

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id 923022-132582

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

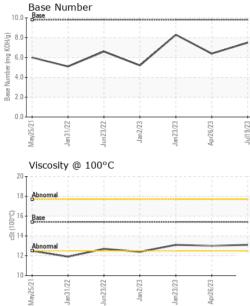
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0082084	GFL0078610	GFL0065652
Sample Date		Client Info		19 Jul 2023	26 Apr 2023	23 Jan 2023
Machine Age	hrs	Client Info		22642	22084	21532
Oil Age	hrs	Client Info		589	603	600
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Glycol		WC Method	20.0	NEG	NEG	NEG
-				nea		
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	9	12	13
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	<1	3	4
Titanium	ppm	ASTM D5185m		0	<1	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	<1	4
Lead	ppm	ASTM D5185m	>40	0	<1	1
Copper	ppm	ASTM D5185m	>330	<1	2	2
Tin	ppm	ASTM D5185m	>15	<1	1	1
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 10	history1 13	history2 31
	ppm ppm		0			
Boron		ASTM D5185m	0	10	13	31
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	10 0	13 0	31 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	10 0 63	13 0 67	31 0 65
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	10 0 63 <1	13 0 67 <1	31 0 65 <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	10 0 63 <1 959	13 0 67 <1 934	31 0 65 <1 895
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 ASTM D5185m	0 0 60 0 1010 1070	10 0 63 <1 959 1206 998 1261	13 0 67 <1 934 1161 1011 1284	31 0 65 <1 895 1270
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	10 0 63 <1 959 1206 998	13 0 67 <1 934 1161 1011	31 0 65 <1 895 1270 950
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	10 0 63 <1 959 1206 998 1261	13 0 67 <1 934 1161 1011 1284	31 0 65 <1 895 1270 950 1250
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	10 0 63 <1 959 1206 998 1261 3463	13 0 67 <1 934 1161 1011 1284 2970	31 0 65 <1 895 1270 950 1250 3717
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	10 0 63 <1 959 1206 998 1261 3463 current	13 0 67 <1 934 1161 1011 1284 2970 history1	31 0 65 <1 895 1270 950 1250 3717 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 kimit/base >25	10 0 63 <1 959 1206 998 1261 3463 <i>current</i> 13	13 0 67 <1 934 1161 1011 1284 2970 history1 6	31 0 65 <1 895 1270 950 1250 3717 history2 7
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 method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base >25	10 0 63 <1 959 1206 998 1261 3463 <u>current</u> 13 6	13 0 67 <1 934 1161 1011 1284 2970 history1 6 10	31 0 65 <1 895 1270 950 1250 3717 history2 7 10
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 limit/base >25	10 0 63 <1 959 1206 998 1261 3463 current 13 6 0	13 0 67 <1 934 1161 1011 1284 2970 history1 6 10 3	31 0 65 <1 895 1270 950 1250 3717 history2 7 10 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 225 >25 >20 Limit/base >20	10 0 63 <1 959 1206 998 1261 3463 current 13 6 0	13 0 67 <1 934 1161 1011 1284 2970 history1 6 10 3 history1	31 0 65 <1 895 1270 950 1250 3717 history2 7 10 3 3
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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	10 0 63 <1 959 1206 998 1261 3463 <i>current</i> 13 6 0 <i>current</i> 0.3	13 0 67 <1 934 1161 1011 1284 2970 history1 6 10 3 history1 0.2	31 0 65 <1 895 1270 950 1250 3717 history2 7 10 3 history2 0.1
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 limit/base >25 >20 limit/base >20	10 0 63 <1 959 1206 998 1261 3463 <i>current</i> 13 6 0 <i>current</i> 0.3 7.8	13 0 67 <1 934 1161 1011 1284 2970 history1 6 10 3 history1 0.2 7.4	31 0 65 <1 895 1270 950 1250 3717 history2 7 10 3 Vistory2 0.1 6.6
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 D7844 *ASTM D7844	0 0 0 1010 1070 1150 2260 2060 225 20 225 20 1000 225 20 20 20 20 20 20 20 20 20 20 20 20 20	10 0 63 <1 959 1206 998 1261 3463 <i>current</i> 13 6 0 <i>current</i> 0.3 7.8 19.1	13 0 67 <1 934 1161 1011 1284 2970 history1 6 10 3 history1 0.2 7.4 17.5 history1	31 0 65 <1 895 1270 950 1250 3717 history2 7 10 3 history2 0.1 6.6 18.0 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 2060 2060 225 20 220 20 20 20 20 20 20 20 20 20 20 20	10 0 63 <1 959 1206 998 1261 3463 current 13 6 0 current 0.3 7.8 19.1	13 0 67 <1 934 1161 1011 1284 2970 history1 6 10 3 history1 0.2 7.4 17.5	31 0 65 <1 895 1270 950 1250 3717 history2 7 10 3 history2 0.1 6.6 18.0



OIL ANALYSIS REPORT

VISUAL



/		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
\checkmark		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
Jan 2/23 Jan 23/23	Apr26/23 Jul19/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
	iA L	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	13.1	13.0	13.1
		GRAPHS						
		Ferrous Alloys						
2/23 -	/23	35 - iron chromium	Λ					
Jan2/23 Jan23/23	Apr26/23	30 - nickel						
		25						
		<u>특</u> 20						
		15	$/ \times$	L				
		10						
		May25/21- Jan31/22 - Jun23/22 -	Jan 2/23 -	Jan 23/23 - Apr 26/23 -	Jul19/23 -			
		May25/21 Jan31/22 Jun23/22	Jan	Jan2 Apr2	Jult			
		Non-ferrous Meta	ls					
		70 copper						
		60 - management lead						
		50						
		₫ 30						
		30						
		20						
		10						
			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~ ~ ~				
		May25/21 Jan31/22 Jun23/22	Jan 2/23	Jan 23/23 Apr26/23	Jul19/23			
		≊ ૈ ૈ Viscosity @ 100°C		Ja Aı	- -			
		¹⁹				Base Number		
		18 - Abnormal						
		17- 16 - Base			( ^B /H)	0	/	$\langle \rangle$
		© Base			(0)HOX Dw) Jaquer 4.1		$\sim$ /	$\sim$
		().0015 -00115 -14			nber (		$\sim$	
		13 Abnormal			H 4.	0		
		12			²⁰ 2.	0-		
		11-				0		
		3/22 -	Jan2/23 -	3/23			un 23/22 - Jan 2/23 -	Jan 23/23 + Apr26/23 -
		May25/21 Jan31/22 Jun23/22	Janž	Jan 23/23 Apr 26/23	Jul19/23	May25/21 Jan31/22	Jan 23/22	Jan 23/23 Apr 26/23
					10			
d	Laboratory Sample No.	: WearCheck USA - : GFL0082084	501 Madis Received					
<b>T</b>				Jul 2023 Jul 2023	7580 PHILIPS HW Jacksonville, F			
TAB	Lap Number							
	Lab Number Unique Number		Diagnost	i <b>cian</b> :We	s Davis			US 3225
CARDON CONTRACTORY	Unique Number Test Package	: 10565489	•				Contac	US 3225 ct: Robert Whi

Submitted By: Eric Thomas Page 2 of 2