

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 912027

Component Diesel Engine

Fluid PETRO CANADA DURON SHP 15W40 (11 GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. Please specify the component make and model with your next sample.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

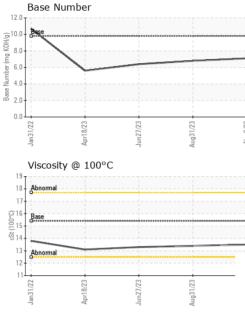
Fluid Condition

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

iAL)		Jan2022	Apr2023	Jun2023 Aug2023	Nov2023	
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0092459	GFL0083649	GFL0074594
Sample Date		Client Info		06 Nov 2023	31 Aug 2023	27 Jun 2023
Machine Age	hrs	Client Info		5984	5392	4938
Oil Age	hrs	Client Info		601	619	670
Oil Changed		Client Info		Changed	Changed	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATI	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	7	12	11
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	1	<1	1
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	<1	0
Aluminum	ppm	ASTM D5185m	>20	<1	0	<1
Lead	ppm	ASTM D5185m	>40	<1	0	<1
Copper	ppm	ASTM D5185m	>330	2	3	5
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
Cadmium ADDITIVES	ppm	ASTM D5185m method	limit/base	0 current	0 history1	0 history2
ADDITIVES	ppm ppm		limit/base 0		-	-
ADDITIVES Boron		method	0	current	history1	history2
ADDITIVES Boron Barium	ppm	method ASTM D5185m	0	current 2	history1 3	history2 3
ADDITIVES Boron Barium Molybdenum	ppm ppm	method ASTM D5185m ASTM D5185m	0 0 60	current 2 0	history1 3 0	history2 3 2
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 2 0 63	history1 3 0 65	history2 3 2 67
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 2 0 63 <1	history1 3 0 65 <1	history2 3 2 67 <1
	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 2 0 63 <1 923	history1 3 0 65 <1 1001	history2 3 2 67 <1 800
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	current 2 0 63 <1 923 1036	history1 3 0 65 <1 1001 1129	history2 3 2 67 <1 800 1074
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	current 2 0 63 <1 923 1036 915	history1 3 0 65 <1 1001 1129 984	history2 3 2 67 <1 800 1074 898
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	current 2 0 63 <1 923 1036 915 1161	history1 3 0 65 <1 1001 1129 984 1277	history2 3 2 67 <1 800 1074 898 1095
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method 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 2 0 63 <1 923 1036 915 1161 2571	history1 3 0 65 <1 1001 1129 984 1277 3138	history2 3 2 67 <1 800 1074 898 1095 2654
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method 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 2 0 63 <1 923 1036 915 1161 2571 current	history1 3 0 65 <1	history2 3 2 67 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method 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 2 0 63 <1 923 1036 915 1161 2571 current 4	history1 3 0 65 <1	history2 3 2 67 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base >25	current 2 0 63 <1 923 1036 915 1161 2571 current 4 4	history1 3 0 65 <1	history2 3 2 67 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25	current 2 0 63 <1 923 1036 915 1161 2571 current 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	history1 3 0 65 <1	history2 3 2 67 <1
ADDITIVES 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	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20	current 2 0 63 <1 923 1036 915 1161 2571 current 4 4 4 4 4 4 current	history1 3 0 65 <1	history2 3 2 67 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	current 2 0 63 <1 923 1036 915 1161 2571 current 4 4 4 4 0.8	history1 3 0 65 <1	history2 3 2 67 <1
ADDITIVES 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 TS ppm ppm ppm ppm	method ASTM D5185m ASTM D7844 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >20	current 2 0 63 <1 923 1036 915 1161 2571 current 4 4 4 0.8 8.2	history1 3 0 65 <1	history2 3 2 67 <1
ADDITIVES 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 TS ppm ppm ppm ppm	method ASTM D5185m ASTM D7844 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >3 >20 >3	current 2 0 63 <1 923 1036 915 1161 2571 4 4 4 0.8 8.2 19.8	history1 3 0 65 <1	history2 3 2 67 <1



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
Jun27/23 -	Aug31/23 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Junz	Aug3 Nov	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	13.5	13.4	13.3
		GRAPHS						
		Ferrous Alloys		_				
23		iron						
Jun27/23	Aug31/23	10 - chromium						
7	A	8						
		E 6-						
		4						
		2-	on Strein and an O'S' of Strein or other	Take and the second second	*********			
				C.				
		Jan 31/22 Apr1 8/23	Jun27/23	Aug31/23	Nov6/23			
				Aug	N			
		Non-ferrous Met	tals					
		35 copper						
		30 - management lead						
		25						
		E 20						
		^a 15						
		10						
		5		 				
		0	and Street Street Street, Square, or other street, or oth	TRADEWOOD I LINESSEE				
		8/23	7/23	1/23	6/23			
		Jan31/22	Jun27/23	Aug31/23	Nav6/23			
		Viscosity @ 100	~	Aug31/23	Nov6/23	Base Number		
			~	Aug31/23	12.0	T		
		Viscosity @ 100	~	Aug31/23	12.0	T		
		Viscosity @ 100 ¹⁹ ¹⁸ ^{Abnomal}	~	ES/IEguA	12.0	Base		
		Viscosity @ 100 ¹⁹ ¹⁸ ^{Abnomal}	~	Aug31/23	12.0	Base		
		Viscosity @ 100	~	Aug31/23	12.0	Desc		
		Viscosity @ 100	~	Aug31/23	12.0	Desc		
		Viscosity @ 100	~	Aug31/23	12.0 10.0 (C)HO 8.0 (C)HO	Pres		
		Viscosity @ 100 Abnormal Base Base Abnormal Abnormal Abnormal	°C		12.0 (0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(Prese.		
		Viscosity @ 100 Abnormal Base Base Abnormal Abnormal Abnormal	°C		12.0 (0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(Prese.	7/23	1/23
		Viscosity @ 100 Abnomal Base Base Abnomal Abnomal	~	Aug31/23 Aug31/23	12.0 (0)HOX 000 aquiny action aquiny action aquiny action		Jun27/23	Aug31/23
	Laboratory	Viscosity @ 100	°C	Aug31/23	12.0 (0)HOX 000 aquiny see 2.0 EZ/900N	Jan 31/22		
	Laboratory Sample No.	Viscosity @ 100	°C	EZILEBNY son Ave., Ca	12.0 (0)HOX 000 9000 10.0 (0)HOX 000 9000 10.0 2.0 0.0 10.0 10.0 10.0 10.0 10.	Jan 31/22	vironmental - 09	5 - Atlanta We
NABE -	Laboratory Sample No. Lab Number	Viscosity @ 100	°C	EZILEBHY son Ave., Ca d : 09 l	12.0 (0)HOX 000 aquiny see 2.0 EZ/900N	Jan 31/22	/ironmental - 09 2699 Cochrar	5 - Atlanta We
	Sample No. Lab Number Unique Number	Viscosity @ 100	°C	son Ave., Ca d : 09 l ed : 10 l	12.0 10.0	Jan 31/22	vironmental - 09 2699 Cochrar D L	5 - Atlanta We n Industrial Bl Douglasville, C JS 30127-13
	Sample No. Lab Number Unique Number Test Package	Viscosity @ 100	°C	son Ave., Ca d : 09 ed : 10 tician : We	12.0 10.0	Jan 31/22	vironmental - 09 2699 Cochrar D L Contac	5 - Atlanta We n Industrial Bl Douglasville, C