

OIL ANALYSIS REPORT

Sample Rating Trend



^{Machine Id} 229128-429064

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.

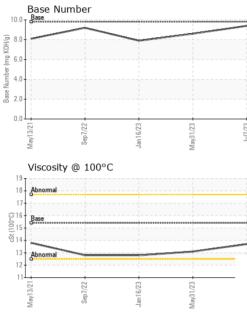
Fluid Condition

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

SAMPLE INFOR	MATION	method	limit/base	current	history 1	history 2
Sample Number		Client Info		GFL0085399	GFL0077359	GFL0066769
Sample Date		Client Info		07 Jul 2023	31 May 2023	16 Jan 2023
Machine Age	hrs	Client Info		23805	23693	23177
Oil Age	hrs	Client Info		23693	516	524
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history 1	history 2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history 1	history 2
Iron	ppm	ASTM D5185m	>100	5	16	19
Chromium	ppm	ASTM D5185m	>20	<1	<1	2
Nickel	ppm	ASTM D5185m	>4	<1	0	0
Titanium	ppm	ASTM D5185m		<1	<1	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	5	12	14
Lead	ppm	ASTM D5185m	>40	<1	0	<1
Copper	ppm		>330	<1	1	<1
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m	210	<1	0	0
Cadmium	ppm	ASTM D5185m		<1	0	0
ADDITIVES	I- I-		11 11 11			
	nnm	method	limit/base	current	history 1	history 2
Boron	ppm	ASTM D5185m	0	5	6	7
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	5 0	6 0	7 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	5 0 59	6 0 61	7 0 64
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	5 0 59 <1	6 0 61 0	7 0 64 <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	5 0 59 <1 837	6 0 61 0 782	7 0 64 <1 824
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	5 0 59 <1 837 1161	6 0 61 0 782 1222	7 0 64 <1 824 1151
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 ASTM D5185m	0 0 60 0 1010 1070 1150	5 0 59 <1 837 1161 951	6 0 61 0 782 1222 979	7 0 64 <1 824 1151 983
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	5 0 59 <1 837 1161 951 1202	6 0 61 0 782 1222 979 1187	7 0 64 <1 824 1151 983 1187
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 0 1010 1070 1150 1270 2060	5 0 59 <1 837 1161 951 1202 3711	6 0 61 0 782 1222 979 1187 3614	7 0 64 <1 824 1151 983 1187 3601
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	5 0 59 <1 837 1161 951 1202 3711 current	6 0 61 0 782 1222 979 1187 3614 history 1	7 0 64 <1 824 1151 983 1187 3601 history 2
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	5 0 59 <1 837 1161 951 1202 3711 current 3	6 0 61 0 782 1222 979 1187 3614 history 1 4	7 0 64 <1 824 1151 983 1187 3601 history 2 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm 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 0 1010 1070 1150 1270 2060 Limit/base >25	5 0 59 <1 837 1161 951 1202 3711 current 3 5	6 0 61 0 782 1222 979 1187 3614 history 1 4 26	7 0 64 <1 824 1151 983 1187 3601 history 2 5 41
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 ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	5 0 59 <1 837 1161 951 1202 3711 current 3	6 0 61 0 782 1222 979 1187 3614 history 1 4	7 0 64 <1 824 1151 983 1187 3601 history 2 5 41 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm 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	5 0 59 <1 837 1161 951 1202 3711 current 3 5	6 0 61 0 782 1222 979 1187 3614 history 1 4 26	7 0 64 <1 824 1151 983 1187 3601 history 2 5 41
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm 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	5 0 59 <1 837 1161 951 1202 3711 current 3 5 3	6 0 61 0 782 1222 979 1187 3614 history 1 4 26 4 kistory 1 0.9	7 0 64 <1 824 1151 983 1187 3601 history 2 5 41 5 5 41 5 history 2 0.6
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 limit/base >25	5 0 59 <1 837 1161 951 1202 3711 current 3 5 3 3 <i>current</i>	6 0 61 0 782 1222 979 1187 3614 history 1 4 26 4 kistory 1	7 0 64 <1 824 1151 983 1187 3601 history 2 5 41 5 +
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 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	5 0 59 <1 837 1161 951 1202 3711 current 3 5 3 2 5 3 2 current 0.4	6 0 61 0 782 1222 979 1187 3614 history 1 4 26 4 kistory 1 0.9	7 0 64 <1 824 1151 983 1187 3601 history 2 5 41 5 5 41 5 history 2 0.6
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> >25 >20 <i>limit/base</i> >3 >20	5 0 59 <1 837 1161 951 1202 3711 current 3 5 3 5 3 2 0.4 6.0	6 0 61 0 782 1222 979 1187 3614 history 1 4 26 4 26 4 history 1 0.9 8.6	7 0 64 <1 824 1151 983 1187 3601 history 2 5 41 5 5 41 5 history 2 0.6 8.0
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 225 20 225 20 20 3 20 3 20 3 20 20 20 20 20 20 20 20 20 20 20 20 20	5 0 59 <1 837 1161 951 1202 3711 current 3 5 3 5 3 2 <i>current</i> 0.4 6.0 18.5	6 0 61 0 782 1222 979 1187 3614 history 1 4 26 4 26 4 history 1 0.9 8.6 20.1	7 0 64 <1 824 1151 983 1187 3601 history 2 5 41 5 5 41 5 history 2 0.6 8.0 19.7
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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 3 20 20 20 3 3 20 20 20 20 20 20 20 20 20 20 20 20 20	5 0 59 <1 837 1161 951 1202 3711 current 3 5 3 5 3 current 0.4 6.0 18.5 current	6 0 61 0 782 1222 979 1187 3614 history 1 4 26 4 26 4 history 1 0.9 8.6 20.1 history 1	7 0 64 <1 824 1151 983 1187 3601 history 2 5 41 5 5 41 5 history 2 0.6 8.0 19.7 history 2



