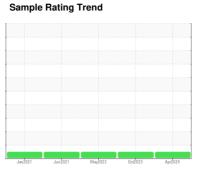


# **OIL ANALYSIS REPORT**



**NORMAL** 



Machine Id 2026814

**Diesel Engine** 

PETRO CANADA DURON SHP 10W30 (--- G

## DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor. Please specify the component make and model with your next sample.

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

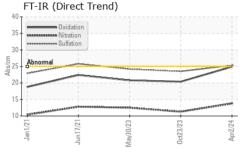
#### Fluid Condition

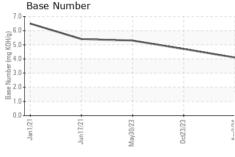
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

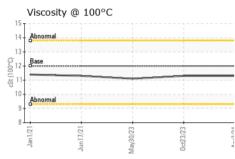
SAMPLE INFORMATION   method   limit/base   current   history1   history2	QTS)		Jan 2021	Jun2021	May2023 Oct2023	Apr2024	
Sample Date	SAMPLE INFOR	RMATION	method	limit/base	current	history1	history2
Machine Age         mls         Client Info         359311         319678         280359           Oil Age         mls         Client Info         40000         40000         40000           Oil Changed         Client Info         N/A         Changed         Changed           Sample Status         Immitted         NORMAL         NORMAL         NORMAL           VOONTAMINATION         method         Immitted         1 story2           Fuel         WC Method         >5         <1.0	Sample Number		Client Info		PCA0111501	PCA0107907	PCA0097162
Oil Age         mls         Client Info         40000         40000         40000         40000           Oil Changed Status         Client Info         N/A         Changed Changed Changed NoRMAL         NORMAL NORMAL NORMAL         NORMAL NORMAL NORMAL         NORMAL NORMAL NORMAL         NORMAL NORMAL NORMAL         NORMAL NORMAL NORMAL         NORMAL NORMAL NORMAL         NORMAL NORMAL NORMAL         NORMAL NORMAL NORMAL         NORMAL NORMAL NORMAL         NORMAL NORMAL NORMAL         NORMAL NORMAL NORMAL         NORMAL NORMAL NORMAL         NORMAL NORMAL         NORMAL NORMAL NORMAL         NORMAL NORMAL         NORMAL NORMAL         NORMAL NORMAL         NORMAL NORMAL         NORMAL NORMAL         NORMAL NORMAL         NORMAL NORMAL         NORMAL NORMAL         NORMAL NORMAL         NORMAL NORMAL         NORMAL NORMAL         NORMAL NORMAL         NORMAL NORMAL         NORMAL NORMAL         NORMAL NORMAL         ALOUS 1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0	Sample Date		Client Info		02 Apr 2024	23 Oct 2023	30 May 2023
Oil Changed Sample Status         Client Info NoRMAL         N/A NORMAL         Changed NORMAL NORMAL         Change NEG NEG NEG NORMAL NORMAL         Change NEG NEG NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORM	Machine Age	mls	Client Info		359311	319678	280359
Sample Status	Oil Age	mls	Client Info		40000	40000	40000
Fuel	Oil Changed		Client Info		N/A	Changed	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         Imit/base         current         history1         history2           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         55         36         47           Chromium         ppm         ASTM D5185m         >20         <1	CONTAMINA	ΓΙΟΝ	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         55         36         47           Chromium         ppm         ASTM D5185m         >20         <1	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >20         <1         <1         <1           Nickel         ppm         ASTM D5185m         >4         0         <1	WEAR METAI	_S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	55	36	47
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>4	0	<1	0
Aluminum         ppm         ASTM D5185m         >20         6         4         5           Lead         ppm         ASTM D5185m         >40         1         1         <1	Titanium	ppm	ASTM D5185m		0	<1	2
Lead	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper         ppm         ASTM D5185m         >330         6         7         10           Tin         ppm         ASTM D5185m         >15         <1	Aluminum	ppm	ASTM D5185m	>20	6	4	5
Tin	Lead	ppm	ASTM D5185m	>40	1	1	<1
Antimony         ppm         ASTM D5185m              Vanadium         ppm         ASTM D5185m         0         <1         0           Cadmium         ppm         ASTM D5185m         0         <1         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         2         0         0         0         0           Barium         ppm         ASTM D5185m         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         50         61         58         59           Manganese         ppm         ASTM D5185m         950         992         914         925           Calcium         ppm         ASTM D5185m         995         1064         1003         951           Zinc         ppm         ASTM D5185m         995         1064         1003         951           Zinc         ppm         ASTM D5185m         2600         2990         3011         3046           CONTAMINANTS         method         limit/base         current         history1 </td <td>Copper</td> <td>ppm</td> <td>ASTM D5185m</td> <td>&gt;330</td> <th>6</th> <td>7</td> <td>10</td>	Copper	ppm	ASTM D5185m	>330	6	7	10
Vanadium         ppm         ASTM D5185m         0         <1         0           Cadmium         ppm         ASTM D5185m         0         <1         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         2         0         0         0           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         50         61         58         59           Manganese         ppm         ASTM D5185m         50         61         58         59           Magnesium         ppm         ASTM D5185m         950         992         914         925           Calcium         ppm         ASTM D5185m         995         1064         1003         951           Zinc         ppm         ASTM D5185m         995         1064         1003         951           Zinc         ppm         ASTM D5185m         2600         2990         3011         3046           CONTAMINANTS         method         limit/base         current         history1         hist	Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Cadmium         ppm         ASTM D5185m         0         <1         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         2         0         0         0           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         50         61         58         59           Manganese         ppm         ASTM D5185m         0         <1	Antimony	ppm	ASTM D5185m				
ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         2         0         0         0           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         50         61         58         59           Manganese         ppm         ASTM D5185m         0         <1	Vanadium	ppm	ASTM D5185m		0	<1	0
Boron	Cadmium	ppm	ASTM D5185m		0	<1	0
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         50         61         58         59           Manganese         ppm         ASTM D5185m         0         <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         50         61         58         59           Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         950         992         914         925           Calcium         ppm         ASTM D5185m         1050         1116         1071         1159           Phosphorus         ppm         ASTM D5185m         1050         1116         1071         1159           Zinc         ppm         ASTM D5185m         995         1064         1003         951           Zinc         ppm         ASTM D5185m         2600         2990         3011         3046           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         7         5         5           Sodium         ppm         ASTM D5185m         20         2         6         4           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7844         >3	Boron	ppm	ASTM D5185m	2	0	0	0
Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         950         992         914         925           Calcium         ppm         ASTM D5185m         1050         1116         1071         1159           Phosphorus         ppm         ASTM D5185m         995         1064         1003         951           Zinc         ppm         ASTM D5185m         1180         1257         1206         1200           Sulfur         ppm         ASTM D5185m         2600         2990         3011         3046           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         7         5         5           Sodium         ppm         ASTM D5185m         2         2         2         3           Potassium         ppm         ASTM D5185m         >20         2         6         4           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium         ppm         ASTM D5185m         950         992         914         925           Calcium         ppm         ASTM D5185m         1050         1116         1071         1159           Phosphorus         ppm         ASTM D5185m         995         1064         1003         951           Zinc         ppm         ASTM D5185m         1180         1257         1206         1200           Sulfur         ppm         ASTM D5185m         2600         2990         3011         3046           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         7         5         5           Sodium         ppm         ASTM D5185m         22         2         3           Potassium         ppm         ASTM D5185m         >20         2         6         4           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         13.8         11.3         12.5           Sulfation         Abs/.1mm         *ASTM D7415	Molybdenum	ppm	ASTM D5185m	50	61	58	59
Calcium         ppm         ASTM D5185m         1050         1116         1071         1159           Phosphorus         ppm         ASTM D5185m         995         1064         1003         951           Zinc         ppm         ASTM D5185m         1180         1257         1206         1200           Sulfur         ppm         ASTM D5185m         2600         2990         3011         3046           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         7         5         5           Sodium         ppm         ASTM D5185m         2         2         2         3           Potassium         ppm         ASTM D5185m         >20         2         6         4           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         13.8         11.3         12.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         25.3         23.5         24.2           FLUID DEGRADATION         limit	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus         ppm         ASTM D5185m         995         1064         1003         951           Zinc         ppm         ASTM D5185m         1180         1257         1206         1200           Sulfur         ppm         ASTM D5185m         2600         2990         3011         3046           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         7         5         5           Sodium         ppm         ASTM D5185m         2         2         3           Potassium         ppm         ASTM D5185m         >20         2         6         4           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.7         0.6         0.6           Nitration         Abs/cm         *ASTM D7624         >20         13.8         11.3         12.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         25.3         23.5         24.2           FLUID DEGRADATION         method	Magnesium	ppm	ASTM D5185m	950	992	914	925
Zinc         ppm         ASTM D5185m         1180         1257         1206         1200           Sulfur         ppm         ASTM D5185m         2600         2990         3011         3046           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         7         5         5           Sodium         ppm         ASTM D5185m         2         2         2         3           Potassium         ppm         ASTM D5185m         >20         2         6         4           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.7         0.6         0.6           Nitration         Abs/.mm         *ASTM D7624         >20         13.8         11.3         12.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         25.3         23.5         24.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm <td>Calcium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1050</td> <th>1116</th> <td>1071</td> <td>1159</td>	Calcium	ppm	ASTM D5185m	1050	1116	1071	1159
Sulfur         ppm         ASTM D5185m         2600         2990         3011         3046           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         7         5         5           Sodium         ppm         ASTM D5185m         2         2         2         3           Potassium         ppm         ASTM D5185m         >20         2         6         4           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.7         0.6         0.6           Nitration         Abs/cm         *ASTM D7624         >20         13.8         11.3         12.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         25.3         23.5         24.2           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.9         20.4         20.8	Phosphorus	ppm	ASTM D5185m	995	1064	1003	951
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         7         5         5           Sodium         ppm         ASTM D5185m         2         2         2         3           Potassium         ppm         ASTM D5185m         >20         2         6         4           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.7         0.6         0.6           Nitration         Abs/cm         *ASTM D7624         >20         13.8         11.3         12.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         25.3         23.5         24.2           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.9         20.4         20.8	Zinc	ppm	ASTM D5185m	1180	1257	1206	1200
Silicon         ppm         ASTM D5185m         >25         7         5         5           Sodium         ppm         ASTM D5185m         2         2         2         3           Potassium         ppm         ASTM D5185m         >20         2         6         4           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.7         0.6         0.6           Nitration         Abs/cm         *ASTM D7624         >20         13.8         11.3         12.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         25.3         23.5         24.2           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.9         20.4         20.8	Sulfur	ppm	ASTM D5185m	2600	2990	3011	3046
Sodium         ppm         ASTM D5185m         2         2         3           Potassium         ppm         ASTM D5185m         >20         2         6         4           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.7         0.6         0.6           Nitration         Abs/cm         *ASTM D7624         >20         13.8         11.3         12.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         25.3         23.5         24.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.9         20.4         20.8	CONTAMINA	NTS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         2         6         4           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.7         0.6         0.6           Nitration         Abs/cm         *ASTM D7624         >20         13.8         11.3         12.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         25.3         23.5         24.2           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.9         20.4         20.8	Silicon	ppm	ASTM D5185m	>25	7	5	5
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.7         0.6         0.6           Nitration         Abs/cm         *ASTM D7624         >20         13.8         11.3         12.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         25.3         23.5         24.2           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.9         20.4         20.8	Sodium	ppm	ASTM D5185m		2	2	3
Soot %         %         *ASTM D7844         >3         0.7         0.6         0.6           Nitration         Abs/cm         *ASTM D7624         >20         13.8         11.3         12.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         25.3         23.5         24.2           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.9         20.4         20.8	Potassium	ppm	ASTM D5185m	>20	2	6	4
Nitration         Abs/cm         *ASTM D7624         >20         13.8         11.3         12.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         25.3         23.5         24.2           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.9         20.4         20.8	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         25.3         23.5         24.2           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         24.9         20.4         20.8	Soot %	%	*ASTM D7844	>3	0.7	0.6	0.6
FLUID DEGRADATION method limit/base current history1     history2       Oxidation     Abs/.1mm *ASTM D7414     >25     24.9     20.4     20.8	Nitration	Abs/cm	*ASTM D7624	>20	13.8	11.3	12.5
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	25.3	23.5	24.2
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN)         mg KOH/g         ASTM D2896         4.1         4.7         5.3	Oxidation	Abs/.1mm	*ASTM D7414	>25	24.9	20.4	20.8
	Base Number (BN)	mg KOH/g	ASTM D2896		4.1	4.7	5.3

