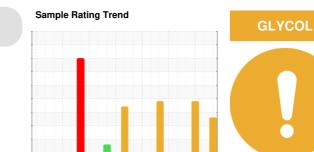


# **OIL ANALYSIS REPORT**



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Component Front Diesel Engine Fluid PETRO CANADA DURON HP 15W40 (27 LTR)

# DIAGNOSIS

Machine Id 9105

### Recommendation

We advise that you check for the source of the coolant leak. The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

# Wear

All component wear rates are normal.

# Contamination

Test for glycol is positive. There is a light concentration of glycol present in the oil.

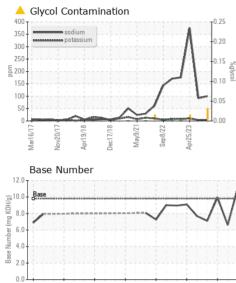
#### Fluid Condition

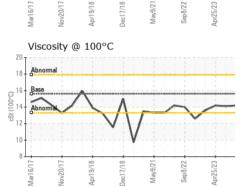
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service. The oil is no longer serviceable due to the presence of contaminants.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0112427	GFL0099592	GFL0077579
Sample Date		Client Info		19 Feb 2024	30 Nov 2023	25 Apr 2023
Machine Age	hrs	Client Info		24533	573073	541984
Oil Age	hrs	Client Info		317	0	541984
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				ATTENTION	NORMAL	ABNORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>75	31	48	27
Chromium	ppm	ASTM D5185(m)	>5	2	3	1
Nickel	ppm	ASTM D5185(m)	>4	<1	<1	<1
Titanium	ppm	ASTM D5185(m)	>2	0	0	<1
Silver	ppm	ASTM D5185(m)	>2	0	<1	0
Aluminum	ppm	ASTM D5185(m)	>15	7	5	10
Lead	ppm	ASTM D5185(m)	>25	<1	2	<1
Copper	ppm	ASTM D5185(m)	>100	1	2	1
Tin	ppm	ASTM D5185(m)	>4	0	0	0
Antimony	ppm	ASTM D5185(m)		0	0	<1
Vanadium	ppm	ASTM D5185(m)		0	0	0
Beryllium	ppm	ASTM D5185(m)		0	0	0
Cadmium	ppm	ASTM D5185(m)		0	0	0
Cadmium ADDITIVES	ppm	ASTM D5185(m) method	limit/base	0 current	0 history1	0 history2
	ppm ppm		limit/base			
ADDITIVES		method	0	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185(m)	0	current 2	history1 2	history2 2
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185(m) ASTM D5185(m)	0 0 60	current 2 0	history1 2 <1	history2 2 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method           ASTM D5185(m)           ASTM D5185(m)           ASTM D5185(m)	0 0 60	current 2 0 59	history1 2 <1 61	history2 2 0 71
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 60 0	2 0 59 0	history1 2 <1 61 0	history2           2           0           71           <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 60 0 1010	current 2 0 59 0 911	history1 2 <1 61 0 931	history2 2 0 71 <1 931
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 60 0 1010 1070	Current 2 0 59 0 911 1037	history1 2 <1 61 0 931 1030	history2           2           0           71           <1           931           1073
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 60 0 1010 1070 1150	Current 2 0 59 0 911 1037 970	history1 2 <1 61 0 931 1030 918	history2           2           0           71           <1           931           1073           1064
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 60 0 1010 1070 1150 1270	Current 2 0 59 0 911 1037 970 1143	history1           2           <1           61           0           931           1030           918           1164	history2           2           0           71           <1           931           1073           1064           1164
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 60 0 1010 1070 1150 1270	Current 2 0 59 0 911 1037 970 1143 2579	history1           2           <1           61           0           931           1030           918           1164           2360	history2           2           0           71           <1           931           1073           1064           1164           2527
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185(m)	0 0 60 0 1010 1070 1150 1270 2060	Current 2 0 59 0 911 1037 970 1143 2579 <1	history1         2         <1         61         0         931         1030         918         1164         2360         <1	history2         2         0         71         <1         931         1073         1064         1164         2527         <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185(m)	0 0 60 1010 1070 1150 1270 2060	Current 2 0 59 0 911 1037 970 1143 2579 <1 2000 2000 2000 2000 2000 2000 2000 2	history1         2         <1         61         0         931         1030         918         1164         2360         <1         history1	history2         2         0         71         <1         931         1073         1064         1164         2527         <1         history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185(m)	0 0 60 1010 1070 1150 1270 2060	Current           2           0           59           0           911           1037           970           1143           2579           <1           current           5	history1         2         <1         61         0         931         1030         918         1164         2360         <1         history1         7	history2         2         0         71         <1         931         1073         1064         1164         2527         <1         history2         6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185(m)	0 0 60 0 1010 1070 1150 1270 2060 imit/base >25	Current 2 0 59 0 911 1037 970 1143 2579 <1 Current 5 100	history1         2         <1         61         0         931         1030         918         1164         2360         <1         history1         7         92	history2         2         0         71         <1         931         1073         1064         1164         2527         <1         history2         6         375
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185(m)	0 0 60 0 1010 1070 1150 1270 2060 imit/base >25	2         0         59         0         911         1037         970         1143         2579         <1         current         5         100         4         0.031	history1         2         <1         61         0         931         1030         918         1164         2360         <1         history1         7         92         4	history2         2         0         71         <1         931         1073         1064         1164         2527         <1         history2         6         375         10
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185(m)           ASTM D7922*           method	0 0 60 0 1010 1070 1150 1270 2060 imit/base >25 >20	Current 2 0 59 0 911 1037 970 1143 2579 <1 Current 5 100 4 0.031	history1         2         <1         61         0         931         1030         918         1164         2360         <1         history1         7         92         4         0.0	history2         2         0         71         <1         931         1073         1064         1164         2527         <1         history2         6         375         10         0         0
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185(m)           ASTM D5185(m)	0 0 0 1010 1070 1150 1270 2060 iimit/base >25 >20 iimit/base >20	Current 2 0 59 0 911 1037 970 1143 2579 <1 Current 5 100 4 ▲ 0.031 Current 0.9	history1         2         <1         61         0         931         1030         918         1164         2360         <1         7         92         4         0.0         history1         1.3	P         2         0         71         <1         931         1073         1064         1164         2527         <1         bistory2         6         375         10         0.016         bistory2         0.6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185(m)           ASTM D7922*           method	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	Current 2 0 59 0 911 1037 970 1143 2579 <1 Current 5 100 4 0.031 Current	history1         2         <1         61         0         931         1030         918         1164         2360         <1         history1         7         92         4         0.0         history1	P         2         0         71         <1         931         1073         1064         1164         2527         <1         bistory2         6         375         10         0.016



