

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id **4524M** 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

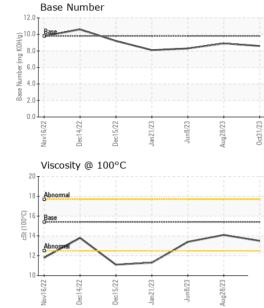
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0092789	GFL0080814	GFL0080812
Sample Date		Client Info		31 Oct 2023	28 Aug 2023	08 Jun 2023
Machine Age	hrs	Client Info		19975	19975	0
Oil Age	hrs	Client Info		19975	19975	600
Oil Changed		Client Info		N/A	Not Changd	Changed
Sample Status				NORMAL	NORMAL	MARGINAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	▲ 1.1
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron		ASTM D5185m	>90	12	55	4
Chromium	ppm ppm	ASTM D5185m	>90 >20	<1	3	4 <1
Nickel		ASTM D5185m	>20	<1 <1	<1	<1
Titanium	ppm	ASTM D5185m		<1	<1	11
Silver	ppm	ASTM D5185m		0 <1	<1	0
Aluminum	ppm		>2 >20	< I 5	13	<1
	ppm	ASTM D5185m	>20 >40	5 <1	4	<1
Lead	ppm	ASTM D5185m				
Copper	ppm	ASTM D5185m		1	2	2
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Vanadium	ppm	ASTM D5185m		<1	<1	<1
Cadmium	ppm	ASTM D5185m		<1	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	Method ASTM D5185m	limit/base 0	current	history1 2	history2 181
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m	0	<1	2	181
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	<1 4	2 0	181 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	<1 4 47	2 0 63	181 0 58
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	<1 4 47 0	2 0 63 <1	181 0 58 <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	<1 4 47 0 711	2 0 63 <1 1062	181 0 58 <1 757
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	<1 4 47 0 711 886	2 0 63 <1 1062 1174	181 0 58 <1 757 1836
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	<1 4 47 0 711 886 506	2 0 63 <1 1062 1174 1092	181 0 58 <1 757 1836 830
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	<1 4 47 0 711 886 506 992	2 0 63 <1 1062 1174 1092 1381	181 0 58 <1 757 1836 830 1010
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 limit/base	<1 4 47 0 711 886 506 992 2195	2 0 63 <1 1062 1174 1092 1381 3758	181 0 58 <1 757 1836 830 1010 4124
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 0 1010 1070 1150 1270 2060 limit/base	<1 4 47 0 711 886 506 992 2195 current	2 0 63 <1 1062 1174 1092 1381 3758 history1	181 0 58 <1 757 1836 830 1010 4124 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 0 1010 1070 1150 1270 2060 limit/base >25	<1 4 47 0 711 886 506 992 2195 current 4	2 0 63 <1 1062 1174 1092 1381 3758 history1 14	181 0 58 <1 757 1836 830 1010 4124 history2 4
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 method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	<1 4 47 0 711 886 506 992 2195 Current 4 6	2 0 63 <1 1062 1174 1092 1381 3758 history1 14 14	181 0 58 <1 757 1836 830 1010 4124 history2 4 2
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 60 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	<1 4 47 0 711 886 506 992 2195 current 4 6 4 4	2 0 63 <1 1062 1174 1092 1381 3758 history1 14 14 5	181 0 58 <1 757 1836 830 1010 4124 history2 4 2 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 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >6	<1 4 47 0 711 886 506 992 2195 current 4 6 4 6 4	2 0 63 <1 1062 1174 1092 1381 3758 history1 14 14 5 5 history1	181 0 58 <1 757 1836 830 1010 4124 history2 4 2 2 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	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >6 >20	<1 4 47 0 711 886 506 992 2195 current 4 6 4 6 4	2 0 63 <1 1062 1174 1092 1381 3758 history1 14 14 5 <u>history1</u> 0.4	181 0 58 <1 757 1836 830 1010 4124 history2 4 2 2 history2 0.6
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 60 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >6 >20	<1 4 47 0 711 886 506 992 2195 current 4 6 4 6 4 0.2 7.0	2 0 63 <1 1062 1174 1092 1381 3758 history1 14 14 5 <u>history1</u> 0.4 9.6	181 0 58 <1 757 1836 830 1010 4124 history2 4 2 2 history2 0.6 6.4
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 imit/base >25 20 imit/base >6 >20 >30 imit/base	<1 4 47 0 711 886 506 992 2195 Current 4 6 4 6 4 0.2 7.0 18.8 Current	2 0 63 <1 1062 1174 1092 1381 3758 history1 14 14 14 5 <u>history1</u> 0.4 9.6 20.6 history1	181 0 58 <1 757 1836 830 1010 4124 history2 4 2 2 history2 0.6 6.4 19.4 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 1270 2060 imit/base >25 >20 imit/base >6 >20 >30 imit/base >25	<1 4 47 0 711 886 506 992 2195 current 4 6 4 6 4 0.2 7.0 18.8	2 0 63 <1 1062 1174 1092 1381 3758 history1 14 14 5 <u>history1</u> 0.4 9.6 20.6	181 0 58 <1 757 1836 830 1010 4124 history2 4 2 2 history2 0.6 6.4 19.4



OIL ANALYSIS REPORT

VISUAL



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				16 (0-015)15 12 12 12 12 12 12 12 12 12 12 12 12 12	Jan21/23	Jun8/23 +	6 G Base Number 5 C	Nov16/22 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Dect5/22	Jun8/23 Aug28/23	0ct31/23		
				22/91/00/ Viscosity @ 100°0	O Jan21/23	Jun8/23 Aug28/23	00000000000000000000000000000000000000						
					23	A	23 /						
				Non-ferrous Meta		Jur Aug	Oct3						
				Nov16/22 Dec14/22 Dec15/22	Jan21/23	Jun8/23 Aug28/23	0ct31/23						
Dec15/22 +	Jan21/23	Jun8/23	Aug28/23	Ferrous Alloys		\wedge							
		/	<u> </u>	Visc @ 100°C GRAPHS	cSt	ASTM D445	15.4	13.5	14.1	13.4			
				FLUID PROPE		method	limit/base		history1	histor	ry2		
۱°C				Emulsified Water Free Water	scalar	*Visual *Visual	>0.2	NEG	NEG	NEG			
Dec15/22 -	Jan 21/23	Jun8/23 -	Aug28/23 -	Appearance Odor	scalar	*Visual *Visual	NORML	NORML	NORML	NORM	IL		
				Debris Sand/Dirt	scalar scalar	*Visual *Visual	NONE	NONE	NONE	NONE			
				Precipitate Silt	scalar scalar	*Visual *Visual	NONE	NONE NONE	NONE NONE	NONE			
				White Metal Yellow Metal	scalar scalar	*Visual *Visual	NONE NONE	NONE NONE	NONE NONE	NONE			

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Submitted By: MARK WOMBLE

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