

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 428086-410

Component

Diesel Engine

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

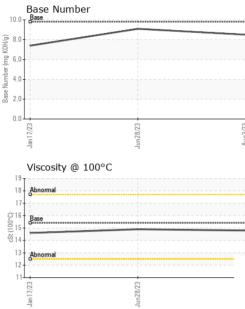
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0066133	GFL0066138	GFL0055740
Sample Date		Client Info		03 Aug 2023	28 Jun 2023	17 Jan 2023
Machine Age	hrs	Client Info		14117	13778	12743
Oil Age	hrs	Client Info		600	600	500
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	>80	7	18	18
Chromium	ppm	ASTM D5185m	>5	<1	1	1
Nickel	ppm	ASTM D5185m	>2	<1	0	<1
Titanium	ppm	ASTM D5185m	-	0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>30	2	3	7
Lead	ppm	ASTM D5185m	>30	0	<1	<1
Copper	ppm	ASTM D5185m	>150	2	5	6
Tin	ppm	ASTM D5185m	>5	0	<1	<1
Vanadium	ppm	ASTM D5185m	20	0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
	ppm			Ŭ	-	-
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	6	10	19
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	6 0	10 0	19 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	6 0 61	10 0 67	19 0 69
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	6 0 61 <1	10 0 67 1	19 0 69 <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 61 <1 891	10 0 67 1 977	19 0 69 <1 934
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	6 0 61 <1 891 1078	10 0 67 1 977 1159	19 0 69 <1 934 1389
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 61 <1 891 1078 995	10 0 67 1 977 1159 1043	19 0 69 <1 934 1389 1051
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 1150 1270	6 0 61 <1 891 1078 995 1146	10 0 67 1 977 1159 1043 1311	19 0 69 <1 934 1389 1051 1355
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	0 0 60 0 1010 1070 1150	6 0 61 <1 891 1078 995	10 0 67 1 977 1159 1043	19 0 69 <1 934 1389 1051
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 61 <1 891 1078 995 1146	10 0 67 1 977 1159 1043 1311	19 0 69 <1 934 1389 1051 1355
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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	6 0 61 <1 891 1078 995 1146 2768	10 0 67 1 977 1159 1043 1311 3628 history1 5	19 0 69 <1 934 1389 1051 1355 3549 history2 6
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 method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base	6 0 61 <1 891 1078 995 1146 2768 current	10 0 67 1 977 1159 1043 1311 3628 history1 5 1	19 0 69 <1 934 1389 1051 1355 3549 history2 6 2
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 kimit/base	6 0 61 <1 891 1078 995 1146 2768 current 3	10 0 67 1 977 1159 1043 1311 3628 history1 5	19 0 69 <1 934 1389 1051 1355 3549 history2 6
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 method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base	6 0 61 <1 891 1078 995 1146 2768 current 3 0	10 0 67 1 977 1159 1043 1311 3628 history1 5 1	19 0 69 <1 934 1389 1051 1355 3549 history2 6 2
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 >20 imit/base	6 0 61 <1 891 1078 995 1146 2768 current 3 0 2	10 0 67 1 977 1159 1043 1311 3628 history1 5 1 4	19 0 69 <1 934 1389 1051 1355 3549 history2 6 2 5
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 2060 220 200 200 200 200 200	6 0 61 <1 891 1078 995 1146 2768 current 3 0 2 2	10 0 67 1 977 1159 1043 1311 3628 history1 5 1 4 4 history1	19 0 69 <1 934 1389 1051 1355 3549 history2 6 2 5 5 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 2060 220 200 200 200 200 200	6 0 61 <1 891 1078 995 1146 2768 <u>current</u> 3 0 2 2 <u>current</u> 0.6	10 0 67 1 977 1159 1043 1311 3628 history1 5 1 4 4 history1 0.9	19 0 69 <1 934 1389 1051 1355 3549 history2 6 2 5 5 history2 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 <i>limit/base</i> >20 <i>limit/base</i> >3 >20	6 0 61 <1 891 1078 995 1146 2768 <i>current</i> 3 0 2 <i>current</i> 0.6 6.6	10 0 67 1 977 1159 1043 1311 3628 history1 5 1 4 history1 0.9 8.4	19 0 69 <1 934 1389 1051 1355 3549 history2 6 2 5 history2 1 9.8
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 >20 imit/base >3 >20 >30	6 0 61 <1 891 1078 995 1146 2768 <i>current</i> 3 0 2 2 <i>current</i> 0.6 6.6 19.0	10 0 67 1 977 1159 1043 1311 3628 history1 5 1 4 history1 0.9 8.4 20.6	19 0 69 <1 934 1389 1051 1355 3549 history2 6 2 5 5 history2 1 9.8 21.6
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 TS ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >20 <i>limit/base</i> >3 >20 <i>limit/base</i> >3 30	6 0 61 <1 891 1078 995 1146 2768 <i>current</i> 3 0 2 <i>current</i> 0.6 6.6 19.0	10 0 67 1 977 1159 1043 1311 3628 history1 5 1 4 5 1 4 4 history1 0.9 8.4 20.6 history1	19 0 69 <1 934 1389 1051 1355 3549 history2 6 2 5 history2 1 9.8 21.6 history2



