ASTM D5185m ▲ 94 39 3 Potassium ppm ASTM D5185m >20 ▲ 986 ▲ 316 6 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history 1 history 2 Soot % % *ASTM D7844 >3 0.4 0.8 1 Nitration Abs/cm *ASTM D7624 >20 9.7 10.6 11.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 23.4 25.9 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 20.5 24.7	Zinc	ppm	ASTM D5185m		1165	1235	1265
Soliticon ppm ASTM D5185m >25 8 7 11	Sulfur	ppm	ASTM D5185m		3088	3353	2742
Sodium ppm ASTM D5185m ■ 94 39 3 Potassium ppm ASTM D5185m >20 ■ 986 ■ 316 6 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history 1 history 2 Soot % % *ASTM D7844 >3 0.4 0.8 1 Nitration Abs/cm *ASTM D7624 >20 9.7 10.6 11.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 23.4 25.9 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 20.5 24.7	CONTAMINAN	ITS	method	limit/base	current	history 1	history 2
Potassium ppm ASTM D5185m >20 ● 986 ▲ 316 6 NEG Relycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history 1 history 2 Soot % % *ASTM D7844 >3 0.4 0.8 1 Vitration Abs/cm *ASTM D7624 >20 9.7 10.6 11.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 23.4 25.9 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 20.5 24.7	Silicon	ppm	ASTM D5185m	>25	8	7	11
NEG NEG	Sodium	ppm	ASTM D5185m		<u></u> 94	39	3
INFRA-RED method limit/base current history 1 history 2 Soot % % *ASTM D7844 >3 0.4 0.8 1 Nitration Abs/cm *ASTM D7624 >20 9.7 10.6 11.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 23.4 25.9 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 20.5 24.7	Potassium	ppm	ASTM D5185m	>20	986	△ 316	6
Soot % % *ASTM D7844 >3 0.4 0.8 1 Nitration Abs/cm *ASTM D7624 >20 9.7 10.6 11.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 23.4 25.9 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 20.5 24.7	Glycol	%	*ASTM D2982		NEG	NEG	NEG
Nitration Abs/cm *ASTM D7624 >20 9.7 10.6 11.3 Sulfation Abs/.1mm *ASTM D7615 >30 18.1 23.4 25.9 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 20.5 24.7	INFRA-RED		method	limit/base	current	history 1	history 2
Nitration Abs/cm *ASTM D7624 >20 9.7 10.6 11.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 23.4 25.9 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 20.5 24.7	Soot %	%	*ASTM D7844	>3	0.4	0.8	1
Sulfation Abs/.1mm *ASTM D7415 >30 18.1 23.4 25.9 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 20.5 24.7							
Oxidation							
	FLUID DEGRAI	DATION	method	limit/base	current	history 1	history 2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.1	20.5	24.7
		mg KOH/g			16.3	7.9	7.6



OIL ANALYSIS REPORT







Certificate L2367

Laboratory Sample No. Lab Number

: PCA0083480 : 05830637

Unique Number : 10444130

Diagnostician : Jonathan Hester Test Package : MOB 1 (Additional Tests: Glycol, TBN)

To discuss this sample report, contact Customer Service at 1-800-237-1369. * - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

: WearCheck USA - 501 Madison Ave., Cary, NC 27513

: 26 Apr 2023

: 28 Apr 2023

Received

Diagnosed

ALBERT HOGOBOOM OILFIELD TRUCKING INC

Contact/Location: LOREN JACK - OILELD

767 OIL HILL ROAD EL DORADO, KS US 67042

Contact: LOREN JACK loren@hogoboom.net

T:

F: (316)321-1396