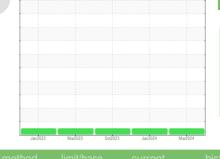


427111-400

OIL ANALYSIS REPORT

Sample Rating Trend







Fluid PETRO CANADA DURON SHP 15W40 (--- LTR)

DIAGNOSIS

Component Diesel Engine

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

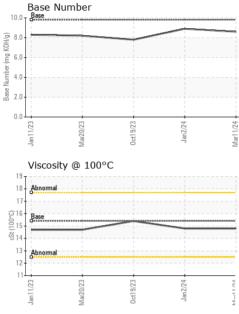
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2	
Sample Number		Client Info		GFL0108481	GFL0108519	GFL0066037	
Sample Date		Client Info		11 Mar 2024	02 Jan 2024	19 Oct 2023	
Machine Age	hrs	Client Info		0	0	0	
Oil Age	hrs	Client Info		0	0	0	
Oil Changed		Client Info		N/A	N/A	N/A	
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	>80	15	17	11	
Chromium	ppm	ASTM D5185m	>5	<1	1	<1	
Nickel	ppm	ASTM D5185m	>2	0	0	0	
Titanium	ppm	ASTM D5185m		0	0	0	
Silver	ppm	ASTM D5185m	>3	0	0	0	
Aluminum	ppm	ASTM D5185m	>30	10	10	8	
Lead	ppm	ASTM D5185m	>30	0	0	0	
Copper	ppm	ASTM D5185m	>150	2	3	4	
Tin	ppm	ASTM D5185m	>5	0	0	0	
Vanadium	ppm	ASTM D5185m		0	0	0	
Cadmium	ppm	ASTM D5185m		0	0	0	
ADDITIVES		method	limit/base	current	history1	history2	
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 4	history1 0	history2 0	
	ppm ppm						
Boron		ASTM D5185m	0	4	0	0	
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	4 0	0	0	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	4 0 57	0 0 58	0 0 59	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	4 0 57 0	0 0 58 0	0 0 59 <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	4 0 57 0 982	0 0 58 0 959	0 0 59 <1 947	
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	4 0 57 0 982 1122	0 0 58 0 959 1083	0 0 59 <1 947 1117	
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	4 0 57 0 982 1122 977	0 0 58 0 959 1083 1032	0 0 59 <1 947 1117 1032	
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	4 0 57 0 982 1122 977 1230	0 0 58 0 959 1083 1032 1209	0 0 59 <1 947 1117 1032 1283	
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	4 0 57 0 982 1122 977 1230 3339	0 0 58 0 959 1083 1032 1209 3252	0 0 59 <1 947 1117 1032 1283 2881	
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	4 0 57 0 982 1122 977 1230 3339 current	0 0 58 0 959 1083 1032 1209 3252 history1	0 0 59 <1 947 1117 1032 1283 2881 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 method	0 0 60 1010 1070 1150 1270 2060	4 0 57 0 982 1122 977 1230 3339 current 3	0 0 58 0 959 1083 1032 1209 3252 history1 5	0 0 59 <1 947 1117 1032 1283 2881 history2 5	
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 60 0 1010 1070 1150 1270 2060 limit/base	4 0 57 0 982 1122 977 1230 3339 current 3 <1	0 0 58 0 959 1083 1032 1209 3252 history1 5 <	0 0 59 <1 947 1117 1032 1283 2881 history2 5 1	
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 60 0 1010 1070 1150 1270 2060 limit/base >20	4 0 57 0 982 1122 977 1230 3339 current 3 < 1 0	0 0 58 0 959 1083 1032 1209 3252 history1 5 < 1 3	0 0 59 <1 947 1117 1032 1283 2881 history2 5 1 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 2060 220 220	4 0 57 0 982 1122 977 1230 3339 current 3 3 <1 0	0 0 58 0 959 1083 1032 1209 3252 history1 5 <1 3	0 0 59 <1 947 1117 1032 1283 2881 history2 5 1 3 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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >20 20 3	4 0 57 0 982 1122 977 1230 3339 current 3 3 <1 0 current 1.3	0 0 58 0 959 1083 1032 1209 3252 history1 5 <1 3 1.2 history1 1.2	0 0 59 <1 947 1117 1032 1283 2881 history2 5 1 3 3 history2 2.1	
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 2060 2060 200 200 200 200 200 200	4 0 57 0 982 1122 977 1230 3339 current 3 <1 0 current 1.3 7.7	0 0 58 0 959 1083 1032 1209 3252 history1 5 <1 3 1.2 history1 1.2 7.0	0 0 59 <1 947 1117 1032 1283 2881 history2 5 1 3 <i>history2</i> 2.1 9.3	
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 220 20 20 320 320 33 220 330	4 0 57 0 982 1122 977 1230 3339 <u>current</u> 3 3 <1 0 <u>current</u> 1.3 7.7 20.7	0 0 58 0 959 1083 1032 1209 3252 history1 5 <1 3 history1 1.2 7.0 20.5	0 0 59 <1 947 1117 1032 1283 2881 history2 5 1 3 history2 2.1 9.3 23.3	
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	0 0 0 1010 1070 1150 1270 2060 2060 2060 200 200 200 200 200 200	4 0 57 0 982 1122 977 1230 3339 current 3 3 <1 0 current 1.3 7.7 20.7 current	0 0 58 0 959 1083 1032 1209 3252 history1 5 <1 3 history1 1.2 7.0 20.5 history1	0 0 59 <1 947 1117 1032 1283 2881 history2 5 1 3 <i>history2</i> 2.1 9.3 23.3 history2	



