

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 928038

Component Diesel Engine

Fluid

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.

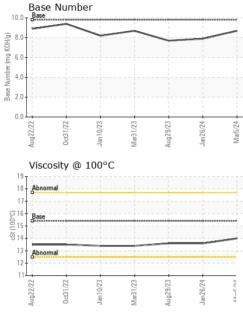
Fluid Condition

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		GFL0107495	GFL0107506	GFL0064703	
Sample Date		Client Info		05 Mar 2024	26 Jan 2024	29 Aug 2023	
Machine Age	hrs	Client Info		17743	17743	16818	
Oil Age	hrs	Client Info		605	604	608	
Oil Changed		Client Info		Changed	Changed	Changed	
Sample Status				NORMAL	NORMAL	ABNORMAL	
CONTAMINAT	ION	method	limit/base	current	history1	history2	
Fuel		WC Method	>5	<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	>100	20	37	16	
Chromium	ppm	ASTM D5185m	>20	<1	1	<1	
Nickel	ppm	ASTM D5185m	>4	0	0	0	
Titanium	ppm	ASTM D5185m		0	<1	<1	
Silver	ppm	ASTM D5185m	>3	0	0	0	
Aluminum	ppm	ASTM D5185m	>20	2	3	3	
Lead	ppm	ASTM D5185m	>40	<1	<1	<1	
Copper	ppm	ASTM D5185m	>330	<1	2	1	
Tin	ppm	ASTM D5185m	>15	0	<1	0	
Vanadium	ppm	ASTM D5185m		0	<1	<1	
Cadmium	ppm	ASTM D5185m		0	<1	0	
ADDITIVES		method	limit/base	current	history1	history2	
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 21	history1 29	history2 62	
	ppm ppm	ASTM D5185m					
Boron		ASTM D5185m	0	21	29	62	
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	21 0	29 0	62 0	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	21 0 63	29 0 56	62 0 68	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	21 0 63 0	29 0 56 <1	62 0 68 <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	21 0 63 0 980	29 0 56 <1 892	62 0 68 <1 791 1417 893	
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	21 0 63 0 980 1184	29 0 56 <1 892 1139	62 0 68 <1 791 1417	
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	21 0 63 0 980 1184 1064	29 0 56 <1 892 1139 919	62 0 68 <1 791 1417 893	
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	21 0 63 0 980 1184 1064 1261	29 0 56 <1 892 1139 919 1084	62 0 68 <1 791 1417 893 1130	
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	21 0 63 0 980 1184 1064 1261 3830	29 0 56 <1 892 1139 919 1084 2702	62 0 68 <1 791 1417 893 1130 3360	
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 0 1010 1070 1150 1270 2060	21 0 63 0 980 1184 1064 1261 3830 current	29 0 56 <1 892 1139 919 1084 2702 history1	62 0 68 <1 791 1417 893 1130 3360 history2	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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 0 0 1010 1070 1150 1270 2060 kimit/base >25	21 0 63 0 980 1184 1064 1261 3830 current 6	29 0 56 <1 892 1139 919 1084 2702 history1 13	62 0 68 <1 791 1417 893 1130 3360 history2 ▲ 38	
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 ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 kimit/base >25	21 0 63 0 980 1184 1064 1261 3830 current 6 3	29 0 56 <1 892 1139 919 1084 2702 history1 13 4	62 0 68 <1 791 1417 893 1130 3360 history2 ▲ 38 5	
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 imit/base >25	21 0 63 0 980 1184 1064 1261 3830 current 6 3 3 0	29 0 56 <1 892 1139 919 1084 2702 history1 13 4 1	62 0 68 <1 791 1417 893 1130 3360 history2 ▲ 38 5 <1	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25	21 0 63 0 980 1184 1064 1261 3830 current 6 3 3 0 0	29 0 56 <1 892 1139 919 1084 2702 history1 13 4 1 1 13 4 1 history1	62 0 68 <1 791 1417 893 1130 3360 history2 ▲ 38 5 <1 ×1	
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>imit/base</i> >25 >20 <i>imit/base</i> >3 >20	21 0 63 0 980 1184 1064 1261 3830 current 6 3 0 current 0.4	29 0 56 <1 892 1139 919 1084 2702 history1 13 4 1 1 13 4 1 history1 0.7	62 0 68 <10 791 1417 893 1130 3360 ► history2 <1 ↓ history2 0.6	
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>imit/base</i> >25 >20 <i>imit/base</i> >3 >20	21 0 63 0 980 1184 1064 1261 3830 current 6 3 0 current 0.4 6.4	29 0 56 <1 892 1139 919 1084 2702 history1 13 4 1 1 13 4 1 0.7 9.1	62 0 68 <1 791 1417 893 1130 3360 history2 ▲ 38 5 <1 ▲ 38 5 <1 history2	
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 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 33 220 330 20 330	21 0 63 0 980 1184 1064 1261 3830 current 6 3 3 0 current 0.4 6.4 18.7 current	29 0 56 <1 892 1139 919 1084 2702 history1 13 4 1 1 0.7 9.1 21.2 history1	62 0 68 <1 791 1417 893 1130 3360 history2 ▲ 38 5 <1 history2 0.6 8.3 21.0 history2	
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 2060 225 20 225 20 20 3 20 3 20 20 20 20 20 20 20 20 20 20 20 20 20	21 0 63 0 980 1184 1064 1261 3830 current 6 3 0 current 0.4 6.4 18.7	29 0 56 <1 892 1139 919 1084 2702 history1 13 4 1 1 13 4 1 0.7 9.1 21.2	62 0 68 <1 791 1417 893 1130 3360 history2 ▲ 38 5 <1 ↓ history2 0.6 8.3 21.0	