OIL ANALYSIS REPORT

VISUAL



	VISUAL		method	iiiiii/base	current	Thstory I	Thistory2
	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
Jun 28/23 Aug3/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Junz	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	ERTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.4	14.8	14.9	14.6
	GRAPHS						
	Ferrous Alloys	_					
/23	16- iron						
Jun 28/23	14 - nickel						
	12-						
	E ¹⁰		\ \				
	6-						
	4-						
	2	Annal and a state of the state					
		23		23			
	lan 17,23	Jun28/23		Aug3/23			
	⊸ Non-ferrous Meta	,					
	¹⁰ T						
	copper						
	8-						
	6						
	u dd						
	4						
	2-						
	Sector Content of Content Cont		and have the second damage of the second damag				
	33	/23 -	And the second se	123			
	Jan 17/23	Jun28/23		Aug3/23			
	Viscosity @ 100°	-			_		
	¹⁹ T	_		10.0	Base Number		
	18 - Abnormal			10.0			
	17-						
	⊊ ¹⁶ Base			(0/HO) (0/10/10/10/10/10/10/10/10/10/10/10/10/10			
	0,16 Base 0,15			<u> </u>			
	⁴ ¹⁴	1		4.0-			
	13 Abnormal			ase			
	12-			° 2.0			
	11			0.0	~		
	2//	Jun28/23		Aug3/23	Jan 17/23	Jun28/23	
	-	_		Au	Jar	Jun	
	Jan 17/23	Ju					
l aboratory			son Ave Ca	rv NC 27513	GFI Fn	vironmental -	9044 - Thor
Laboratory Sample No.	: WearCheck USA - : GFL0066133			ry, NC 27513 Aug 2023	GFL En	vironmental - N149	
Sample No. Lab Number	: WearCheck USA - : GFL0066133 : 05924695	501 Madis Received Diagnose	l :15/ ed :15/		GFL En		85 Tieman A Thorp,
Sample No. Lab Number Unique Number	: WearCheck USA - : GFL0066133 : 05924695 r : 10604642	501 Madis Received	l :15/ ed :15/	Aug 2023	GFL En	N149	85 Tieman A Thorp, V US 547
Sample No. Lab Number	: WearCheck USA - : GFL0066133 : 05924695 r : 10604642 e : FLEET	501 Madis Received Diagnose Diagnost	ed : 15 / ed : 15 / ician : Wes	Aug 2023 Aug 2023 s Davis	GFL En	N149 Cont	85 Tieman A Thorp,

Submitted By: See also GFL904,A,B,C, 927, 938 - Andy Kane