

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 960T

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.

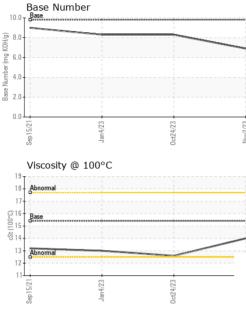
Fluid Condition

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

•		Sep202	1 Jan2023	Oct2023 N	ov2023	
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0083072	GFL0097226	GFL0066563
Sample Date		Client Info		02 Nov 2023	24 Oct 2023	04 Jan 2023
Machine Age	hrs	Client Info		0	0	0
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Not Changd	Not Changd	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	29	20	8
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	1
Titanium	ppm	ASTM D5185m		<1	<1	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	8	1	<1
Lead	ppm	ASTM D5185m	>40	14	<1	0
Copper	ppm	ASTM D5185m	>330	1	2	<1
Tin	ppm	ASTM D5185m	>15	<1	0	0
Antimony	ppm	ASTM D5185m				
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	current 17	history1 13	history2 15
	ppm ppm					
Boron		ASTM D5185m	0	17	13	15
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	17 0	13 0	15 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	17 0 66 <1 554	13 0 61	15 0 64 0 806
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	17 0 66 <1	13 0 61 0	15 0 64 0
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	17 0 66 <1 554	13 0 61 0 862	15 0 64 0 806
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	17 0 66 <1 554 1623	13 0 61 0 862 1045	15 0 64 0 806 1038
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	17 0 66 <1 554 1623 997	13 0 61 0 862 1045 1084	15 0 64 0 806 1038 920
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	17 0 66 <1 554 1623 997 1304	13 0 61 0 862 1045 1084 1122	15 0 64 0 806 1038 920 1098
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 1010 1070 1150 1270 2060	17 0 66 <1 554 1623 997 1304 2929	13 0 61 0 862 1045 1084 1122 2764	15 0 64 0 806 1038 920 1098 2949
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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	17 0 66 <1 554 1623 997 1304 2929 current	13 0 61 0 862 1045 1084 1122 2764 history1	15 0 64 0 806 1038 920 1098 2949 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Chosphorus 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 method	0 0 60 0 1010 1070 1150 1270 2060 limit/base	17 0 66 <1 554 1623 997 1304 2929 current 11	13 0 61 0 862 1045 1084 1122 2764 <u>history1</u> 8	15 0 64 0 806 1038 920 1098 2949 history2 16
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	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 0 1010 1070 1150 1270 2060 limit/base	17 0 66 <1 554 1623 997 1304 2929 <u>Current</u> 11 1	13 0 61 0 862 1045 1084 1122 2764 history1 8 5	15 0 64 0 806 1038 920 1098 2949 history2 16 2
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 >25	17 0 66 <1 554 1623 997 1304 2929 <u>current</u> 11 1 0 <u>current</u>	13 0 61 0 862 1045 1084 1122 2764 history1 8 5 <1 history1 1.5	15 0 64 0 806 1038 920 1098 2949 history2 16 2 1 1 history2 0.2
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	17 0 66 <1 554 1623 997 1304 2929 <u>current</u> 11 1 0 <u>current</u>	13 0 61 0 862 1045 1084 1122 2764 history1 8 5 <1 history1	15 0 64 0 806 1038 920 1098 2949 history2 16 2 1 1 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	17 0 66 <1 554 1623 997 1304 2929 <u>current</u> 11 1 0 <u>current</u>	13 0 61 0 862 1045 1084 1122 2764 history1 8 5 <1 history1 1.5	15 0 64 0 806 1038 920 1098 2949 history2 16 2 1 1 history2 0.2
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	17 0 66 <1 554 1623 997 1304 2929 current 11 1 1 0 current 1.1 1.1 12.6	13 0 61 0 862 1045 1084 1122 2764 history1 8 5 <1 8 5 <1 history1 1.5 7.5	15 0 64 0 806 1038 920 1098 2949 history2 16 2 1 1 history2 0.2 5.0
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 20 3 20 20 20 20 20 20 20 20 20 20 20 20 20	17 0 66 <1 554 1623 997 1304 2929 <u>current</u> 11 1 0 <u>current</u> 1.1 1.1 12.6 26.6	13 0 61 0 862 1045 1084 1122 2764 history1 8 5 <1 kistory1 1.5 7.5 20.7	15 0 64 0 806 1038 920 1098 2949 history2 16 2 1 1 history2 0.2 5.0 17.7
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 1270 2060 2060 225 220 220 220 20 33 220 20 33 220 23 30	17 0 66 <1 554 1623 997 1304 2929 Current 11 1 0 Current 1.1 12.6 26.6 Current	13 0 61 0 862 1045 1084 1122 2764 history1 8 5 <1 history1 1.5 7.5 20.7 history1	15 0 64 0 806 1038 920 1098 2949 history2 16 2 1 1 history2 0.2 5.0 17.7 history2