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	VISUAL		method	limit/base	current	history 1	history 2	
	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	
		scalar	*Visual	NONE	NONE	NONE	NONE	
		scalar	*Visual				NONE	
v31/2; Jul7/2;							NORML	
Ma.							NORML	
				>0.2			NEG	
			^Visual		NEG		NEG	
		RTIES	method	limit/base	current	history 1	history 2	
	Visc @ 100°C	cSt	ASTM D445	15.4	13.7	13.1	12.8	
	Ferrous Alloys							
1/23 -	50 - iron							
May3	40							
	20	-	-					
	10-							
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	Sep 7	Jan 16	May31	Jul				
	Viscosity @ 100°C	2			Base Number			
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	17							
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	0015			E 0.0				
	⁶³ 14	1		4.0				
	13 Abnormal			en 2.0				
	12							
	11	/23 -	/23 -	0.0	3/21	/23+	/23+	
	May13 Sep7/	Jan 16,	May31,	/Inf	Sep 7	Jan 16,	May31/23 .	
abauatawa						divergence and a large		
aboratory. Sample No.			ry, NC 27513 GFL Environmental - 882 - Gainesvill Jul 2023 5002 SW 41st Blv					
			nosed : 11 Jul 2023		Gainesville, F			
ab Number		•						
•	: 10550638	Diagnose		s Davis		0	US 3260 OBERT CLAR	
		Yellow Metal Precipitate Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys 60 00 00 00 00 00 00 00 00 00	Yellow Metal scalar Precipitate scalar Silt scalar Debris scalar Sand/Dirt scalar Appearance scalar Free Water scalar Free Water scalar Free Water scalar Free Water scalar Free Water scalar Free Water scalar Non-ferrous Alloys Visc @ 100°C cSt GRAPHS Ferrous Alloys Viscosity @ 100°C Viscosity @ 100°C	Precipitate scalar *Visual Precipitate scalar *Visual Sitt scalar *Visual Sand/Dirt scalar *Visual Sand/Dirt scalar *Visual Appearance scalar *Visual Codor scalar *Visual Emulsified Water scalar *Visual Free Water scalar *Visual Visc @ 100°C cSt ASTM D445 GRAPHS Ferrous Alloys Viscosity @ 100°C Uscosity @ 100°C Total for the scalar *Visual Comparison of the scalar *Visual Free Water scalar *Visual Ferrous Alloys Viscosity @ 100°C Total for the scalar *Visual Comparison of the scalar *Visual Ferrous Alloys Outro ferrous Metals Outro ferro fer	Yellow Metal Precipitate Scalar Visual NONE Sitt Scalar Visual NONE Sand/Dirt Scalar Visual NONE Sand/Dirt Scalar Visual NONE Scalar Visual NONE Scalar Visual NONE Scalar Visual NONE Scalar Visual NORML Codor Scalar NORML Codor Scalar NORML Codor Scalar NORML Codor Scalar NORML Codor Scalar NORML Codor Scalar NORML Codor Scalar NORML Codor Scalar NORML Codor Scalar NORML Codor Scalar NORML Codor Scalar NORML Codor Scalar NORML Codor Scalar NORML	Yellow Metal scalar Visual NONE NONE Precipitate scalar Visual NONE NONE Sit scalar Visual NONE NONE Sand/Dirt scalar Visual NONE NONE Sand/Dirt scalar Visual NONE NONE Appearance scalar Visual NORML NORML Odor scalar Visual NORML NOR	Vellow Metal scalar Visual NONE NONE NONE NONE Precipitate scalar Visual NONE NONE NONE NONE Sitt scalar Visual NONE NONE NONE Sand/Dirit scalar Visual NONE NONE NONE Appearance scalar Visual NORML NORML NORML Odor scalar Visual NORML NORML NORML NORML NORML Odor scalar Visual NORML NORML NORML Street Visual NORML NORML NORM NORML NORML NORML NORML NORM NORM North NORML NORML NORM NORML NORM NORM North NORM NORML NORM NORM North NORML NORML NORML NORM NORM North NORM NORM North NORM North NORM NORM North North NORM North North Nor	

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Submitted By: STEPHEN WEIL

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