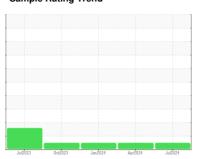


# **OIL ANALYSIS REPORT**

Sample Rating Trend



NORMAL



Machine Id
514027
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

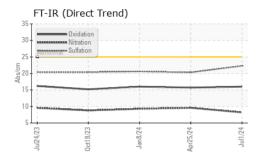
## **Fluid Condition**

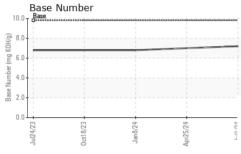
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

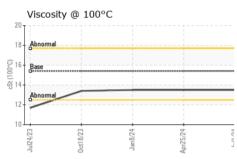
Sample Number			Jul2024	Jan 2024 Apr 2024	Oct2023	Jul2023		GAL)
Sample Date   Client Info   O1 Jul 2024   25 Apr 2024   08 Jan Machine Age   hrs   Client Info   3001   2457   1842	story2	history	history1	current	limit/base	method	MATION	SAMPLE INFORM
Sample Date	96095	GFL00960	GFL0110947	GFL0122759		Client Info		Sample Number
Oil Age         hrs         Client Info         2386         615         633           Oil Changed         Client Info         Changed         NoRMAL         NORMAL	2024	08 Jan 202	25 Apr 2024	01 Jul 2024		Client Info		
Changed   Changed   Changed   NORMAL   NORMAL   NORMAL   NORMAL   NORMAL   NORMAL   NORMAL		1842	2457	3001		Client Info	hrs	Machine Age
Sample Status		633	615	2386		Client Info	hrs	Oil Age
CONTAMINATION         method         limit/base         current         history1         his           Fuel         WC Method         >2.0         <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         <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         <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         <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         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0	ed	Changed	Changed	Changed		Client Info		Oil Changed
Fuel         WC Method         >2.0         <1.0	AL	NORMAL	NORMAL	NORMAL				Sample Status
Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         his           Iron         ppm         ASTM D5185m         >100         14         20         16           Chromium         ppm         ASTM D5185m         >20         <1         1         1           Nickel         ppm         ASTM D5185m         >4         0         0         0           Titanium         ppm         ASTM D5185m         >3         0         0         0           Aluminum         ppm         ASTM D5185m         >20         11         11         15           Lead         ppm         ASTM D5185m         >40         <1         <1         <1         <1           Copper         ppm         ASTM D5185m         >40         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	tory2	history	history1	current	limit/base	method	ON	CONTAMINATI
Glycol   WC Method   NEG   NEG   NEG	)	<1.0	<1.0	<1.0	>2.0	WC Method		Fuel
WEAR METALS         method         limit/base         current         history1         his           Iron         ppm         ASTM D5185m         >100         14         20         16           Chromium         ppm         ASTM D5185m         >20         <1         1         1           Nickel         ppm         ASTM D5185m         >20         <1         1         1           Nickel         ppm         ASTM D5185m         >4         0         0         0         0           Titanium         ppm         ASTM D5185m         >3         0         0         0         0           Aluminum         ppm         ASTM D5185m         >20         11         11         15         1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	à	NEG	NEG	NEG	>0.2	WC Method		Water
Iron	à	NEG	NEG	NEG		WC Method		Glycol
Chromium         ppm         ASTM D5185m         >20         <1	tory2	history	history1	current	limit/base	method	S	WEAR METALS
Nickel         ppm         ASTM D5185m         >4         0         0         0           Titanium         ppm         ASTM D5185m         2         14         11           Silver         ppm         ASTM D5185m         >3         0         0         0           Aluminum         ppm         ASTM D5185m         >20         11         11         11         15           Lead         ppm         ASTM D5185m         >40         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1		16	20	14	>100	ASTM D5185m	ppm	Iron
Titanium		1	1	<1	>20	ASTM D5185m	ppm	Chromium
Silver         ppm         ASTM D5185m         >3         0         0         0           Aluminum         ppm         ASTM D5185m         >20         11         11         15           Lead         ppm         ASTM D5185m         >40         <1         <1         <1         <1           Copper         ppm         ASTM D5185m         >330         1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1		0	0	0	>4	ASTM D5185m	ppm	Nickel
Aluminum         ppm         ASTM D5185m         >20         11         11         15           Lead         ppm         ASTM D5185m         >40         <1         <1         <1           Copper         ppm         ASTM D5185m         >330         1         <1         <1           Tin         ppm         ASTM D5185m         0         <1         <1         <1           Vanadium         ppm         ASTM D5185m         0         <1         <1         <1           Cadmium         ppm         ASTM D5185m         0         0         <1         <1           Cadmium         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         448         731         689           Calcium         ppm         ASTM D5185m         1070         1472         1582         1467           Phosphorus         ppm         ASTM D5185m         1270         1223		11	14	2		ASTM D5185m	ppm	Titanium
Lead         ppm         ASTM D5185m         >40         <1		0	0	0			ppm	Silver
Copper         ppm         ASTM D5185m         >330         1         <1		15	11	11	>20	ASTM D5185m	ppm	Aluminum
Tin         ppm         ASTM D5185m         >15         <1		<1	<1		>40	ASTM D5185m	ppm	
Vanadium         ppm         ASTM D5185m         0         <1			<1	1	>330	ASTM D5185m	ppm	Copper
