

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 410022

Component Diesel Engine

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

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.

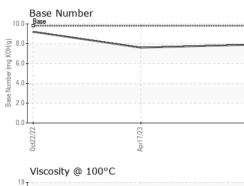
Fluid Condition

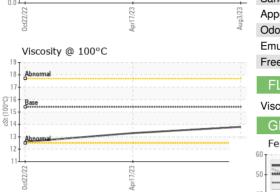
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0089497	GFL0078781	GFL0058690
Sample Date		Client Info		03 Aug 2023	17 Apr 2023	22 Oct 2022
Machine Age	hrs	Client Info		6014	5409	4978
Oil Age	hrs	Client Info		0	0	4978
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<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	>100	27	32	53
Chromium	ppm	ASTM D5185m	>20	2	2	2
Nickel	ppm	ASTM D5185m	>4	0	<1	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	4	4	16
Lead	ppm	ASTM D5185m	>40	1	0	3
Copper	ppm		>330	<1	<1	1
Tin	ppm		>15	<1	0	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base		historv1	historv2
ADDITIVES Boron	maa	method ASTM D5185m	limit/base	current	history1 18	history2 220
Boron	ppm pom	ASTM D5185m	0	6	18	220
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	6 0	18 0	220 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	6 0 67	18 0 63	220 0 121
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	6 0 67 <1	18 0 63 <1	220 0 121 <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	6 0 67 <1 1059	18 0 63 <1 938	220 0 121 <1 670
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	6 0 67 <1 1059 1179	18 0 63 <1 938 1092	220 0 121 <1 670 1504
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	6 0 67 <1 1059 1179 1097	18 0 63 <1 938 1092 998	220 0 121 <1 670 1504 689
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	6 0 67 <1 1059 1179	18 0 63 <1 938 1092	220 0 121 <1 670 1504
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	6 0 67 <1 1059 1179 1097 1322	18 0 63 <1 938 1092 998 1242	220 0 121 <1 670 1504 689 846
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	6 0 67 <1 1059 1179 1097 1322 3673	18 0 63 <1 938 1092 998 1242 3551	220 0 121 <1 670 1504 689 846 2857
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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	6 0 67 <1 1059 1179 1097 1322 3673 current	18 0 63 <1 938 1092 998 1242 3551 history1	220 0 121 <1 670 1504 689 846 2857 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 60 1010 1070 1150 1270 2060 imit/base >25	6 0 67 <1 1059 1179 1097 1322 3673 current 4	18 0 63 <1 938 1092 998 1242 3551 history1 4	220 0 121 <1 670 1504 689 846 2857 history2 8
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	0 0 60 1010 1070 1150 1270 2060 imit/base >25	6 0 67 <1 1059 1179 1097 1322 3673 <u>current</u> 4 5	18 0 63 <1 938 1092 998 1242 3551 history1 4 1	220 0 121 <1 670 1504 689 846 2857 history2 8 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 imit/base >25	6 0 67 <1 1059 1179 1097 1322 3673 <i>current</i> 4 5 7	18 0 63 <1 938 1092 998 1242 3551 history1 4 1 1	220 0 121 <1 670 1504 689 846 2857 history2 8 4 35
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 225 >25 >20 Imit/base >20	6 0 67 <1 1059 1179 1097 1322 3673 <i>current</i> 4 5 7 <i>current</i> 0.4	18 0 63 <1 938 1092 998 1242 3551 history1 4 1 14 14 0.4	220 0 121 <1 670 1504 689 846 2857 history2 8 4 35 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 2060 225 >25 >20 Imit/base >20	6 0 67 <1 1059 1179 1097 1322 3673 current 4 5 7 7	18 0 63 <1 938 1092 998 1242 3551 history1 4 1 14 14 history1	220 0 121 <1 670 1504 689 846 2857 history2 8 4 35 history2 0.5
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> >3 >20	6 0 67 <1 1059 1179 1097 1322 3673 <i>current</i> 4 5 7 <i>current</i> 0.4 9.8	18 0 63 <1 938 1092 998 1242 3551 history1 4 1 1 14 14 0.4 8.8	220 0 121 <1 670 1504 689 846 2857 history2 8 4 35 history2 0.5 11.8
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 D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >3 >20	6 0 67 <1 1059 1179 1097 1322 3673 <u>current</u> 4 5 7 <u>current</u> 0.4 9.8 20.3	18 0 63 <1 938 1092 998 1242 3551 history1 4 1 14 14 0.4 8.8 17.7	220 0 121 <1 670 1504 689 846 2857 history2 8 4 35 history2 0.5 11.8 25.6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAI	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 imit/base >25 20 imit/base >3 >20 30 imit/base	6 0 67 <1 1059 1179 1097 1322 3673 <i>current</i> 4 5 7 <i>current</i> 0.4 9.8 20.3 <i>current</i>	18 0 63 <1 938 1092 998 1242 3551 history1 4 1 14 14 0.4 8.8 17.7 history1	220 0 121 <1 670 1504 689 846 2857 history2 8 4 35 history2 0.5 11.8 25.6 history2



