

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 712042

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.

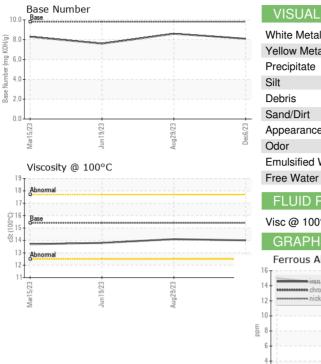
Fluid Condition

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

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2	
Sample Number		Client Info		GFL0098427	GFL0089483	GFL0084558	
Sample Date		Client Info		06 Dec 2023	29 Aug 2023	19 Jun 2023	
Machine Age	hrs	Client Info	5836 5254		5254	4833	
Oil Age	hrs	Client Info		5836	0	0	
Oil Changed		Client Info		Changed	N/A	Changed	
Sample Status				NORMAL	NORMAL	NORMAL	
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	>110	9	6	14	
Chromium	ppm	ASTM D5185m	>4	<1	0	<1	
Nickel	ppm	ASTM D5185m	>2	<1	0	<1	
Titanium	ppm	ASTM D5185m		<1	0	0	
Silver	ppm	ASTM D5185m	>2	0	0	0	
Aluminum	ppm	ASTM D5185m	>25	2	<1	8	
Lead	ppm	ASTM D5185m	>45	0	0	3	
Copper	ppm	ASTM D5185m	>85	<1	<1	2	
Tin	ppm	ASTM D5185m	>4	<1	0	2	
Vanadium	ppm	ASTM D5185m		0	0	<1	
Cadmium	ppm	ASTM D5185m		<1	0	<1	
ADDITIVES		method	limit/base	current	history1	history2	
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base		history1 0	history2 2	
		ASTM D5185m		current			
Boron	ppm	ASTM D5185m	0	current <1	0	2	
Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	current <1 12	0	2 0	
Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current <1 12 59	0 0 60	2 0 64	
Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current <1 12 59 <1	0 0 60 0	2 0 64 2	
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current <1 12 59 <1 934	0 0 60 0 1030	2 0 64 2 1034	
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	<1 12 59 <1 934 1004	0 0 60 0 1030 1149	2 0 64 2 1034 1122	
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	Current <1 12 59 <1 934 1004 970	0 0 60 0 1030 1149 1106	2 0 64 2 1034 1122 1069	
Boron 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 0 60 0 1010 1070 1150 1270	<1 12 59 <1 934 1004 970 1208	0 0 60 0 1030 1149 1106 1371	2 0 64 2 1034 1122 1069 1322	
Boron 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 0 60 1010 1070 1150 1270 2060	Current <1 12 59 <1 934 1004 970 1208 3202	0 0 60 0 1030 1149 1106 1371 4111	2 0 64 2 1034 1122 1069 1322 3643	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm 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 60 1010 1070 1150 1270 2060	current <1 12 59 <1 934 1004 970 1208 3202 current	0 0 60 0 1030 1149 1106 1371 4111 history1	2 0 64 2 1034 1122 1069 1322 3643 history2	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	0 0 60 1010 1070 1150 1270 2060 limit/base	<1 12 59 <1 934 1004 970 1208 3202 current 3	0 0 60 0 1030 1149 1106 1371 4111 <u>history1</u> 2	2 0 64 2 1034 1122 1069 1322 3643 history2 3	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm 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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base	<1 12 59 <1 934 1004 970 1208 3202 current 3 2	0 0 60 0 1030 1149 1106 1371 4111 <u>history1</u> 2 6	2 0 64 2 1034 1122 1069 1322 3643 history2 3 6	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Jimit/base >30	<1 12 59 <1 934 1004 970 1208 3202 current 3 2 5	0 0 60 0 1030 1149 1106 1371 4111 <u>history1</u> 2 6 6 6	2 0 64 2 1034 1122 1069 1322 3643 history2 3 6 8	
Boron 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 ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >30 -20 Imit/base	<1 12 59 <1 934 1004 970 1208 3202 current 3 2 5 current	0 0 60 0 1030 1149 1106 1371 4111 history1 2 6 6 6 6 6 history1	2 0 64 2 1034 1122 1069 1322 3643 history2 3 6 8 kistory2	
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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >30 20 limit/base	<1 12 59 <1 934 1004 970 1208 3202 current 3 2 5 current 0.3	0 0 60 0 1030 1149 1106 1371 4111 history1 2 6 6 6 6 history1 0.3	2 0 64 2 1034 1122 1069 1322 3643 history2 3 6 8 8 history2 0.4	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc 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 imit/base >30 200 imit/base >33 >20	<1 12 59 <1 934 1004 970 1208 3202 current 3 2 5 current 0.3 9.3	0 0 60 0 1030 1149 1106 1371 4111 history1 2 6 6 6 6 history1 0.3 7.9	2 0 64 2 1034 1122 1069 1322 3643 history2 3 6 8 8 history2 0.4 9.8	
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 D7624 *ASTM D7415	0 0 0 1010 1070 1150 2060 2060 2060 2060 200 200 200 200 20	<1 12 59 <1 934 1004 970 1208 3202 current 3 2 5 current 0.3 9.3 19.8	0 0 60 0 1030 1149 1106 1371 4111 history1 2 6 6 6 6 history1 0.3 7.9 19.3 history1	2 0 64 2 1034 1122 1069 1322 3643 history2 3 6 8 <u>history2</u> 0.4 9.8 20.6 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 2060 2060 2060 2060 200 200 200 200 20	<1 12 59 <1 934 1004 970 1208 3202 current 3 2 5 current 0.3 9.3 19.8	0 0 60 0 1030 1149 1106 1371 4111 history1 2 6 6 6 6 history1 0.3 7.9 19.3	2 0 64 2 1034 1122 1069 1322 3643 history2 3 6 8 history2 0.4 9.8 20.6	



OIL ANALYSIS REPORT



******		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	
5	723 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
	Aug 29/23 Dec6/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML	
	а ц	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG	
2		Free Water	scalar	*Visual	20.L	NEG	NEG	NEG	
		FLUID PROPE		method	limit/base	current	history1	history2	
		Visc @ 100°C	cSt	ASTM D445	15.4	14.0	14.1	13.8	
		GRAPHS							
		Ferrous Alloys							
ç	20 +	16 14							
0	Aug 29/23	12							
	АП	10							
		E 8							
		6		-					
		4							
		2							
		0		Steps States Long Street option	THE OWNER WHEN PARTY IN THE OWNER WHEN				
		Mar 15/23 Jun 19/23		9/23	Dec6/23				
		Mar1 Jun1		Aug29/23	Dec				
		Non-ferrous Metals	3						
		10 copper							
		Bead assessesses lead							
		tin							
		6							
		mdd							
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		All and a start of the start of	No. of Concession, Name						
				Z3	23				
		Marl 5/23 Jun 1 9/23		Aug 29/23	Dec6/23				
		≥ ⊰ Viscosity @ 100°C		Aı					
		¹⁹			10.	Base Number			
		18 - Abnormal							
		17-			(B)	.0 -			
		© ¹⁶ Base			B 6	.0 -			
		G 16 E Base 15 3 14			Base Number (mg KOH/g)				
		⁶³ 14			5 4.	.0			
		13 Abnormal			ese ase 2	0			
		12-							
		11		~			, ,		
		Mar15/23 Jun19/23		Aug29/23	Dec6/23	Mar15/23		Aug 29/23	
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	Laboratory	: WearCheck USA - 5	01 Madie	on Ave Ca	rv. NC 2751	3 GFL Env	ironmental . º	18 - Hartland H	
4			Recieved		Dec 2023				
		: GFL0098427	ICCICVEL						
	Sample No. Lab Number		Diagnose		Dec 2023				
	Sample No. Lab Number Unique Number	: 06035743 [: 10790972 [ed :16 l				Hartland, W US 5302	
Certificate L2367	Sample No. Lab Number Unique Number Test Package	: 06035743 [: 10790972 [Diagnose Diagnosti	ed :16 l ician :We	Dec 2023 s Davis			Hartland, W US 5302 ct: David McCa call@gflenv.cor	

Submitted By: David McCall

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