OIL ANALYSIS REPORT



			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	
1/23	5/24	Mar5/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
Mar31/23	Jan 26/24	Marl	Odor	scalar	*Visual	NORML	NORML	NORML	NORML	
°C			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	14.0	13.6	13.6	
			GRAPHS							
			Ferrous Alloys							
23	24	VC	40 35 iron		Λ					
Mar31/23	Jan 26/24	M C	30 - nickel		/ \					
			25 -							
			튭 ²⁰		/					
			15							
			5-							
			0 +			********				
			Aug22/22 0ct31/22 Jan10/23	Mar31/23	Aug29/23 Jan26/24	Mar5/24				
					Aug	\geq				
			Non-ferrous Meta	ls						
			copper							
			8 - tin							
			6-							
			u dd							
			2							
			0	The second states	AREA STATES	And and a state of the state of				
			Aug22/22 0ct31/22 Jan10/23	lar31/23	Aug 29/23 Jan 26/24	Mar5/24				
			A D L	2	Aug	Z				
			Viscosity @ 100°C			10	Base Number			
			18 - Abnormal			10.				
			17-			(B)	0			
			C ¹⁶ Base			p 6.	0			
			() 16 () 15 () 15 () 15 () 15 () 15			per (m				
						Base Number (mg KOH/g)	0			
			13 Abnormal			²⁸⁰ 2.	0			
			12			0.	0			
			2/22	1/23 -	6/24	Mar5/24		1/23 -	ug 29/23 - Jan 26/24 - Mar5/24 -	
			Aug22/22 0ct31/22 Jan10/23	Mar31/23	Aug29/23 Jan26/24	Mar	Aug22/22 0ct31/22	Jan 10/23 Mar3 1/23	Aug 25/23 Jan 26/24 Mar5/24	
2	Labor	atorv	: WearCheck USA - 50	1 Madisc	on Ave., Carv	. NC 27513	GFL Envi	ronmental - 912 -	Fort Atkinson HC	
ANAB	Samp	Laboratory Sample No. Lab Number Unique Number Test Package	: GFL0107495	Received : 11 Mar 202		Mar 2024	24 1215 Klement			
A C C R E D I T E D				Teste		2 Mar 2024		F	ort Atkinson, WI	
Certificate L2367				Diagr	nosed : 12	Mar 2024 - V			US 53538 KOZI ELICHAR	
			, contact Customer Serv	ice at 1-8	300-237-136	Э.		Contact: LEONARD KOZLEUCHAR leonard.kozleuchar@gflenv.com		
* - Denotes te	est metho	ods that	are outside of the ISO 1	7025 sco	ope of accred	litation.		Т	: (262)210-6528	
Statements of	of conform	nity to sp	pecifications are based o	on the sin	nple accepta	nce decision	rule (JCGM 106	:2012)	F:	

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Submitted By: LEONARD KOZLEUCHAR