OIL ANALYSIS REPORT

VISUAL



	White Metal Yellow Metal	scalar	*Visual *Visual	NONE	NONE	NONE	NONE	E			
		Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE			
		Silt	scalar	*Visual	NONE	NONE	NONE	NONE			
		Debris	scalar	*Visual	NONE	NONE	NONE	NONE			
23 -	24	Sand/Dirt	scalar	*Visual *Visual	NONE NORML	NONE NORML	NONE NORML	NONE			
0ct19/23	Jan 2/24 Mar1 1/24	Appearance Odor	scalar		NORML	NORML	NORML	NOR			
0	2	Emulsified Water	scalar scalar	*Visual *Visual	>0.2	NEG	NEG	NEG			
		Free Water	scalar	*Visual	20.2	NEG	NEG	NEG			
		FLUID PROPE		method	limit/base		history1		ory2		
		Visc @ 100°C	cSt	ASTM D445		14.8	14.8	15.4	01 y Z		
		GRAPHS									
		Ferrous Alloys									
9/23 -	Jan 2/24	16 iron		1	_						
0ct19/23	Jan 2.	14 12	$\langle /$								
		E 10	\sim								
		⁶ 8									
		4									
		2 -									
		53 53	23	24	24						
		Jan 11/23 Mar20/23	0ct19/23	Jan 2/24	Mar11/24						
		Non-ferrous Meta	ls		_						
		10 copper									
		8 - sessesses lead									
		un									
		4		_							
		2-			1						
		23 J3	/23	/24	/24						
		Jan 1 1/23 Mar 20/23	0ct19/23	Jan 2/24	Mar11/24						
		Viscosity @ 100°C	C			Base Number					
		¹⁹		1	10						
		18 - Abnormal				.0+					
		17-			(B/HO)						
		G16 Base 15 3 14	~~~		Base Number (mg KOH/g)	.0 -					
		10 53 14			Jagun 4	.0-					
		13 Abnormal			ase N						
		12-			ш ₂	.0 -					
		11	en	4	0			4			
		Jan 1 1/23 Mar 20/23	0ct19/23	Jan 2/24	Mar11/24	Jan 1 1/23 Mar2 0/23	0ct19/23	Jan 2/24			
		Ja Mi	Ő	-7	Ξ.	Ja Mi	õ	-,			
٩	Laboratory								ntal - 904 - Chippewa Falls H		
ANAB	Sample No.	: GFL0108481					11888 & 118				
CCREDITED ISONEC 17935 TESTING LABORATORY	Lab Number Unique Number			Tested: 19 Mar 2024Diagnosed: 19 Mar 2024 - Wes Davis				Chippewa Falls, V US 5472			
			Cor	Contact: Andy Kar							
Certificate L2367	Test Package	. FLEEI					001	itaci. Anuy	nar		

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CoPI

Submitted By: See also GFL904,A,B,C, 927, 938 - Andy Kane