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
0ct24/23 Nov2/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
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 PROPE		method	limit/base	current	history1	history2
***************************************	Visc @ 100°C	cSt	ASTM D445	15.4	14.0	12.6	13.0
	GRAPHS						
	Ferrous Alloys						
0ct24/23 +	25 - iron 						
00	20 -						
	<u>۾</u> 15-	/					
	10						
	5						
	Sep 15/21 Jan 4/23		0ct24/23	Nov2/23			
	65		0ct	Na			
	Non-ferrous Meta	als					
	copper						
	12 - essessesses lead						
	10-						
			/				
	8						
	E 8 6						
	u 8- 6- 4-						
	ш ⁸ 6- 4- 2-						
				52			
			6624/23	Vov2/23 + 11			
		C	0c24/23	Nov2/23 + 11	Base Number		
	0 12/31 lines Viscosity @ 100°	C	0dt24/23		Base Number		-
	⁶ 4 2 0 12/31 6 8 Viscosity @ 100°	c	0c24/23	10.0	Base	-	
	b 4 2 0 1251 1648 Viscosity @ 100° 19 18 Abnormal 17	c	042/423	10.0	Base		
	b 4 2 0 1251 1648 Viscosity @ 100° 19 18 Abnormal 17	c	0ct24/23	10.0	Base		
	b 4 2 0 12751 des Viscosity @ 100° 19 18 Abnormal 17 16	c	0ct24/23	10.0	Base		
	Viscosity @ 100°	c	0ct24/23	10.0	Base		
	b 4 2 0 12751 deg Viscosity @ 100° 19 Abnormal 17 16 Base 15 14	c	0ct24/23		Base		
	b 4 2 0 127 13 16 Base 13 14 13 14 14 15 16 Base 10 10 10 10 10 10 10 10 10 10	c		10.0 (0,0)(0,0) (0,0)(0,0) (0,0)(0,0) (0,0)(0,0)	Base.		
	b 4 2 0 127 13 16 Base 13 14 13 14 14 15 16 Base 10 10 10 10 10 10 10 10 10 10	c		10.0 (0,0)(0,0) (0,0)(0,0) (0,0)(0,0) (0,0)(0,0)	Base.		http4/23
Laboratory Sample No. Lab Number Unique Number	Viscosity @ 100° b b c viscosity @ 100° b b b b b c c c c c c c c c c c c c		son Ave., Ca d : 08 l ed : 09 l	10.0 (0)HOX BWJ 34 BWJ 34 HOX BWJ	Base.	ronmental - 072 - An 361 M	IcMath Mill Roa Americus, G US 317
Laboratory Sample No. Lab Number	Viscosity @ 100° Viscosity @ 100° Abnomal Abnomal Control 10 Base EVery Control 10 Base Control 10 Control 10 Contro	501 Madi Received Diagnos Diagnos	son Ave., Ca d : 08 l ed : 09 l tician : Jon	10.0 (0H0) 50.0 (0H0) 50.0 (0H0) 50.0 (0.0 (0H0) 50.0 (0H0) 50.0 (Base GFL Envi	EZHEF ronmental - 072 - A	mericus - Transwa IcMath Mill Ro Americus, (US 317) HEINZERLIN

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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