

OIL ANALYSIS REPORT

Sample Rating Trend

mb2019 Dec2019 Mar2022 Jan2023 Mary2023 Ju2023 Aug/2023 Oc22073 Nov2022 Dec202





428060-402359

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

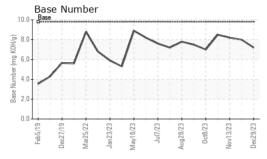
Fluid Condition

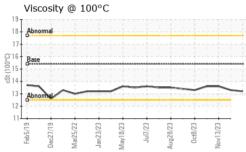
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

				023 Jul2023 Aug2023 Oct2023 No		
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0104925	GFL0088222	GFL0088098
Sample Date		Client Info		29 Dec 2023	12 Dec 2023	13 Nov 2023
Machine Age	hrs	Client Info		16009	292102	15710
Oil Age	hrs	Client Info		16009	292102	0
Oil Changed		Client Info		N/A	Changed	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	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	>120	6	5	2
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel		ASTM D5185m	>5	0	<1	0
	ppm					
Titanium	ppm	ASTM D5185m	>2	0	<1	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	2	1
Lead	ppm	ASTM D5185m	>40	0	<1	<1
Copper	ppm	ASTM D5185m	>330	1	1	<1
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	<1	0
ADDITIVES		method	limit/base	current	history1	history2
			•	•		0
Boron	ppm	ASTM D5185m	0	2	0	0
Boron Barium	ppm ppm		0	0	12	0
Barium	ppm	ASTM D5185m	0	0	12	0
Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m	0 60	0 58	12 57	0 57
Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0	0 58 <1	12 57 <1	0 57 <1
Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010	0 58 <1 911	12 57 <1 884	0 57 <1 983
Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070	0 58 <1 911 1068	12 57 <1 884 970	0 57 <1 983 1044
Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150	0 58 <1 911 1068 941	12 57 <1 884 970 942	0 57 <1 983 1044 1072
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270	0 58 <1 911 1068 941 1181	12 57 <1 884 970 942 1154	0 57 <1 983 1044 1072 1289
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060	0 58 <1 911 1068 941 1181 2884	12 57 <1 884 970 942 1154 2993	0 57 <1 983 1044 1072 1289 3130
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060	0 58 <1 911 1068 941 1181 2884	12 57 <1 884 970 942 1154 2993	0 57 <1 983 1044 1072 1289 3130 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base	0 58 <1 911 1068 941 1181 2884 current	12 57 <1 884 970 942 1154 2993 history1	0 57 <1 983 1044 1072 1289 3130 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base	0 58 <1 911 1068 941 1181 2884 current 5	12 57 <1 884 970 942 1154 2993 history1 4	0 57 <1 983 1044 1072 1289 3130 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base >25	0 58 <1 911 1068 941 1181 2884 current 5 3 1	12 57 <1 884 970 942 1154 2993 history1 4 <1 3	0 57 <1 983 1044 1072 1289 3130 history2 3 2 <1
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	0 58 <1 911 1068 941 1181 2884 current 5 3 1	12 57 <1 884 970 942 1154 2993 history1 4 <1 3	0 57 <1 983 1044 1072 1289 3130 history2 3 2 <1 history2 0.1
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base >25	0 58 <1 911 1068 941 1181 2884 current 5 3 1 current 0.3 6.9	12 57 <1 884 970 942 1154 2993 history1 4 <1 3 history1 0.2 6.1	0 57 <1 983 1044 1072 1289 3130 history2 3 2 <1
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m Method ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D76144	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >4 >20 >30	0 58 <1 911 1068 941 1181 2884 current 5 3 1 current 0.3 6.9 18.3	12 57 <1 884 970 942 1154 2993 history1 4 <1 3 history1 0.2 6.1 17.8	0 57 <1 983 1044 1072 1289 3130 history2 3 2 <1 history2 0.1 5.5 17.8
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm	ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >4 >20 >30 limit/base	0 58 <1 911 1068 941 1181 2884 current 5 3 1 current 0.3 6.9 18.3	12 57 <1 884 970 942 1154 2993 history1 4 <1 3 history1 0.2 6.1 17.8 history1	0 57 <1 983 1044 1072 1289 3130 history2 3 2 <1 history2 0.1 5.5 17.8 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m Method ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D76144	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >4 >20 >30 limit/base	0 58 <1 911 1068 941 1181 2884 current 5 3 1 current 0.3 6.9 18.3	12 57 <1 884 970 942 1154 2993 history1 4 <1 3 history1 0.2 6.1 17.8	0 57 <1 983 1044 1072 1289 3130 history2 3 2 <1 history2 0.1 5.5 17.8



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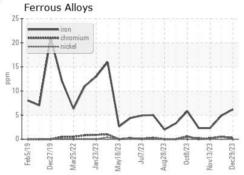


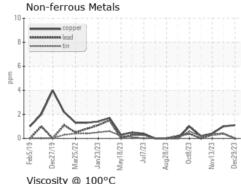


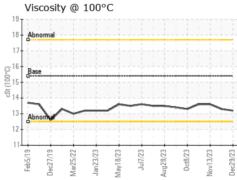
VISUAL		method				history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance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

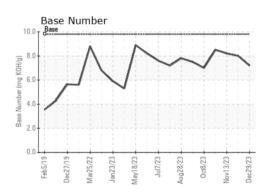
FLUID PROPI	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.2	13.3	13.6

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number Unique Number : 10831425 Test Package : FLEET

: GFL0104925 : 06060043

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Recieved : 12 Jan 2024 : 15 Jan 2024 Diagnosed Diagnostician : Wes Davis

GFL Environmental - 820 - Joplin Hauling

3700 West 7th Street Joplin, MO US 64801 Contact: James Jarrett

jjarrett@gflenv.com

T: (417)310-2802

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)

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