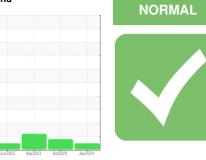


OIL ANALYSIS REPORT

SAMPLE INFORMATION method

Sample Rating Trend



Machine Id 420036

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

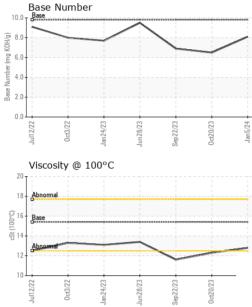
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM		method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0097484	GFL0097515	GFL0092891
Sample Date		Client Info		05 Jan 2024	20 Oct 2023	22 Sep 2023
Machine Age	hrs	Client Info		7810	7483	7332
Oil Age	hrs	Client Info		5891	5891	5891
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	MARGINAL	ABNORMAL
-						
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	3 .0	A 3.5
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	>100	11	27	14
Chromium	ppm	ASTM D5185m	>20	0	1	1
Nickel		ASTM D5185m	>4	0	<1	<1
	ppm		>4	0		0
Titanium Silver	ppm	ASTM D5185m	. 0		<1 0	0
	ppm	ASTM D5185m	>3	0		
Aluminum	ppm	ASTM D5185m	>20	<1	5	<1
Lead	ppm	ASTM D5185m	>40	<1	<1	1
Copper	ppm		>330	0	<1	8
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	<1	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 7	history1 10	history2 7
	ppm ppm					
Boron		ASTM D5185m	0	7	10	7
Boron Barium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	7 0	10 <1	7 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	7 0 56	10 <1 60	7 0 62
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	7 0 56 0	10 <1 60 <1	7 0 62 <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	7 0 56 0 901	10 <1 60 <1 892	7 0 62 <1 900
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	7 0 56 0 901 1028	10 <1 60 <1 892 1108	7 0 62 <1 900 1069
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	7 0 56 0 901 1028 925	10 <1 60 <1 892 1108 980	7 0 62 <1 900 1069 1042
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	7 0 56 0 901 1028 925 1239	10 <1 60 <1 892 1108 980 1218	7 0 62 <1 900 1069 1042 1259
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 0 1010 1070 1150 1270 2060	7 0 56 0 901 1028 925 1239 2870	10 <1 60 <1 892 1108 980 1218 3603	7 0 62 <1 900 1069 1042 1259 3021
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	7 0 56 0 901 1028 925 1239 2870 current 2	10 <1 60 <1 892 1108 980 1218 3603 history1 4	7 0 62 <1 900 1069 1042 1259 3021 history2 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	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 >25	7 0 56 0 901 1028 925 1239 2870 current	10 <1 60 <1 892 1108 980 1218 3603 history1	7 0 62 <1 900 1069 1042 1259 3021 history2
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 60 0 1010 1070 1150 1270 2060 limit/base >25 >20	7 0 56 0 901 1028 925 1239 2870 current 2 2 2 2	10 <1 60 <1 892 1108 980 1218 3603 history1 4 5 9	7 0 62 <1 900 1069 1042 1259 3021 history2 3 3 1
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 2060 225 >20 20	7 0 56 0 901 1028 925 1239 2870 current 2 2 2 2 2 2 2	10 <1 60 <1 892 1108 980 1218 3603 history1 4 5 9 9	7 0 62 <1 900 1069 1042 1259 3021 history2 3 3 1 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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 limit/base >3	7 0 56 0 901 1028 925 1239 2870 current 2 2 2 2 2 2 2 2 2 2 2 2 2 2	10 <1 60 <1 892 1108 980 1218 3603 history1 4 5 9 history1 0.3	7 0 62 <1 900 1069 1042 1259 3021 history2 3 3 1 history2 0.2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 220 20 20 20 20 20 20 20 20 20	7 0 56 0 901 1028 925 1239 2870 current 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	10 <1 60 <1 892 1108 980 1218 3603 history1 4 5 9 history1 0.3 9.8	7 0 62 <1 900 1069 1042 1259 3021 history2 3 3 3 1 history2 0.2 9.7
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 limit/base >3	7 0 56 0 901 1028 925 1239 2870 current 2 2 2 2 2 2 2 2 2 2 2 2 2 2	10 <1 60 <1 892 1108 980 1218 3603 history1 4 5 9 history1 0.3	7 0 62 <1 900 1069 1042 1259 3021 history2 3 3 1 history2 0.2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 220 20 20 20 20 20 20 20 20 20	7 0 56 0 901 1028 925 1239 2870 current 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	10 <1 60 <1 892 1108 980 1218 3603 history1 4 5 9 history1 0.3 9.8	7 0 62 <1 900 1069 1042 1259 3021 history2 3 3 3 1 history2 0.2 9.7
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 TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 320 320 20 33 20	7 0 56 0 901 1028 925 1239 2870 current 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	10 <1 60 <1 892 1108 980 1218 3603 history1 4 5 9 9 history1 0.3 9.8 20.3	7 0 62 <1 900 1069 1042 1259 3021 history2 3 3 1 history2 0.2 9.7 20.2
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 TS ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7414	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 30 20 30 20 30 25 20	7 0 56 0 901 1028 925 1239 2870 current 2 2 2 2 2 2 current 0.2 7.5 18.7	10 <1 60 <1 892 1108 980 1218 3603 history1 4 5 9 history1 0.3 9.8 20.3 history1	7 0 62 <1 900 1069 1042 1259 3021 history2 3 3 3 1 history2 0.2 9.7 20.2 history2



OIL ANALYSIS REPORT

VISUAL



			White Metal Yellow Metal Precipitate Silt Debris Sand/Dirt	scalar scalar scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual *Visual	NONE NONE NONE NONE NONE	NONE NONE NONE NONE NONE NONE	NONE NONE NONE NONE NONE	NONE NONE NONE NONE NONE		
°C	Jun28/23 +	Sep 2 2/23 - Oct20/23 -	Appearance Odor Emulsified Water	scalar scalar scalar	*Visual *Visual *Visual	NORML NORML >0.2	NORML NORML NEG	NORML NORML NEG	NORM NORM NEG	1L	
			Free Water	scalar	*Visual		NEG	NEG	NEG		
					method	limit/bas		history1	histor	ry2	
			Visc @ 100°C	cSt	ASTM D445	15.4	12.8	12.3	▲ 11.6		
			Ferrous Alloys								
	Jun20/23	Sep22/23 + 0ct20/23 +	25 20 wdd 15 0 27 20 20 20 20 20 20 20 20 20 20 20 20 20	Jun 28/23	Sep 22/23	Jan5,24					
			Non-ferrous Meta		Sep						
			2 0 2ZZZIInf Viscosity @ 100°	Jun28/23	Sep22/23	Jan5/24	Base Number				
			19 18 Abnormal 17 16 000015 14 13 12 11 14	_		Base Number (mg KOH/g)	10.0 Base				
			Jult2/22 Jult2/22 Jan24/23	Jun28/23	Sep 22/23	Jan5/24 🗕	Jult2/22	Jun28/23	Sep 22/23 0ct20/23	Jan5/24	
* - Dei	cuss th notes te	est methods that	e : FLEET , contact Customer Serv are outside of the ISO	501 Madia Recieved Diagnose Diagnose vice at 1-8 17025 sco	son Ave., Ca d : 11, ed : 12, ician : We 00-237-1365 pe of accrea	Jan 2024 Jan 2024 s Davis D. Jitation.	1	3 GFL Environmental - 641 - Alpena 1241 KING SETTLEMENT RD ALPENA, MI US 49707 Contact: DYLAN TOLAN dylan.tolan@gflenv.com T: (989)854-7203 JCGM 106:2012) F:			

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Submitted By: GFL463 and GFL641 - DYLAN TOLAN