

## **OIL ANALYSIS REPORT**

Sample Rating Trend

NORMAL



164M Component Diesel Engine Fluid PETRO CANADA DURON SHP 15W40 (--- GAL)

### DIAGNOSIS Recommendation

Resample at the next service interval to monitor.

Machine Id

#### 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 INFORM Sample Number Sample Date Machine Age Oil Age Oil Changed Sample Status CONTAMINATI	hrs	method Client Info Client Info	limit/base	current GFL0108762	history1 GFL0105641	history2 GFL0089090
Sample Date Machine Age Oil Age Oil Changed Sample Status				GEI 0108762	GFL0105641	GEL 0089090
Machine Age Oil Age Oil Changed Sample Status		Client Info				GI 20000000
Oil Age Oil Changed Sample Status				20 Mar 2024	14 Dec 2023	22 Nov 2023
Oil Changed Sample Status		Client Info		18927	18236	18235
Sample Status	hrs	Client Info		0	21146	0
·		Client Info		Not Changd	Not Changd	Not Changd
CONTAMINATI				NORMAL	NORMAL	NORMAL
CONTAMINATI	ON	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>200	15	7	13
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	<1	<1	1
Titanium	ppm	ASTM D5185m	>2	<1	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>30	2	3	5
Lead	ppm	ASTM D5185m	>30	<1	0	<1
Copper	ppm	ASTM D5185m	>30	4	1	1
Tin	ppm	ASTM D5185m	>15	<1	0	<1
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	<1	1	16
Barium	ppm	ASTM D5185m	0	0	0	0
Molybdenum	ppm	ASTM D5185m	60	65	52	48
Manganese	ppm	ASTM D5185m	0	0	<1	<1
Magnesium	ppm	ASTM D5185m	1010	997	905	827
Calcium	ppm	ASTM D5185m	1070	1145	998	1119
Phosphorus	ppm	ASTM D5185m	1150	1032	994	1086
Zinc	ppm	ASTM D5185m	1270	1304	1240	1231
Sulfur	ppm	ASTM D5185m	2060	2869	3110	3134
CONTAMINAN	TS	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>30	5	5	4
Sodium	ppm	ASTM D5185m		6	2	6
Potassium	ppm	ASTM D5185m	>20	2	2	3
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	0.2	0.2	0.4
Nitration	Abs/cm	*ASTM D7624	>20	7.8	5.2	6.8
Sulfation	Abs/.1mm	*ASTM D7415	>30	19.7	17.9	19.4
FLUID DEGRAD	ATION	method	limit/base	current	history1	history2
	Abs/.1mm	*ASTM D7414	>25	16.1	13.3	14.8
Oxidation						



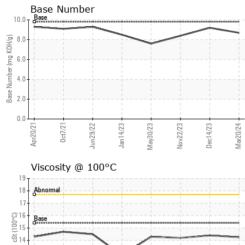
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Apr20/21