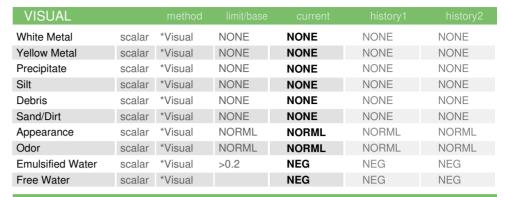


## **OIL ANALYSIS REPORT**



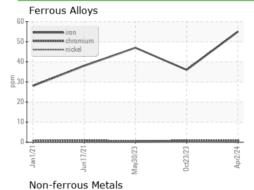


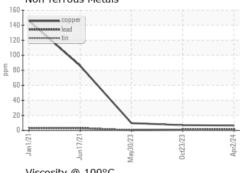


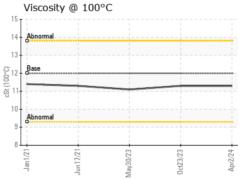


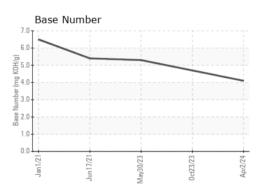
FLUID PROP	ERHES	method			history1	history2
Visc @ 100°C	cSt	ASTM D445	12.00	11.3	11.3	11.1

### **GRAPHS**













Laboratory Sample No.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Lab Number : 06140847 Unique Number : 10965655

: PCA0111501

Received **Tested** 

: 08 Apr 2024 Diagnosed

: 08 Apr 2024 - Wes Davis

: 08 Apr 2024

Test Package : FLEET Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369.

 $^st$  - 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)

**PERDUE FARMS - Lewiston** 210 GRIFFINS QUARTER RD

LEWISTON, NC US 27849

Contact: NELSON WALLACE nelson.wallace2@perdue.com

T: F: