

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 727021-523

Component Diesel Engine Fluid

PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. (Customer Sample Comment: Resample after EGR repairs)

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.

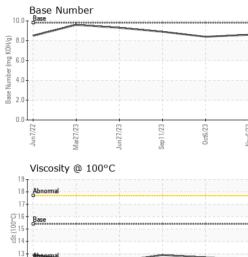
iAL)		Jun2022	Mar2023 Jun2023	Sep2023 Oct2023	Nov2023	
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0094849	GFL0088292	GFL0088269
Sample Date		Client Info		06 Nov 2023	06 Oct 2023	11 Sep 2023
Machine Age	hrs	Client Info		34269	34181	34043
Oil Age	hrs	Client Info		89	590	452
Oil Changed		Client Info		Not Changd	Changed	Not Changd
Sample Status				NORMAL	ABNORMAL	ABNORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>2.0	<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	19	54	48
Chromium	ppm	ASTM D5185m	>20	<1	<1	1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	3	3
Lead	ppm	ASTM D5185m	>40	<1	2	4
Copper	ppm	ASTM D5185m	>330	1	3	2
Tin	ppm	ASTM D5185m	>15	0	0	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium		AOTH DELOS				
oddinidini	ppm	ASTM D5185m		0	0	0
ADDITIVES	ppm	method	limit/base	0 current	0 history1	0 history2
ADDITIVES	ppm		limit/base	-		-
ADDITIVES Boron		method	0	current	history1	history2
ADDITIVES Boron Barium	ppm	method ASTM D5185m	0	current 3	history1 8	history2 12
ADDITIVES Boron Barium Molybdenum	ppm ppm	method ASTM D5185m ASTM D5185m	0 0 60	current 3 0	history1 8 0	history2 12 0
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 3 0 64	history1 8 0 72	history2 12 0 70
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 3 0 64 0	history1 8 0 72 0	history2 12 0 70 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 3 0 64 0 930	history1 8 0 72 0 970	history2 12 0 70 <1 936
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	current 3 0 64 0 930 1084	history1 8 0 72 0 970 1116	history2 12 0 70 <1 936 1117
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	current 3 0 64 0 930 1084 940	history1 8 0 72 0 970 11116 990	history2 12 0 70 <1 936 1117 1002
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	current 3 0 64 0 930 1084 940 1233	history1 8 0 72 0 970 1116 990 1254	history2 12 0 70 <1 936 1117 1002 1218
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	method 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 3 0 64 0 930 1084 940 1233 3001	history1 8 0 72 0 970 11116 990 1254 2811	history2 12 0 70 <1 936 1117 1002 1218 3356
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method 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 3 0 64 0 930 1084 940 1233 3001 current	history1 8 0 72 0 970 11116 990 1254 2811 history1	history2 12 0 70 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base	current 3 0 64 0 930 1084 940 1233 3001 current 5	history1 8 0 72 0 970 1116 990 1254 2811 history1 9	history2 12 0 70 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	current 3 0 64 0 930 1084 940 1233 3001 current 5 68	history1 8 0 72 0 970 1116 990 1254 2811 history1 9 315	history2 12 0 70 <1 936 1117 1002 1218 3356 history2 10 ▲ 350
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25	current 3 0 64 0 930 1084 940 1233 3001 current 5 68 3	history1 8 0 72 0 970 11116 990 1254 2811 history1 9 315 6	history2 12 0 70 <1 936 1117 1002 1218 3356 history2 10 ▲ 350 7
ADDITIVES 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	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	current 3 0 64 0 930 1084 940 1233 3001 current 5 68 3 current	history1 8 0 72 0 970 1116 990 1254 2811 history1 9 315 6 history1	history2 12 0 70 <1 936 1117 1002 1218 3356 history2 10 ▲ 350 7 history2
ADDITIVES 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	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 20 imit/base >20	current 3 0 64 0 930 1084 940 1233 3001 current 5 68 3 current 0 0.6	history1 8 0 72 0 970 1116 990 1254 2811 9 315 6 history1 1.2	history2 12 0 70 <1 936 1117 1002 1218 3356 history2 10 ▲ 350 7 history2 1.1
ADDITIVES 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 TS ppm ppm ppm	method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 20 imit/base >20	current 3 0 64 0 930 1084 940 1233 3001 current 5 68 3 current 0 0.6 5.6	history1 8 0 72 0 970 1116 990 1254 2811 9 315 6 history1 1.2 8.4	history2 12 0 70 <1 936 1117 1002 1218 3356 history2 10 ▲ 350 7 history2 1.1 8.6
ADDITIVES 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	method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >20 imit/base >3 >20	current 3 0 64 0 930 1084 940 1233 3001 current 5 68 3 current 0.6 5.6 18.2	history1 8 0 72 0 970 1116 990 1254 2811 9 315 6 history1 1.2 8.4 20.1	history2 12 0 70 <1 936 1117 1002 1218 3356 history2 10 ▲ 350 7 history2 1.1 8.6 19.9



12 11 Jun7/22

OIL ANALYSIS REPORT

VISUAL



Mar27/23

		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
		Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
		Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE	
		Silt		*Visual	NONE	NONE	NONE	NONE	
		Debris	scalar	*Visual	NONE	NONE	NONE	NONE	
		Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE	
Jun27/23 Sep11/23	0ct6/23 - Nov6/23 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
Jun27/23 Sep11/23	Nov	Odor	scalar	*Visual	NORML	NORML	NORML	NORML	
°C		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	12.5	12.7	12.9	
		GRAPHS							
		Ferrous Alloys							
Jun21/23	0ct6/23 -	Non-ferrous Meta	ls	otebr23	Nov6/23				
		Viscosity @ 100°C		0ct6/23	EC/gnov	Base Number			
		18 - <mark>Abnormal</mark> 17 -							
		G 16 Base 15 15			(b)/HOX (b)/HOX (b)/HOX (b)/HOX (b)/HOX (b)/HOX (c)/HOX (c)/HO				
		ぎ ₁₄ 13			quin 4.0-				
		12 Abnormal			<u>2.0</u>				
					0.0	3			
		Jun7/22 Mar27/23	sep 11/23	0ct6/23	Nov6/23	Jun7/22 Mar27/23	Jun 27/23 Sep 11/23	0ct6/23 Nov6/23	
Laboratory Sample No. Lab Number Unique Number Test Package To discuss this sample report, * - Denotes test methods that app		: WearCheck USA - : GFL0094849 : 06002067 : 10735829 : FLEET contact Customer Serv are outside of the ISO 1	501 Madison Ave., Cary, NC 27513 Received : 08 Nov 2023 Diagnosed : 09 Nov 2023 Diagnostician : Jonathan Hester vice at 1-800-237-1369.			GFL Environmental - 625 - Harrison Hauling 4102 Industrial Pkwy Harrison, MI US 48625 Contact: Glenda Standen gstanden@gflenv.com T:			
Statements of c	onformity to spec	cilications are based on t	ine simple	acceptance c	ecision rule (J	CGM 106:2012)		F:	