# **OIL ANALYSIS REPORT**





FLUID DEGRADATION method >25 16.6 21.9 Oxidation Abs/.1mm ASTM D7414\* 16.0 Base Number (BN) mg KOH/g ASTM D2896\* 9.8 11.12 6.61 9.93 VISUAL NEG NEG NEG >0.2 Emulsified Water scalar Visual\* NEG Free Water scalar Visual\* NEG NEG **FLUID PROPERTIE** Visc @ 100°C cSt 14.2 ASTM D7279(m) 15.6 14.2 14.1 GRAPHS Iron (ppm) Lead (ppm) 140 Sev 120 50 100 40 80 ۲<u>ط</u> 30 Ab 60 20 40 10 20 0 0 Mar16/17 n8/77 /ar16/1 Aluminum (ppm) Chromium (ppm) 30 25 10 20 E 15 mdo 10 n Mav9/21 ep 8/22 nr75/73 pr19/18 Dec17/18 Dec17/18 Copper (ppm) Silicon (ppm) 250 60 50 200 40 150 ppm d 30 100 20 50 10 n Apr25/23 Mav9/21 ep 8/22 Mar16/1 lc17/18 or19/ /ar1 Viscosity @ 100°C Base Number 20 u (mg KOH/g) 18 -(100°C) 6.0 Number ż 4.0 Base 2.0 0.0 Sep 8/22 Dec17/18 Mav9/21 Dec17/18 Sep8/22 Apr25/23 May9/21 Mar16/17 or19/18 Mar16/17 pr19/18 Nov20/1 Nov20/1 Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 GFL Environmental - 550 - Rocky View County Sample No. Received : 28 Feb 2024 220 Carmek Blvd : GFL0112427 Lab Number : 02618609 Tested : 29 Feb 2024 Rocky View County, AB : 29 Feb 2024 - Wes Davis CA T1X 1X1 Unique Number : 5735719 Diagnosed Test Package : MOB 2 (Additional Tests: Glycol) Contact: GFL Calgary To discuss this sample report, contact Customer Service at 1-800-268-2131. calgarymaintenance@gflenv.com Test denoted (\*) outside scope of accreditation, (m) method modified, (e) tested at external lab. T: F: (403)369-6163 Validity of results and interpretation are based on the sample and information as supplied.

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