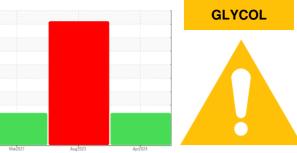


OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id

374138 Component **Diesel Engine** Fluid PETRO CANADA DURON SHP 10W30 (--- GAL)

DIAGNOSIS

Recommendation

We advise that you check for the source of the coolant leak. Check for low coolant level. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

Sodium and/or potassium levels remain high.

Fluid Condition

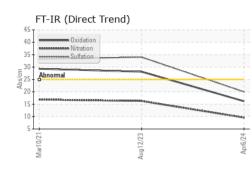
The BN result indicates that there is suitable alkalinity remaining in the oil.

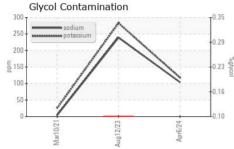
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0121435	PCA0102897	PCA0042309
Sample Date		Client Info		06 Apr 2024	12 Aug 2023	10 Mar 2021
Machine Age	mls	Client Info		248378	222843	137613
Oil Age	mls	Client Info		248378	222843	8000
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				ABNORMAL	SEVERE	ABNORMAL
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
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	32	97	1 08
Chromium	ppm	ASTM D5185m	>20	<1	2	3
Nickel	ppm	ASTM D5185m	>4	0	<1	2
Titanium	ppm	ASTM D5185m		6	29	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	16	14	<u> </u>
Lead	ppm	ASTM D5185m	>40	0	0	0
Copper	ppm	ASTM D5185m	>330	3	3	6
Tin	ppm	ASTM D5185m	>15	0	<1	2
Antimony	ppm	ASTM D5185m				0
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	<1	<1
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 13	history1 12	history2 3
	ppm ppm					
Boron		ASTM D5185m	2	13	12	3
Boron Barium	ppm	ASTM D5185m ASTM D5185m	2 0	13 0	12 0	3
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50	13 0 66	12 0 60	3 0 59
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0	13 0 66 <1	12 0 60 1	3 0 59 1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950	13 0 66 <1 931	12 0 60 1 679	3 0 59 1 977
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050	13 0 66 <1 931 1152	12 0 60 1 679 1432	3 0 59 1 977 1073
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	2 0 50 0 950 1050 995	13 0 66 <1 931 1152 1111	12 0 60 1 679 1432 939	3 0 59 1 977 1073 1020
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	2 0 50 0 950 1050 995 1180	13 0 66 <1 931 1152 1111 1285	12 0 60 1 679 1432 939 1190	3 0 59 1 977 1073 1020 1171
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	2 0 50 950 1050 995 1180 2600	13 0 66 <1 931 1152 1111 1285 3610	12 0 60 1 679 1432 939 1190 3379	3 0 59 1 977 1073 1020 1171 2069
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	2 0 50 950 1050 995 1180 2600	13 0 66 <1 931 1152 1111 1285 3610 current	12 0 60 1 679 1432 939 1190 3379 history1	3 0 59 1 977 1073 1020 1171 2069 history2
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 ASTM D5185m	2 0 50 950 1050 995 1180 2600	13 0 66 <1 931 1152 1111 1285 3610 current 5	12 0 60 1 679 1432 939 1190 3379 history1 9	3 0 59 1 977 1073 1020 1171 2069 history2 9
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 ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 limit/base >25	13 0 66 <1 931 1152 1111 1285 3610 current 5 ▲ 104	12 0 60 1 679 1432 939 1190 3379 history1 9 9 ▲ 239	3 0 59 1 977 1073 1020 1171 2069 history2 9 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 limit/base >25	13 0 66 <1 931 1152 1111 1285 3610 current 5 ▲ 104 ▲ 118	12 0 60 1 679 1432 939 1190 3379 history1 9 9 ▲ 239 ▲ 283	3 0 59 1 977 1073 1020 1171 2069 history2 9 4 25
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 limit/base >25 >20	13 0 66 <1 931 1152 1111 1285 3610 current 5 ▲ 104 ▲ 118 NEG current	12 0 60 1 679 1432 939 1190 3379 history1 9 ▲ 239 ▲ 239 ▲ 283 ▲ 0.10	3 0 59 1 977 1073 1020 1171 2069 history2 9 4 25 NEG
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m *ASTM D2982	2 0 50 0 950 1050 995 1180 2600 limit/base >25 >20	13 0 66 <1 931 1152 1111 1285 3610 current 5 ▲ 104 ▲ 118 NEG current 0.8	12 0 60 1 679 1432 939 1190 3379 history1 9 239 ▲ 239 ▲ 239 ▲ 239 ▲ 0.10	3 0 59 1 977 1073 1020 1171 2069 history2 9 4 25 NEG history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm %	ASTM D5185m ASTM D5185m *ASTM D2982	2 0 50 0 950 1050 995 1180 2600 Imit/base >25 >20 Imit/base >3	13 0 66 <1 931 1152 1111 1285 3610 current 5 ▲ 104 ▲ 118 NEG current	12 0 60 1 679 1432 939 1190 3379 history1 9 ▲ 239 ▲ 239 ▲ 283 ▲ 0.10 history1	3 0 59 1 977 1073 1020 1171 2069 history2 9 4 25 NEG history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D5185m *ASTM D2982 nethod *ASTM D7844 *ASTM D7844	2 0 50 0 950 1050 995 1180 2600 limit/base >25 >20 limit/base >3 >20	13 0 66 <1 931 1152 1111 1285 3610 current 5 ▲ 104 ▲ 118 NEG current 0.8 9.6	12 0 60 1 679 1432 939 1190 3379 history1 9 ▲ 239 ▲ 239 ▲ 239 ▲ 283 ▲ 0.10 history1 ▲ 3.1 16.3	3 0 59 1 977 1073 1020 1171 2069 history2 9 4 25 NEG NEG history2 3.2 16.9
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D5185m *ASTM D2982 nethod *ASTM D7844 *ASTM D7844	2 0 50 0 950 1050 995 1180 2600 imit/base >25 >20 imit/base >3 >20 >30 imit/base	13 0 66 <1 931 1152 1111 1285 3610 current 5 ▲ 104 ▲ 118 NEG current 0.8 9.6 20.0	12 0 60 1 679 1432 939 1190 3379 history1 9 239 ▲ 239 ▲ 239 ▲ 239 ▲ 239 ▲ 239 ▲ 0.10 history1 ▲ 3.1 16.3 34.0	3 0 59 1 977 1073 1020 1171 2069 history2 9 4 25 NEG 0 bistory2 4 25 NEG 3.2 16.9 33.2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	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 *ASTM D2982 method *ASTM D7844 *ASTM D7844	2 0 50 0 950 1050 995 1180 2600 imit/base >25 >20 imit/base >3 >20 >30 imit/base	13 0 66 <1 931 1152 1111 1285 3610 Current 5 ▲ 104 ▲ 118 NEG Current 0.8 9.6 20.0 Current	12 0 60 1 679 1432 939 1190 3379 ▲ 239 ▲ 239 ▲ 239 ▲ 239 ▲ 239 ▲ 239 ▲ 239 ▲ 239 ▲ 3.1 history1 ▲ 3.1 16.3 34.0 history1	3 0 59 1 977 1073 1020 1171 2069 history2 9 4 25 NEG 0 bistory2 ▲ 3.2 16.9 33.2 history2

