

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id

426039-981

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

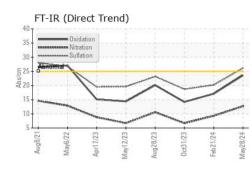
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

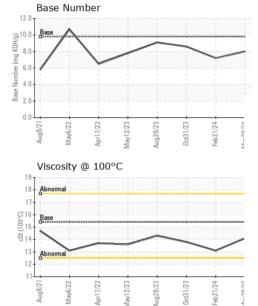
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0100991	GFL0092824	GFL0092785
Sample Date		Client Info		28 May 2024	21 Feb 2024	31 Oct 2023
Machine Age	mls	Client Info		0	516261	516261
Oil Age	mls	Client Info		0	267349	267349
Oil Changed		Client Info		N/A	Not Changd	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 METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>90	73	31	7
Chromium	ppm	ASTM D5185m	>20	6	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	0	<1
Titanium	ppm	ASTM D5185m	>2	2	<1	0
Silver	ppm	ASTM D5185m	>2	<1	0	<1
Aluminum	ppm	ASTM D5185m	>20	3	4	4
Lead	ppm	ASTM D5185m	>40	22	0	0
Copper	ppm	ASTM D5185m	>330	6	2	<1
Tin	ppm	ASTM D5185m	>15	1	<1	0
Vanadium	ppm	ASTM D5185m		<1	0	<1
• • •						
Cadmium	ppm	ASTM D5185m		<1	0	<1
ADDITIVES	ppm	ASTM D5185m method	limit/base	<1 current	0 history1	<1 history2
	ppm ppm		limit/base		-	
ADDITIVES		method		current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current 5	history1 6	history2 0
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0	current 5 0	history1 6 <1	history2 0 4
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 5 0 65	history1 6 <1 65	history2 0 4 44
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 5 0 65 <1	history1 6 <1 65 1	history2 0 4 44 0
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 5 0 65 <1 992	history1 6 <1 65 1 882	history2 0 4 44 0 666
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	current 5 0 65 <1 992 1237	history1 6 <1 65 1 882 1045	history2 0 4 44 0 666 856
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	Current 5 0 65 <1 992 1237 1098	history1 6 <1 65 1 882 1045 943	history2 0 4 44 0 666 856 483
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	current 5 0 65 <1 992 1237 1098 1287	history1 6 <1 65 1 882 1045 943 1109 2637 history1	history2 0 4 44 0 666 856 483 963 1554 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	current 5 0 65 <1 992 1237 1098 1287 3209 current 6	history1 6 <1 65 1 882 1045 943 1109 2637 history1 5	history2 0 4 0 666 856 483 963 1554 history2 2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	current 5 0 65 <1 992 1237 1098 1287 3209 current 6 5	history1 6 <1 65 1 882 1045 943 1109 2637 history1 5 6	history2 0 4 44 0 666 856 483 963 1554 history2 2 2 2 2 2 2 2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	current 5 0 65 <1 992 1237 1098 1287 3209 current 6	history1 6 <1 65 1 882 1045 943 1109 2637 history1 5	history2 0 4 0 666 856 483 963 1554 history2 2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >20 20	current 5 0 65 <1 992 1237 1098 1287 3209 current 6 5 1 current	history1 6 <1 65 1 882 1045 943 1109 2637 history1 5 6 5	history2 0 4 0 666 856 483 963 1554 history2 2 2 4 4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	current 5 0 65 <1 992 1237 1098 1287 3209 current 6 5 1 current 1.5	history1 6 <1 65 1 882 1045 943 1109 2637 history1 5 6 5	history2 0 4 0 666 856 483 963 1554 history2 2 2 4 0 63 1554
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >20 20	current 5 0 65 <1 992 1237 1098 1287 3209 current 6 5 1 current 1.5 12.7	history1 6 <1 65 1 882 1045 943 1109 2637 history1 5 6 5 6 5 6 5 6 5 9 0.5 9.3	history2 0 4 0 666 856 483 963 1554 history2 2 2 4 0 0.3 6.7
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	current 5 0 65 <1 992 1237 1098 1287 3209 current 6 5 1 current 1.5	history1 6 <1 65 1 882 1045 943 1109 2637 history1 5 6 5	history2 0 4 0 666 856 483 963 1554 history2 2 2 4 0 63 1554
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 220 20 20 20 20 20 20 20 20 20	current 5 0 65 <1 992 1237 1098 1287 3209 current 6 5 1 current 1.5 12.7	history1 6 <1 65 1 882 1045 943 1109 2637 history1 5 6 5 6 5 6 5 6 5 9 0.5 9.3	history2 0 4 0 666 856 483 963 1554 history2 2 2 4 0 0.3 6.7
ADDITIVES Boron 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	method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 <u>imit/base</u> >6 >20 20	current 5 0 65 <1 992 1237 1098 1287 3209 current 6 5 1 current 1.5 12.7 26.1	history1 6 <1 65 1 882 1045 943 1109 2637 history1 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 6 5 0.5 9.3 20.2	history2 0 4 0 666 856 483 963 1554 history2 2 2 4 0.3 6.7 18.7



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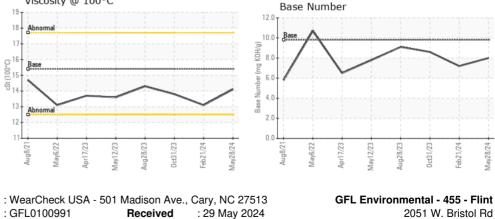
Ferrous Alloys





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
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.1	13.1	13.8
GRAPHS						

90 80 70 60 - 50 40 30 20 10 Π. Aug8/21. Apr17/23 Aug28/23 Mav6/22 Feb21/24 May12/23 Mav28/24 Non-ferrous Metals 70 60 lead 50 40 30 20 10 0 Apr17/23 Aug 8/7 Aav12/2 Aav28/24 eh71/7/ Viscosity @ 100°C 19 18 17 Base Number (mg KOH/g) ()-16 ()-00 () 15 () 14 Abn 12 11-May28/24 -Aug8/21 Apr17/23 0ct31/23 Feb21/24 Mav6/22 May12/23 Aua28/23



2051 W. Bristol Rd Flint Township, MI US 48507 Contact: MARK WOMBLE mwomble@gflenv.com T: (586)825-9514 F:



Unique Number : 11056905 Diagnosed : 31 May 2024 - Sean Felton Test Package : FLEET Certificate 12367 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)

Received

: 30 May 2024

Tested

Report Id: GFL455 [WUSCAR] 06194782 (Generated: 05/31/2024 17:41:54) Rev: 1

Laboratory

Sample No.

Lab Number : 06194782

: GFL0100991

Submitted By: MARK WOMBLE

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