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         his           Boron         ppm         ASTM D5185m         0         282         84         111           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         78         48         51           Manganese         ppm         ASTM D5185m         0         0         -1         -1           Magnesium         ppm         ASTM D5185m         1010         448         731         689           Calcium         ppm         ASTM D5185m         1070         1472         1582         1467           Phosphorus         ppm         ASTM D5185m         1270         1223         869         911           Zinc         ppm         ASTM D5185m         2060         3726         3568         3050           CONTAMINANTS         method         limit/base         current         history1         his           Silicon         ppm         ASTM D5185m         >20         21			<1		>15	ASTM D5185m	ppm	
ADDITIVES						ASTM D5185m	ppm	
Boron         ppm         ASTM D5185m         0         282         84         111           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         78         48         51           Manganese         ppm         ASTM D5185m         0         0         <1		0	0	0		ASTM D5185m	ppm	Cadmium
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         78         48         51           Manganese         ppm         ASTM D5185m         0         0         <1         <1           Magnesium         ppm         ASTM D5185m         1010         448         731         689           Calcium         ppm         ASTM D5185m         1070         1472         1582         1467           Phosphorus         ppm         ASTM D5185m         1150         1015         761         798           Zinc         ppm         ASTM D5185m         1270         1223         869         911           Sulfur         ppm         ASTM D5185m         2060         3726         3568         3050           CONTAMINANTS         method         limit/base         current         history1         his           Silicon         ppm         ASTM D5185m         >25         6         7         8           Sodium         ppm         ASTM D5185m         >20         21         25         36           INFRA-RED         method         limit/base         c	story2	history	history1	current	limit/base	method		ADDITIVES
Molybdenum         ppm         ASTM D5185m         60         78         48         51           Manganese         ppm         ASTM D5185m         0         0         <1         <1           Magnesium         ppm         ASTM D5185m         1010         448         731         689           Calcium         ppm         ASTM D5185m         1070         1472         1582         1467           Phosphorus         ppm         ASTM D5185m         1150         1015         761         798           Zinc         ppm         ASTM D5185m         1270         1223         869         911           Sulfur         ppm         ASTM D5185m         2060         3726         3568         3050           CONTAMINANTS         method         limit/base         current         history1         his           Silicon         ppm         ASTM D5185m         >25         6         7         8           Sodium         ppm         ASTM D5185m         >20         21         25         36           INFRA-RED         method         limit/base         current         history1         his           Soot %         %         *ASTM D7624         >20 <th></th> <th>111</th> <th>84</th> <th>282</th> <th>0</th> <th>ASTM D5185m</th> <th>ppm</th> <th>Boron</th>		111	84	282	0	ASTM D5185m	ppm	Boron
Manganese         ppm         ASTM D5185m         0         0         <1		0	0	0	0	ASTM D5185m	ppm	Barium
Magnesium         ppm         ASTM D5185m         1010         448         731         689           Calcium         ppm         ASTM D5185m         1070         1472         1582         1467           Phosphorus         ppm         ASTM D5185m         1150         1015         761         798           Zinc         ppm         ASTM D5185m         1270         1223         869         911           Sulfur         ppm         ASTM D5185m         2060         3726         3568         3050           CONTAMINANTS         method         limit/base         current         history1         his           Silicon         ppm         ASTM D5185m         >25         6         7         8           Sodium         ppm         ASTM D5185m         20         21         25         36           INFRA-RED         method         limit/base         current         history1         his           Soot %         %         *ASTM D7844         >3         0.5         0.4         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.2         9.6         9.3		51	48	78	60	ASTM D5185m	ppm	Molybdenum
Calcium         ppm         ASTM D5185m         1070         1472         1582         1467           Phosphorus         ppm         ASTM D5185m         1150         1015         761         798           Zinc         ppm         ASTM D5185m         1270         1223         869         911           Sulfur         ppm         ASTM D5185m         2060         3726         3568         3050           CONTAMINANTS         method         limit/base         current         history1         his           Silicon         ppm         ASTM D5185m         >25         6         7         8           Sodium         ppm         ASTM D5185m         4         5         3           Potassium         ppm         ASTM D5185m         >20         21         25         36           INFRA-RED         method         limit/base         current         history1         his           Soot %         %         *ASTM D7844         >3         0.5         0.4         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.2         9.6         9.3				0	0	ASTM D5185m	ppm	Manganese
Phosphorus         ppm         ASTM D5185m         1150         1015         761         798           Zinc         ppm         ASTM D5185m         1270         1223         869         911           Sulfur         ppm         ASTM D5185m         2060         3726         3568         3050           CONTAMINANTS         method         limit/base         current         history1         his           Silicon         ppm         ASTM D5185m         >25         6         7         8           Sodium         ppm         ASTM D5185m         25         6         7         8           Potassium         ppm         ASTM D5185m         >20         21         25         36           INFRA-RED         method         limit/base         current         history1         his           Soot %         %         *ASTM D7844         >3         0.5         0.4         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.2         9.6         9.3		689		448		ASTM D5185m	ppm	Magnesium
Zinc         ppm         ASTM D5185m         1270         1223         869         911           Sulfur         ppm         ASTM D5185m         2060         3726         3568         3050           CONTAMINANTS         method         limit/base         current         history1         his           Silicon         ppm         ASTM D5185m         >25         6         7         8           Sodium         ppm         ASTM D5185m         4         5         3           Potassium         ppm         ASTM D5185m         >20         21         25         36           INFRA-RED         method         limit/base         current         history1         his           Soot %         %         *ASTM D7844         >3         0.5         0.4         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.2         9.6         9.3		1467	1582		1070	ASTM D5185m	ppm	
Sulfur         ppm         ASTM D5185m         2060         3726         3568         3050           CONTAMINANTS         method         limit/base         current         history1         his           Silicon         ppm         ASTM D5185m         >25         6         7         8           Sodium         ppm         ASTM D5185m         4         5         3           Potassium         ppm         ASTM D5185m         >20         21         25         36           INFRA-RED         method         limit/base         current         history1         his           Soot %         %         *ASTM D7844         >3         0.5         0.4         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.2         9.6         9.3								
CONTAMINANTS         method         limit/base         current         history1         his           Silicon         ppm         ASTM D5185m         >25         6         7         8           Sodium         ppm         ASTM D5185m         4         5         3           Potassium         ppm         ASTM D5185m         >20         21         25         36           INFRA-RED         method         limit/base         current         history1         his           Soot %         %         *ASTM D7844         >3         0.5         0.4         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.2         9.6         9.3								
Silicon         ppm         ASTM D5185m         >25         6         7         8           Sodium         ppm         ASTM D5185m         4         5         3           Potassium         ppm         ASTM D5185m         >20         21         25         36           INFRA-RED         method         limit/base         current         history1         his           Soot %         %         *ASTM D7844         >3         0.5         0.4         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.2         9.6         9.3	J	3050	3568	3726	2060	ASTM D5185m		
Sodium         ppm         ASTM D5185m         4         5         3           Potassium         ppm         ASTM D5185m         >20         21         25         36           INFRA-RED         method         limit/base         current         history1         his           Soot %         %         *ASTM D7844         >3         0.5         0.4         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.2         9.6         9.3	story2	history		current	limit/base	method	TS	CONTAMINAN'
Potassium         ppm         ASTM D5185m         >20         21         25         36           INFRA-RED         method         limit/base         current         history1         his           Soot %         %         *ASTM D7844         >3         0.5         0.4         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.2         9.6         9.3					>25		ppm	
INFRA-RED         method         limit/base         current         history1         his           Soot %         %         *ASTM D7844         >3         0.5         0.4         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.2         9.6         9.3		3	5	4		ASTM D5185m	ppm	Sodium
Soot %         %         *ASTM D7844         >3         0.5         0.4         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.2         9.6         9.3		36	25	21	>20	ASTM D5185m	ppm	Potassium
<b>Nitration</b>   Abs/cm   *ASTM D7624   >20   <b>8.2</b>   9.6   9.3	story2	history	history1	current	limit/base	method		INFRA-RED
		0.3						
Out = 1 = 1		9.3	9.6	8.2	>20	*ASTM D7624	Abs/cm	Nitration
Sulfation ADSI.IMM ASSIM D/415 >30 <b>22.3</b> 20.3 20.6	<b>;</b>	20.6	20.3	22.3	>30	*ASTM D7415	Abs/.1mm	Sulfation
FLUID DEGRADATION method limit/base current history1 his	story2	history	history1	current	limit/base	method	ATION	FLUID DEGRAD
Oxidation Abs/.1mm *ASTM D7414 >25 <b>16.0</b> 15.7 16.0	)	16.0	15.7	16.0	>25	*ASTM D7414	Abs/.1mm	Oxidation
Base Number (BN)         mg KOH/g         ASTM D2896         9.8         7.2         7.0         6.8		6.8	7.0	7.2	9.8	ASTM D2896	mg KOH/g	Base Number (BN)