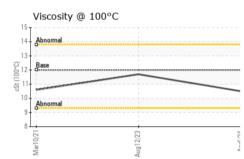
Contact/Location: ROSTY VITER - MILPHINE

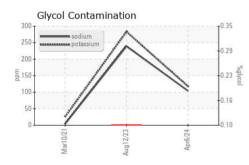


OIL ANALYSIS REPORT









 VISUAL		method	limit/base	current	history1	history2
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
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
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	12.00	10.5	11.7	10.6
GRAPHS						
Iron (ppm)			10	Lead (ppm)		
200 - Severe			8	Severe		
150 - Abnomal			udd a	Abnormal		
6 100 - demosmal			4			
0					~	
Mar10/2	Aug12/23 .		Apr6/24	Mar10/2	Aug12/23	
≥ Aluminum (ppm)				≥ Chromium (p		
50			5	Severe		
40 - G			4	0 - 0		
a 20 Abnomal			mdd 2	Abnormal		
10-			1			
0410/01	1/23 -			0/21	1/23 -	
Mar10	Aug12/23 .		Apr6/24	Mar10	Aug12/23	
Copper (ppm)	4			- Silicon (ppm)		
400 Severe			8			
300			6	0		
§ 200 -			틆 4	0		
100			2	Abnormal		
0 3 3 1 1 0	1/23 -			0 1 1 7 0	1/23 +	
Mar10/2	Aug12/23 -		Apr6/24	Mar1 0/21	Aug12/23	
Viscosity @ 100°			8.	Base Number	-	
Abnormal			(B/HO)			
5.0012 Base 3.12 Base			, Bm	0		
512			19 4.	U *		
10 Abnormal			(8)(HO) Base Number (mg KOH)	0-		
2	23			0 +	/23	
Mar10/2	Aug12/23		Apr6/24	Mar1 0/2	Aug12/23	

: 17 Apr 2024 Diagnosed : 18 Apr 2024 - Jonathan Hester

Test Package : MOB 1 (Additional Tests: TBN)

To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

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

Report Id: MILPHINE [WUSCAR] 06150068 (Generated: 04/18/2024 14:44:30) Rev: 1

Certificate 12367

Unique Number : 10980146

Contact/Location: ROSTY VITER - MILPHINE

Page 2 of 2

US 19116

Contact: ROSTY VITER

T: (215)552-9832

F: (215)552-9892

rviter@millertransgroup.com