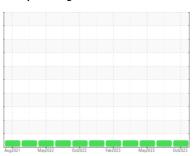


# **OIL ANALYSIS REPORT**

### Sample Rating Trend







Machine Id 920077-205331

Component

**Diesel Engine** 

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

# 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.

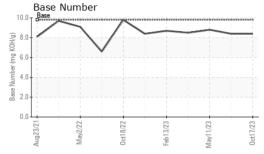
## **Fluid Condition**

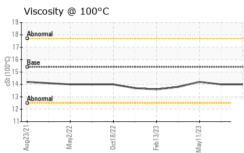
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION   method   limit/base   current   history1		Oct2023	Feb2023 May2023	May2022 Oct2022	Aug2021		JAL)
Sample Date	history2	history1	current	limit/base	method	MATION	SAMPLE INFORM
Machine Age   hrs   Client Info   10316   10179   150   15	GFL0079378	GFL0079337	GFL0079302		Client Info		Sample Number
Machine Age   hrs   Client Info   10316   10179   150   15	11 May 2023	27 Sep 2023	17 Oct 2023		Client Info		Sample Date
Dil Age	9106		10316		Client Info	hrs	Machine Age
Contamped   Cont	150	150	700		Client Info	hrs	
NORMAL   NORMAL	Not Changd	Not Changd	Changed		Client Info		-
Fuel	NORMAL						-
MEG   NEG   NEG	history2	history1	current	limit/base	method	ON	CONTAMINATI
WEAR METALS	<1.0	<1.0	<1.0	>5	WC Method		Fuel
WEAR METALS         method         limit/base         current         history1           Irron         ppm         ASTM D5185m         >100         5         4           Chromium         ppm         ASTM D5185m         >20         <1	NEG						
Chromium	history2			limit/base		2	,
Chromium							
Nickel	7					• •	
Description	<1						
Silver	0			>4			
Aluminum	<1					ppm	
Lead         ppm         ASTM D5185m         >40         0         0           Copper         ppm         ASTM D5185m         >330         <1	<1					ppm	
Copper         ppm         ASTM D5185m         >330         <1         <1           Tin         ppm         ASTM D5185m         >15         0         0           Vanadium         ppm         ASTM D5185m         0         0           Cadmium         ppm         ASTM D5185m         0         0           Cadmium         ppm         ASTM D5185m         0         0           Boron         ppm         ASTM D5185m         0         0         0           Boron         ppm         ASTM D5185m         0         0         0         0           Boron         ppm         ASTM D5185m         0         0         0         0           Boron         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         1010         912         962         2           Calcium         ppm         ASTM D5185m         1070         984         1009         109         1198         1237         1198         1237         1237         1198         1237         12	1				ASTM D5185m	ppm	Aluminum
Tin	<1	0		>40	ASTM D5185m	ppm	Lead
Vanadium         ppm         ASTM D5185m         0         0           Cadmium         ppm         ASTM D5185m         0         0           ADDITIVES         method         limit/base         current         history1           Boron         ppm         ASTM D5185m         0         0         <1           Barium         ppm         ASTM D5185m         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0           Manganese         ppm         ASTM D5185m         0         0         0           Magnesium         ppm         ASTM D5185m         1010         912         962           Calcium         ppm         ASTM D5185m         1070         984         1009           Phosphorus         ppm         ASTM D5185m         1270         1198         1237           Zinc         ppm         ASTM D5185m         2060         3148         3072           CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >25         3         2           Sodium         ppm         ASTM D5185m </td <td>0</td> <td>&lt;1</td> <th>&lt;1</th> <td>&gt;330</td> <td>ASTM D5185m</td> <td>ppm</td> <td>Copper</td>	0	<1	<1	>330	ASTM D5185m	ppm	Copper
Cadmium         ppm         ASTM D5185m         0         0           ADDITIVES         method         limit/base         current         history1           Boron         ppm         ASTM D5185m         0         0         <1	<1	0	0	>15	ASTM D5185m	ppm	Tin
ADDITIVES	0	0	0		ASTM D5185m	ppm	Vanadium
Boron   ppm   ASTM D5185m   0   0   0   0   0	0	0	0		ASTM D5185m	ppm	Cadmium
Barium         ppm         ASTM D5185m         0         0         0           Molybdenum         ppm         ASTM D5185m         60         58         58           Manganese         ppm         ASTM D5185m         0         0         0           Magnesium         ppm         ASTM D5185m         1010         912         962           Calcium         ppm         ASTM D5185m         1070         984         1009           Phosphorus         ppm         ASTM D5185m         1150         951         992           Zinc         ppm         ASTM D5185m         1270         1198         1237           Sulfur         ppm         ASTM D5185m         2060         3148         3072           CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >25         3         2           Sodium         ppm         ASTM D5185m         3         3           Potassium         ppm         ASTM D5185m         >20         2         <1           INFRA-RED         method         limit/base         current         history1           Soot %	history2	history1	current	limit/base	method		ADDITIVES
Molybdenum         ppm         ASTM D5185m         60         58         58           Manganese         ppm         ASTM D5185m         0         0         0           Magnesium         ppm         ASTM D5185m         1010         912         962           Calcium         ppm         ASTM D5185m         1070         984         1009           Phosphorus         ppm         ASTM D5185m         1150         951         992           Zinc         ppm         ASTM D5185m         1270         1198         1237           Sulfur         ppm         ASTM D5185m         2060         3148         3072           CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >25         3         2           Sodium         ppm         ASTM D5185m         >20         2         <1	2	<1	0	0	ASTM D5185m	ppm	Boron