# **OIL ANALYSIS REPORT**



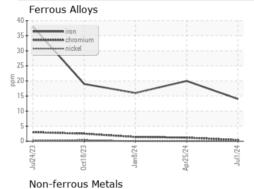


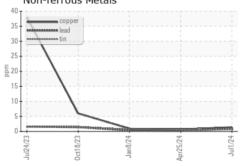


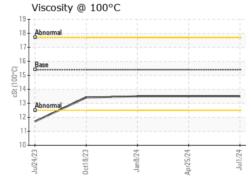
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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

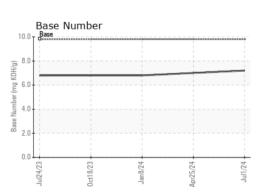
FLUID PROPI	ERIIES	metnoa	ilmit/base	current	nistory i	nistory2
Visc @ 100°C	cSt	ASTM D445	15.4	13.5	13.5	13.5

## **GRAPHS**













Certificate 12367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 Sample No. Lab Number : 06229806 Unique Number : 11113299

: GFL0122759

Received : 08 Jul 2024 **Tested** 

: 09 Jul 2024 Diagnosed : 09 Jul 2024 - Don Baldridge

GFL Environmental - 629 - Northern A1 3947 US 131 N Kalkaska, MI US 49646-8428

Contact: MITCH HERSHBERGER

Test Package : FLEET 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) T: (231)624-0848