

# **OIL ANALYSIS REPORT**

#### Sample Rating Trend





#### Component Diesel Engine

Fluid

PETRO CANADA DURON SHP 15W40 (--- QTS)

## DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

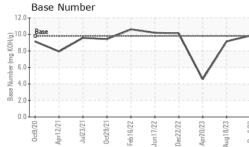
### Fluid Condition

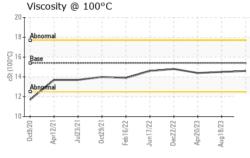
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

		Oct2020 Apr2	021 Jul2021 Oct2021 Feb2	022 Jun2022 Dec2022 Apr2023 Aug2	023 Dec2023	
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0102870	PCA0102865	PCA0095368
Sample Date		Client Info		06 Dec 2023	18 Aug 2023	20 Apr 2023
Machine Age	mls	Client Info		166939	151578	137686
Oil Age	mls	Client Info		15361	13892	12628
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATI	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
ron	ppm	ASTM D5185m	>100	9	14	11
Chromium	ppm	ASTM D5185m	>20	<1	1	<1
Nickel	ppm	ASTM D5185m	>4	<1	0	0
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m		2	<1	0
_ead	ppm	ASTM D5185m	>40	0	0	0
Copper	ppm	ASTM D5185m	>330	0	<1	<1
Гin ́	ppm	ASTM D5185m	>15	<1	<1	0
Vanadium	ppm	ASTM D5185m		<1	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	4	0	2
Barium	ppm	ASTM D5185m	0	0	0	0
-	ppm	ASTM D5185m	60	57	61	55
Vanganese	ppm	ASTM D5185m	0	<1	<1	<1
Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m	0 1010	<1 940	<1 1043	<1 969
Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070	<1 940 999	<1 1043 1116	<1 969 1036
Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150	<1 940 999 1008	<1 1043 1116 1029	<1 969 1036 1018
Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270	<1 940 999 1008 1260	<1 1043 1116 1029 1283	<1 969 1036 1018 1264
Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060	<1 940 999 1008 1260 3051	<1 1043 1116 1029 1283 3677	<1 969 1036 1018 1264 3578
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 limit/base	<1 940 999 1008 1260 3051 current	<1 1043 1116 1029 1283 3677 history1	<1 969 1036 1018 1264 3578 history2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	0 1010 1070 1150 1270 2060	<1 940 999 1008 1260 3051 current 4	<1 1043 1116 1029 1283 3677 history1 3	<1 969 1036 1018 1264 3578 history2 3
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 limit/base >25	<1 940 999 1008 1260 3051 current	<1 1043 1116 1029 1283 3677 history1	<1 969 1036 1018 1264 3578 history2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 limit/base >25	<1 940 999 1008 1260 3051 current 4 4 3	<1 1043 1116 1029 1283 3677 history1 3 2	<1 969 1036 1018 1264 3578 history2 3 0
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	<1 940 999 1008 1260 3051 current 4 4 3	<1 1043 1116 1029 1283 3677 history1 3 2 0	<1 969 1036 1018 1264 3578 history2 3 0 <1
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20 <b>limit/base</b> >3	<1 940 9999 1008 1260 3051 <i>current</i> 4 4 3 <i>current</i> 1.1	<1 1043 1116 1029 1283 3677 history1 3 2 0 history1 1	<1 969 1036 1018 1264 3578 history2 3 0 <1 history2
Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20 <b>limit/base</b> >3	<1 940 9999 1008 1260 3051 current 4 4 3 3	<1 1043 1116 1029 1283 3677 history1 3 2 0 history1	<1 969 1036 1018 1264 3578 history2 3 0 <1 history2 1.4
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D7844 *ASTM D7624	0 1010 1070 1150 1270 2060 limit/base >25 20 limit/base >3 >20	<1 940 999 1008 1260 3051 current 4 4 3 current 1.1 7.5 20.1	<1 1043 1116 1029 1283 3677 history1 3 2 0 history1 1 8.0	<1 969 1036 1018 1264 3578 history2 3 0 <1 history2 1.4 7.3
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D7844 *ASTM D7624	0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 <b>limit/base</b> >3 >20 >30	<1 940 999 1008 1260 3051 current 4 4 3 current 1.1 7.5 20.1	<1 1043 1116 1029 1283 3677 history1 3 2 0 history1 1 8.0 20.6	<1 969 1036 1018 1264 3578 history2 3 0 <1 history2 1.4 7.3 18.6



# **OIL ANALYSIS REPORT**







Certificate L2367

Laboratory

Contact/Location: CONNIE WILBUR - BROAMS