Manganese         ppm         ASTM D5185m         0         0           Magnesium         ppm         ASTM D5185m         1010         912         962           Calcium         ppm         ASTM D5185m         1070         984         1009           Phosphorus         ppm         ASTM D5185m         1150         951         992           Zinc         ppm         ASTM D5185m         1270         1198         1237           Sulfur         ppm         ASTM D5185m         2060         3148         3072           CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >25         3         2           Sodium         ppm         ASTM D5185m         3         3           Potassium         ppm         ASTM D5185m         >20         2         <1	0	0	0	0	ASTM D5185m	ppm	Barium
Magnesium         ppm         ASTM D5185m         1010         912         962           Calcium         ppm         ASTM D5185m         1070         984         1009           Phosphorus         ppm         ASTM D5185m         1150         951         992           Zinc         ppm         ASTM D5185m         1270         1198         1237           Sulfur         ppm         ASTM D5185m         2060         3148         3072           CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >25         3         2           Sodium         ppm         ASTM D5185m         3         3           Potassium         ppm         ASTM D5185m         >20         2         <1	62	58	58	60	ASTM D5185m	ppm	Molybdenum
Calcium         ppm         ASTM D5185m         1070         984         1009           Phosphorus         ppm         ASTM D5185m         1150         951         992           Zinc         ppm         ASTM D5185m         1270         1198         1237           Sulfur         ppm         ASTM D5185m         2060         3148         3072           CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >25         3         2           Sodium         ppm         ASTM D5185m         3         3           Potassium         ppm         ASTM D5185m         >20         2         <1	<1	0	0	0	ASTM D5185m	ppm	Manganese
Phosphorus         ppm         ASTM D5185m         1150         951         992           Zinc         ppm         ASTM D5185m         1270         1198         1237           Sulfur         ppm         ASTM D5185m         2060         3148         3072           CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >25         3         2           Sodium         ppm         ASTM D5185m         3         3           Potassium         ppm         ASTM D5185m         >20         2         <1	1018	962	912	1010	ASTM D5185m	ppm	Magnesium
Zinc         ppm         ASTM D5185m         1270         1198         1237           Sulfur         ppm         ASTM D5185m         2060         3148         3072           CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >25         3         2           Sodium         ppm         ASTM D5185m         3         3           Potassium         ppm         ASTM D5185m         >20         2         <1	1131	1009	984	1070	ASTM D5185m	ppm	Calcium
Zinc         ppm         ASTM D5185m         1270         1198         1237           Sulfur         ppm         ASTM D5185m         2060         3148         3072           CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >25         3         2           Sodium         ppm         ASTM D5185m         3         3           Potassium         ppm         ASTM D5185m         >20         2         <1	1085	992	951	1150	ASTM D5185m	ppm	Phosphorus
Sulfur         ppm         ASTM D5185m         2060         3148         3072           CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >25         3         2           Sodium         ppm         ASTM D5185m         3         3           Potassium         ppm         ASTM D5185m         >20         2         <1	1327	1237	1198	1270	ASTM D5185m		
Solition   ppm   ASTM D5185m   >25   3   2	3709	3072	3148	2060	ASTM D5185m		Sulfur
Sodium         ppm         ASTM D5185m         3         3           Potassium         ppm         ASTM D5185m         >20         2         <1	history2	history1	current	limit/base	method	TS	CONTAMINAN
Sodium         ppm         ASTM D5185m         3         3           Potassium         ppm         ASTM D5185m         >20         2         <1	3	2	3	>25	ASTM D5185m	ppm	Silicon
Potassium         ppm         ASTM D5185m         >20         2         <1           INFRA-RED         method         limit/base         current         history1           Soot %         %         *ASTM D7844         >3         0.5         0.3           Nitration         Abs/cm         *ASTM D7624         >20         6.6         5.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.6         17.9           FLUID DEGRADATION         method         limit/base         current         history1	4	3	3		ASTM D5185m		Sodium
Soot %         %         *ASTM D7844         >3         0.5         0.3           Nitration         Abs/cm         *ASTM D7624         >20         6.6         5.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.6         17.9           FLUID DEGRADATION         method         limit/base         current         history1	3	<1		>20			
Nitration         Abs/cm         *ASTM D7624         >20         6.6         5.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.6         17.9           FLUID DEGRADATION         method         limit/base         current         history1	history2	history1	current	limit/base	method		INFRA-RED
Nitration         Abs/cm         *ASTM D7624         >20         6.6         5.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.6         17.9           FLUID DEGRADATION         method         limit/base         current         history1	0.6	0.3	0.5	>3	*ASTM D7844	%	Soot %
Sulfation Abs/.1mm *ASTM D7415 >30 18.6 17.9  FLUID DEGRADATION method limit/base current history1	6.8	5.9		>20	*ASTM D7624	Abs/cm	Nitration
	19.2						
O 11-11-11	history2	history1	current	limit/base	method	ATION	FLUID DEGRAD
UXIGATION	13.9	13.5	13.7	>25	*ASTM D7414	Abs/.1mm	Oxidation
Base Number (BN) mg KOH/g ASTM D2896 9.8 <b>8.4</b> 8.4	8.8						