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		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
7/23	Aug3/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Apr17/23	Aug	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water		*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PROP	PERTIES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	15.4	13.8	13.3	12.6
		GRAPHS						
		Ferrous Alloys						
23		60 iron						
Apr17/23	1	50 - nickel						
		40						
	mdd	30						
	:	20						
		10-						
		52	23-		23			
		0ct22/22	Apr17/23		Aug3/23			
		Non-ferrous Me	tals					
		¹⁰ T						
		copper						
	-	8 - Head						
	шdd	8 - Head						
	udd	8 - Head						
	шdd	8 - Head						
	udd	8						
	udd	8 - Lead 6 - Lead 2 - Lead 0 - Lead 1 -	EZ/		123			
	mdd	8	Apri17/23		Ping3/23			
	udd	8 - Lead 6 - Lead 2 - Lead 0 - Lead 1 -	Apri		Aug3/23	Baco Numbo		
		B C Viscosity @ 100	Apri			Base Number	r	
		8 lead bin bin bin bin bin bin bin bin bin bin	Apri		10.	Base	r	
		B B C C C C C C C C C C C C C	Apri		10.	Base	r	
		B B C C C C C C C C C C C C C	Apri		10.	Base	r	
		B B C C C C C C C C C C C C C	Apri		10.	Base	r	
	(100-C) tsp	B C C C C C C C C C C C C C	Apri		10.	Base		
	c3t (100°C)	B C C C C C C C C C C C C C	Apri		10. (8.1 (0)HOX 0 (6.1) 10. (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	Base	r	
	(J.J.01) tsp	B C C C C C C C C C C C C C	Apri		10.1 (0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(Base	r	
	(J.J.01) tsp	B C C C C C C C C C C C C C	0.0C		10.1 (b) HOX Bull Jack Market	Base		
	(J.J.01) tsp	 a lead b lead b lead c lead c lead d lea	Apri		10.1 (0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(Base	April 1/23	
j	(3-001) 185 ³	8 6 4 2 0 527 540 577 500 Viscosity @ 100 9 6 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7	April 7/23		10. 8. 6. 9. 8. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9.	Base	Apri1723	
	(3.001) teo ratory	B C C C C C C C C C C C C C	April 7/23	son Ave., Ca	10. 8. 6. 9. 8. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9.	Base	Wironmental - 91	8 - Hartland H
NAR Sam	ratory ple No. Number	Base Viscosity @ 100 Base 10 10 10 10 10 10 10 10 10 10	0°C	son Ave., Ca d : 05 9 ed : 05 9	10.1 (0)HOX DU Jaquiny eeg 2.1 (0)HOX DU Jaquiny eeg 2.1 (0)HOX DU Jaquiny eeg 2.1 (0)HOX DU Jaquiny eeg 2.1 (0)HOX DU Jaquiny eeg 2.1 (1)HOX DU Jaq	Base	Wironmental - 91	Industrial Driv Hartland, V
Samı Lab N Uniqu	ratory ple No. Number re Number	Base Viscosity @ 100 Viscosity @ 100 Base Base Comment Comme	0°C	son Ave., Ca d : 05 %	10.1 (0)HOX 0 (0)HOX 0 (0)HOX 0 (0) (0) (0) (0) (0) (0) (0) (0) (0) (0	Base	nvironmental - 91 630 E	1 8 - Hartland H Industrial Driv Hartland, V US 5302
REGITIC LABORATORY Trifficate L2367 Test	ratory ple No. Number ne Number Package	Base Viscosity @ 100 Base 10 10 10 10 10 10 10 10 10 10	0°C EZLINGY - 501 Madia Received Diagnos Diagnos	son Ave., Ca d : 05 s ed : 05 s tician : Wea	10.1 (6)H(0) Bol) aquun 4.1 (6)H(0) Bol) aquun 4.1 (7)H(0) aquun 4.	Base	ezzLudy nvironmental - 91 630 E Contac	1 8 - Hartland H Industrial Driv Hartland, V