

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 820037-251

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

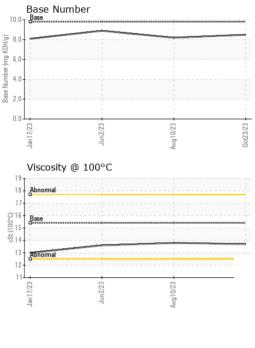
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2	
Sample Number		Client Info		GFL0066139	GFL0066130	GFL0060337	
Sample Date		Client Info		23 Oct 2023	10 Aug 2023	02 Jun 2023	
Machine Age	hrs	Client Info		9276	8741	8239	
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	
Water		WC Method	>0.2	NEG	NEG	NEG	
Glycol		WC Method		NEG	NEG NEG		
WEAR METAL	S	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m	>110	3	12	10	
Chromium	ppm	ASTM D5185m	>4	1	<1	<1	
Nickel	ppm	ASTM D5185m	>2	0	0	0	
Titanium	ppm	ASTM D5185m		0	0	0	
Silver	ppm	ASTM D5185m	>2	0	<1	0	
Aluminum	ppm	ASTM D5185m	>25	2	4	2	
Lead	ppm	ASTM D5185m	>45	0	0	<1	
Copper	ppm		>85	0	0	0	
Tin	ppm	ASTM D5185m	>4	0	0	<1	
Vanadium	ppm	ASTM D5185m		0	0	0	
Cadmium	ppm	ASTM D5185m		0	0	0	
					0		
ADDITIVES		method	limit/base	current	history1	history2	
				current	history1	history2	
Boron	ppm	ASTM D5185m	0				
Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m	0	current 0 4	history1 11 0	history2 13	
Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 0	history1 11	history2 13 0	
Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 60	current 0 4 61	history1 11 0 77	history2 13 0 64	
Boron Barium Molybdenum	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 0 4 61 0	history1 11 0 77 0	history2 13 0 64 <1	
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 0 4 61 0 928	history1 11 0 77 0 1175	history2 13 0 64 <1 970	
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	Current 0 4 61 0 928 1055	history1 11 0 77 0 1175 1346	history2 13 0 64 <1 970 1134	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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	Current 0 4 61 0 928 1055 972	history1 11 0 77 0 1175 1346 1231	history2 13 0 64 <1 970 1134 1037	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm 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	Current 0 4 61 0 928 1055 972 1206	history1 11 0 77 0 1175 1346 1231 1647	history2 13 0 64 <1 970 1134 1037 1313	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm 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	Current 0 4 61 0 928 1055 972 1206 3012	history1 11 0 77 0 1175 1346 1231 1647 4816	history2 13 0 64 <1 970 1134 1037 1313 3689	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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	0 0 60 1010 1070 1150 1270 2060	Current 0 4 61 0 928 1055 972 1206 3012 Current	history1 11 0 77 0 1175 1346 1231 1647 4816 history1	history2 13 0 64 <1 970 1134 1037 1313 3689 history2	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base	Current 0 4 61 0 928 1055 972 1206 3012 Current 0	history1 11 0 77 0 1175 1346 1231 1647 4816 history1 5	history2 13 0 64 <1 970 1134 1037 1313 3689 history2 3	
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 ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base	Current 0 4 61 0 928 1055 972 1206 3012 Current 0 0	history1 11 0 77 0 1175 1346 1231 1647 4816 history1 5 2	history2 13 0 64 <1 970 1134 1037 1313 3689 history2 3 3 3	
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 0 1010 1070 1150 1270 2060 Jimit/base >30	Current 0 4 61 0 928 1055 972 1206 3012 Current 0 0 0	history1 11 0 77 0 1175 1346 1231 1647 4816 history1 5 2 0	history2 13 0 64 <1 970 1134 1037 1313 3689 history2 3 3 2	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >30 -20 Imit/base	Current 0 4 61 0 928 1055 972 1206 3012 Current 0 0 0 0 0	history1 11 0 77 0 1175 1346 1231 1647 4816 history1 5 2 0 15 2 0 history1	history2 13 0 64 <1 970 1134 1037 1313 3689 history2 3 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 ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >30 20 limit/base	current 0 4 61 0 928 1055 972 1206 3012 current 0 0 0 0 0 0.3	history1 11 0 77 0 1175 1346 1231 1647 4816 history1 5 2 0 history1 0.3	history2 13 0 64 <1 970 1134 1037 1313 3689 history2 3 2 history2 0 0 0 0 0 0 0 0 3 2 0.3	
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 imit/base >30 200 imit/base >33 >20	current 0 4 61 0 928 1055 972 1206 3012 current 0 0 0 0 0 0 0 0 0 0.3 7.5	history1 11 0 77 0 1175 1346 1231 1647 4816 history1 5 2 0 history1 0.3 7.6	history2 13 0 64 <1 970 1134 1037 1313 3689 history2 3 2 history2 0.3 7.7	
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 TS ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 2060 2060 2060 2060 200 200 200 200 20	Current 0 4 61 0 928 1055 972 1206 3012 current 0 0 0 0 0 current 0.3 7.5 19.2 current	history1 11 0 77 0 1175 1346 1231 1647 4816 history1 5 2 0 history1 0.3 7.6 19.7 history1	history2 13 0 64 <1 970 1134 1037 1313 3689 history2 3 2 history2 0.3 7.7 19.9 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 >30 imit/base >3 20	Current 0 4 61 0 928 1055 972 1206 3012 Current 0 0 0 0 0 Current 0.3 7.5 19.2	history1 11 0 77 0 1175 1346 1231 1647 4816 history1 5 2 0 history1 0.3 7.6 19.7	history2 13 0 64 <1 970 1134 1037 1313 3689 history2 3 2 history2 0.3 7.7 19.9	