# **OIL ANALYSIS REPORT**

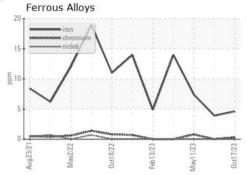


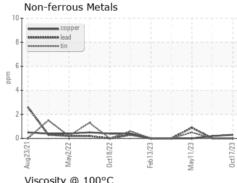


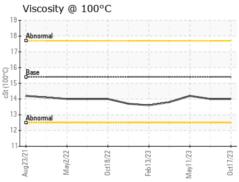
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

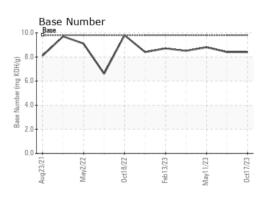
FLUID PROPE	:RHES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.0	14.0	14.2

## **GRAPHS**













Certificate L2367

Laboratory

Sample No. Lab Number **Unique Number** Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0079302 : 06001225

To discuss this sample report, contact Customer Service at 1-800-237-1369.

: 10729585

Received : 08 Nov 2023 Diagnosed Diagnostician : Wes Davis

: 08 Nov 2023

GFL Environmental - 822 - Springfield Hauling

2120 West Bennett Street Springfield, MO US 65807

Contact: Dennis Moore dennis.moore@gflenv.com T: (417)403-3641

\* - 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)