0ct7/21

Jun29/22

# **OIL ANALYSIS REPORT**



Deci4/23 - Deci4/23 - Deci4/23 - Deci4/24 - Mar20/24 -	White Metal Yellow Metal Precipitate Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	scalar scalar scalar scalar scalar scalar scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual *Visual *Visual *Visual *Visual *Visual <b>method</b> ASTM D445	NONE NONE NONE NONE NORML NORML >0.2 Iimit/base	NONE NONE NONE NONE NORML NORML NEG NEG Current	NONE NONE NONE NONE NONE NORML NORML NEG NEG history1 14.4	NONE NONE NONE NONE NORE NORML NORML NEG NEG history2
	Precipitate Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	scalar scalar scalar scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual *Visual *Visual *Visual *Visual <b>method</b>	NONE NONE NONE NORML NORML >0.2	NONE NONE NONE NORML NORML NEG NEG	NONE NONE NONE NORML NORML NEG NEG history1	NONE NONE NONE NORML NORML NEG NEG history2
	Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	scalar scalar scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual *Visual *Visual <b>*</b> Visual <b>method</b>	NONE NONE NORML NORML >0.2	NONE NONE NORML NORML NEG NEG	NONE NONE NORML NORML NEG NEG history1	NONE NONE NORML NORML NEG NEG history2
	Debris Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	scalar scalar scalar scalar scalar scalar RTIES	*Visual *Visual *Visual *Visual *Visual *Visual method	NONE NORML NORML >0.2 limit/base	NONE NORML NORML NEG NEG	NONE NORML NORML NEG NEG history1	NONE NORML NORML NEG NEG history2
	Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	scalar scalar scalar scalar scalar RTIES	*Visual *Visual *Visual *Visual *Visual method	NONE NORML NORML >0.2	NONE NORML NORML NEG NEG	NONE NORML NORML NEG NEG history1	NONE NORML NORML NEG NEG history2
	Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	scalar scalar scalar scalar RTIES	*Visual *Visual *Visual *Visual method	NORML >0.2 limit/base	NORML NORML NEG NEG current	NORML NORML NEG NEG history1	NORML NORML NEG NEG history2
	Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	scalar scalar scalar RTIES	*Visual *Visual *Visual method	NORML >0.2 limit/base	NORML NEG NEG current	NORML NEG NEG history1	NORML NEG NEG history2
	Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	scalar scalar RTIES	*Visual *Visual method	>0.2 limit/base	NEG NEG current	NEG NEG history1	NEG NEG history2
Dec14/23 -	Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	scalar RTIES	*Visual method	limit/base	NEG current	NEG history1	NEG history2
Dec14/23	FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	RTIES	method		current	history1	history2
Dec14/23	Visc @ 100°C GRAPHS Ferrous Alloys						
Deci 4/23	GRAPHS Ferrous Alloys		AOTIM D443	13.4	14.20	1 7.7	14.2
Dec14/23	Ferrous Alloys						14.2
Dec14/23	30 iron						
	Non-ferrous Metals	s	Nov2223 11 Nov2223 12 Deci 4/23 Deci 4/23	Maz024 Maz024			
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	18 - Abnormal			10.0	Base		
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	12						
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	Apr2l Octi	Jan 14 Vlay30	Nov22 Dec14	Mar20	Apr2l Octi Jun29,	Jan14 Vlay30	Nov22/23 Dec14/23 Mar20/24
nique Number est Package	: GFL0108762 : 06126186 : 10940337 : FLEET	Receiv Testeo Diagn	ved : 22 d : 28 losed : 28	2 Mar 2024 3 Mar 2024 Mar 2024 - Don		Ster	<b>- Michigan East</b> 6200 Elmridge ling Heights, MI US 48313 ct: Frank Wolak ak@gflenv.com
	ample No. ab Number hique Number est Package ample report, hethods that a	Aboratory : WearCheck USA - 50° ample No. : GFL0108762 ab Number : 10940337 est Package : FLEET mple report, contact Customer Service thethods that are outside of the ISO 17	Aboratory : WearCheck USA - 501 Madiso ample No. : GFL0108762 Recei ab Number : 10940337 Diagn est Package : FLEET mple report, contact Customer Service at 1-8 bethods that are outside of the ISO 17025 sco	Non-ferrous Metals Non-ferrous Metals Non-ferrous Metals Viscosity @ 100°C Viscosity	Aboratory :: WearCheck USA - 501 Madison Ave., Cary, NC 27513 ample No.: GFL0108762 :: Received :: 22 Mar 2024 blumber :: 10940337 :: Carter Service at 1-800-237-1369. tethods that are outside of the ISO 17025 scope of accreditation.	Non-ferrous Metals Non-ferrous Metals Uscosity @ 100°C Uscosity	boratory : WearCheck USA - 501 Malison Ave., Cary, NC 2751 WearCheck USA - 501 Malison Ave., Cary, NC 2751 Biometer : 10940337 timeter report, contact Customer Service at 1-600-237-1365.

Submitted By: Frank Wolak

Page 2 of 2