

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id 3238M

Fluid

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.

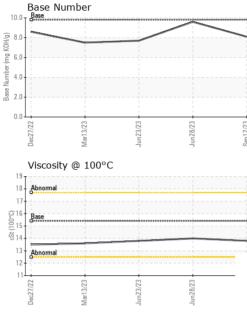
Fluid Condition

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

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0092945	GFL0015807	GFL0055939
Sample Date		Client Info		12 Sep 2023	28 Jun 2023	23 Jun 2023
Machine Age	hrs	Client Info		12264	12264	12263
Oil Age	hrs	Client Info		12714	11743	600
Oil Changed		Client Info		N/A	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	4	4	10
Chromium	ppm	ASTM D5185m	>20	<1	2	2
Nickel	ppm	ASTM D5185m	>5	<1	1	<1
Titanium	ppm	ASTM D5185m	>2	<1	2	<1
Silver	ppm	ASTM D5185m	>2	<1	2	0
Aluminum	ppm	ASTM D5185m	>20	<1	2	0
Lead	ppm	ASTM D5185m	>40	1	4	4
Copper	ppm	ASTM D5185m	>330	<1	2	2
Tin	ppm	ASTM D5185m	>15	2	2	2
Vanadium	ppm	ASTM D5185m		0	1	0
Cadmium	ppm	ASTM D5185m		<1	2	<1
			12 . 1. 0			
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	ASTM D5185m	limit/base	current 3	history1 2	history2 <1
	ppm ppm		0			
Boron		ASTM D5185m	0	3	2	<1
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	3 44	2 0	<1 <1
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	3 44 55	2 0 55	<1 <1 63
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	3 44 55 1	2 0 55 2	<1 <1 63 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	3 44 55 1 873	2 0 55 2 969	<1 <1 63 <1 982
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	3 44 55 1 873 950	2 0 55 2 969 1094	<1 <1 63 <1 982 1116
Boron 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 0 60 0 1010 1070 1150	3 44 55 1 873 950 912	2 0 55 2 969 1094 995	<1 <1 63 <1 982 1116 1017
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	3 44 55 1 873 950 912 1131	2 0 55 2 969 1094 995 1259	<1 <1 63 <1 982 1116 1017 1276
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	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	3 44 55 1 873 950 912 1131 3173	2 0 55 2 969 1094 995 1259 3694	<1 <1 63 <1 982 1116 1017 1276 3523
Boron 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	0 0 60 1010 1070 1150 1270 2060	3 44 55 1 873 950 912 1131 3173 current	2 0 55 2 969 1094 995 1259 3694 history1	<1 <1 63 <1 982 1116 1017 1276 3523 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm TS	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 imit/base >25	3 44 55 1 873 950 912 1131 3173 current 5	2 0 55 2 969 1094 995 1259 3694 history1 5	<1 <1 63 <1 982 1116 1017 1276 3523 history2 7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 imit/base >25	3 44 55 1 873 950 912 1131 3173 current 5 3	2 0 55 2 969 1094 995 1259 3694 history1 5 4	<1 <1 63 <1 982 1116 1017 1276 3523 history2 7 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20	3 44 55 1 873 950 912 1131 3173 current 5 3 4	2 0 55 2 969 1094 995 1259 3694 history1 5 4 6	<1 <1 63 <1 982 1116 1017 1276 3523 history2 7 4 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25	3 44 55 1 873 950 912 1131 3173 current 5 3 4 current	2 0 55 2 969 1094 995 1259 3694 history1 5 4 6 Kistory1	<1 <1 63 <1 982 1116 1017 1276 3523 history2 7 4 3 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 1imit/base >20	3 44 55 1 873 950 912 1131 3173 current 5 3 4 current 0.2	2 0 55 2 969 1094 995 1259 3694 history1 5 4 6 history1 0.1	<1 <1 63 <1 982 1116 1017 1276 3523 history2 7 4 3 history2 0.3
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >4 >20	3 44 55 1 873 950 912 1131 3173 current 5 3 4 current 0.2 5.7	2 0 55 2 969 1094 995 1259 3694 history1 5 4 6 history1 0.1 5.5	<1 <1 63 <1 982 1116 1017 1276 3523 history2 7 4 3 history2 0.3 8.1
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >4 >20	3 44 55 1 873 950 912 1131 3173 current 5 3 4 current 0.2 5.7 17.9	2 0 55 2 969 1094 995 1259 3694 history1 5 4 6 <u>history1</u> 0.1 5.5 18.1	<1 <1 63 <1 982 1116 1017 1276 3523 history2 7 4 3 history2 0.3 8.1 19.8
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	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 2260 225 220 220 imit/base >4 >20 >30 imit/base	3 44 55 1 873 950 912 1131 3173 current 5 3 4 current 0.2 5.7 17.9 current	2 0 55 2 969 1094 995 1259 3694 history1 5 4 6 history1 0.1 5.5 18.1	<1 <1 63 <1 982 1116 1017 1276 3523 history2 7 4 3 history2 0.3 8.1 19.8 history2



OIL ANALYSIS REPORT



			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
Jun 28/23 Sep 12/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Sep	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
	Free Water	scalar	*Visual		NEG	NEG	NEG
	FLUID PROP	ERTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.4	13.8	14.0	13.8
	GRAPHS						
	Ferrous Alloys						
3	iron						
	8 - nickel	$\langle \rangle$					
1	6						
	udd		\mathbf{N}				
	4						
	2		and the Real of Street				
	2	AND DESCRIPTION OF THE OWNER	And a state of the local division of the loc	Percent and			
	0	CO.					
	Dec27/22 Mar13/23	Jun23/23	Jun28/23	Sep 12/23			
			Jur	Sep			
	Non-ferrous Met	als					
	10 copper						
	8 - Bassassassassassassassassassassassassass						
	8 - season lead						
	6 -						
	6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4						
	6						
	6 -						
	6			X			
		5323	E2/82	1223 - 1/2			
	8 6 4 2	Jun23/23	- Classical - Clas	8ep12/23 1/			
	Viscosity @ 100°		-278Zun	Sep12/23	Base Number		
	Viscosity @ 1000		Jun28/23	Sep 12/23	Base Number		
	Viscosity @ 1000		EZ/8Zunf	10.0	Base Number		
	Viscosity @ 1000			10.0	Base Number		
	Viscosity @ 1000		5782mr	10.0	Base Number		
	Viscosity @ 1000		Jun28/23	10.0	Base		
	Viscosity @ 1000		EZ/8ZunF	10.0	Base		
	Viscosity @ 1000		-578Zunf	10.0 (0, 8.0 (0, 9, 40) (0, 10) (0, 10	Base		
	Viscosity @ 1000			10.0 (0HO) 06.0 uu aquun see 2.0	Base		
	Viscosity @ 1000	C		10.0 (0, 8.0 (0, HO) (0, HO) (0, HO) (0, 10, 10, 10, 10, 10, 10, 10, 10, 10, 1	Base		
	Viscosity @ 1000	C		10.0 (0, 8.0 (0, HO) (0, HO) (0, HO) (0, 10, 10, 10, 10, 10, 10, 10, 10, 10, 1	Base		m28/23
	Viscosity @ 1000		52/82/ulc	10.0 (0HO) 06.0 uu aquun see 2.0	Base	EZEZunc	Jun28/23
aboratory	Viscosity @ 1000	C	Jun28/23	10.0 8.0 0.6.0 9288 928 0.0 10,100 10,100	Base Mar13/22		
aboratory ample No.	Viscosity @ 1000 Viscosity @ 1000 Viscosity @ 1000 Viscosity @ 1000 Viscosity @ 1000 Viscosity @ 1000 Viscosity @ 1000 CERTING CER	C EXECUTE 501 Madise Received	czagzung on Ave., Ca : 15 5	10.0 (0,HO) Bull Jack (1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1	Base Mar13/22	EZEZUNG NVironmental - 44 501	63 - Cheboyga N. Western Av
ample No. ab Number	Viscosity @ 1000 Viscosity @ 1000	C EXECUTE 501 Madise Received Diagnose	cz ₂₂ cz ₂₂ on Ave., Ca : 15 d : 18	10.0 (0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(Base Mar13/22	EZEZUNG NVironmental - 44 501	63 - Cheboyga N. Western Av Cheboygan, N
ample No.	Viscosity @ 1000 Viscosity @ 1000 Abnomal	C EXECUTE 501 Madise Received	cz ₂₂ cz ₂₂ on Ave., Ca : 15 d : 18	10.0 (0,HO) Bull Jack (1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1	Base Mar13/22	extronmental - 44 501	63 - Cheboyga N. Western Av

VISUAI method limit/base current history1 history2

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)

Certificate L2367

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F:

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