OIL ANALYSIS REPORT

VISUAL



		Vhite Metal		*Visual	NONE	NONE		DNE	NONE
		ellow Metal recipitate	scalar scalar	*Visual *Visual	NONE NONE	NONE NONE		ONE ONE	NONE
		lit	scalar	*Visual	NONE	NONE		DNE	NONE
	D	ebris	scalar	*Visual	NONE	NONE	NC	DNE	NONE
		and/Dirt	scalar	*Visual	NONE	NONE		DNE	NONE
Jun2/23 Aug10/23 Oct23/23	A	ppearance	scalar	*Visual	NORML	NORML		ORML	NORML
Auto oc	C)dor	scalar	*Visual	NORML	NORML		ORML	NORML
0°C		mulsified Water	scalar	*Visual	>0.2	NEG	NE		NEG
		ree Water	scalar	*Visual		NEG	NE		NEG
				method	limit/base	current		nistory1	history2
	_		cSt	ASTM D445	15.4	13.7	13	.0	13.6
		GRAPHS Ferrous Alloys							
	¹⁸ T	Ferrous Alloys							
Jun2/23 - Aug 10/23 -	16	iron							
Augi	14- 12-	nickel		-					
	e ¹⁰	\sim							
	¹¹ 8-								
	6- 4-								
	2-								
	0	23		233	23				
		Jan17/23 Jun2/23		Aug 10/23	0ct23/23				
		Non-ferrous Meta	als	4					
	10	copper							
	8-	sessesses lead							
	b mdd								
	4								
	2								
		CONTRACTOR OF THE OWNER OWNE							
	01	123-		1/23	3/23				
		Jan 17/23 Jun 2/23		Aug10/23	0ct23/23				
		Viscosity @ 100°	С			Base Num	ber		
	19	Abnoms			10.	D			
	18 17	Abnormal			- 8.	0			
		Page			KOH/6				
	() () () () () () () () () () () () () (цазе 			Base Number (mg KOH/g)				
	⁷⁵ 14				4.	0			
	13-	Abnormal		- i	ese 8 2.	0-			
	12-								
	111	an17/23 - Jun2/23 -		0/23	.0 0ct23/23	7/23	Jun2/23 +	1/23	0ct23/23 -
		Jan 17/23 Jun 2/23		Aug10/23 -	0ct2	Jan17/23	Jun	Aua10/23	0 ct2
Laboratory Sample No. Lab Number Unique Number Test Package To discuss this sample report,	: C : C r : 1 e : F	VearCheck USA - GFL0066139 06048553 0809161 -LEET act Customer Ser	Recieved Diagnose Diagnost	l : 02 ; ed : 03 ; ician : We	Jan 2024 Jan 2024 s Davis	GFL Environmental - 904A - Thorpe N14985 Tieman Ave Thorp, WI US 54771 Contact: Andy Kane akane@gflenv.com			
* - Denotes test methods that Statements of conformity to spe	are o	utside of the ISO	17025 sco	pe of accred	litation.	(JCGM 106:2	2012)		(715)202-3420 F: