

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id 4664M 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.

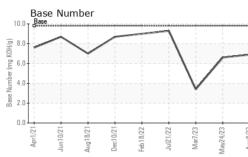
Fluid Condition

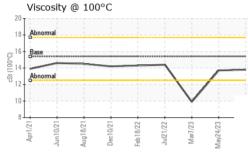
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2				
Sample Number		Client Info		GFL0086653	GFL0081382	GFL0073851				
Sample Date		Client Info		08 Aug 2023	24 May 2023	07 Mar 2023				
Machine Age	hrs	Client Info		14338	13732	13127				
Oil Age	hrs	Client Info		13732	13127	11282				
Oil Changed		Client Info		Changed	Changed	Changed				
Sample Status				NORMAL	NORMAL	ABNORMAL				
CONTAMINAT	ION	method	limit/base	current	history1	history2				
Fuel		WC Method	>3.0	<1.0	<1.0	1.1				
Glycol		WC Method		NEG	NEG	NEG				
WEAR METALS method limit/base current history1 history2										
Iron	ppm	ASTM D5185m		21	26	14				
Chromium		ASTM D5185m		<1	1	<1				
Nickel	ppm ppm	ASTM D5185m	>2	0	<1	0				
Titanium	ppm	ASTM D5185m		۰ <1	<1	0				
Silver	ppm	ASTM D5185m	>2	0	<1	0				
Aluminum	ppm	ASTM D5185m		2	3	2				
Lead	ppm	ASTM D5185m	>20	0	1	0				
		ASTM D5185m		1	3	<1				
Copper Tin	ppm	ASTM D5185m	>330	۱ <1	<1	<1				
Vanadium	ppm ppm	ASTM D5185m	210	<1	<1	0				
Cadmium		ASTM D5185m		0	<1	0				
	ppm	ASTIVI DOTODIII		0	< 1	-				
ADDITIVES		method	limit/base	current	history1	history2				
Boron	ppm	ASTM D5185m	0	0	2	2				
Boron Barium	ppm ppm	ASTM D5185m	0	0 0	2 0	2 0				
Boron		ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 58	2 0 57	2 0 23				
Boron Barium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	0 0	2 0 57 <1	2 0 23 <1				
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 58	2 0 57	2 0 23				
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 58 <1	2 0 57 <1	2 0 23 <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	0 0 58 <1 976	2 0 57 <1 905	2 0 23 <1 ▲ 328				
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	0 0 58 <1 976 1093	2 0 57 <1 905 1000	2 0 23 <1 ▲ 328 ▲ 428				
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	0 0 58 <1 976 1093 1005	2 0 57 <1 905 1000 947	2 0 23 <1 ▲ 328 ▲ 428 ▲ 549				
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	0 0 58 <1 976 1093 1005 1311	2 0 57 <1 905 1000 947 1187	2 0 23 <1 ▲ 328 ▲ 428 ▲ 549 ▲ 695				
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	0 0 60 1010 1070 1150 1270 2060 limit/base	0 0 58 <1 976 1093 1005 1311 3371	2 0 57 <1 905 1000 947 1187 2757	2 0 23 <1 ▲ 328 ▲ 428 ▲ 549 ▲ 695 ▲ 1380				
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	0 0 60 1010 1070 1150 1270 2060 limit/base	0 0 58 <1 976 1093 1005 1311 3371 current	2 0 57 <1 905 1000 947 1187 2757 history1	2 0 23 <1 ▲ 328 ▲ 428 ▲ 549 ▲ 695 ▲ 1380 history2				
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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	0 0 58 <1 976 1093 1005 1311 3371 current 4	2 0 57 <1 905 1000 947 1187 2757 history1 6	2 0 23 <1 ▲ 328 ▲ 428 ▲ 549 ▲ 695 ▲ 1380 history2 4				
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	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	0 0 58 <1 976 1093 1005 1311 3371 current 4 5	2 0 57 <1 905 1000 947 1187 2757 history1 6 7	2 0 23 <1 ▲ 328 ▲ 428 ▲ 549 ▲ 695 ▲ 1380 history2 4 <1				
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	0 0 58 <1 976 1093 1005 1311 3371 current 4 5 2	2 0 57 <1 905 1000 947 1187 2757 history1 6 7 <1	2 0 23 <1 ▲ 328 ▲ 428 ▲ 549 ▲ 695 ▲ 1380 history2 4 <1 1				
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 <i>limit/base</i> >25 >20 <i>limit/base</i>	0 0 58 <1 976 1093 1005 1311 3371 current 4 5 2 2 current	2 0 57 <1 905 1000 947 1187 2757 history1 6 7 <1 kistory1	2 0 23 <1 328 428 549 695 695 1380 history2 4 <1 1 1				
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 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i>	0 0 58 <1 976 1093 1005 1311 3371 current 4 5 2 2 current 0.8	2 0 57 <1 905 1000 947 1187 2757 history1 6 7 <1 6 7 <1 0.8	2 0 23 <1 328 428 549 695 695 1380 history2 4 <1 1 1 history2 0.4				
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 limit/base >25 .20 limit/base >6 >20	0 0 58 <1 976 1093 1005 1311 3371 <i>current</i> 4 5 2 2 <i>current</i> 0.8 9.6	2 0 57 <1 905 1000 947 1187 2757 history1 6 7 <1 6 7 <1 history1 0.8 9.9	2 0 23 <1 328 328 428 549 695 1380 history2 4 <1 1 1 history2 0.4 6.2				
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 ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >20 imit/base >6 >20 >30	0 0 58 <1 976 1093 1005 1311 3371 current 4 5 2 2 current 0.8 9.6 20.4	2 0 57 <1 905 1000 947 1187 2757 history1 6 7 <1 6 7 <1 0.8 9.9 22.4 history1	2 0 23 <1 328 328 428 695 695 1380 history2 4 <1 1 1 history2 0.4 6.2 21.7 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 >25 	0 0 58 <1 976 1093 1005 1311 3371 current 4 5 2 2 current 0.8 9.6 20.4 current	2 0 57 <1 905 1000 947 1187 2757 history1 6 7 <1 6 7 <1 0.8 9.9 22.4	2 0 23 <1 328 428 549 695 1380 history2 4 <1 1 1 history2 0.4 6.2 21.7				



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
23 - 23 - 23 - 23 - 23 - 23 - 23 - 23 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Feb18/22 Jul21/22 Mar7/23 May24/23 Aug8/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
_ 2	Emulsified Water		*Visual	>0.2	NEG	NEG	NEG
		scalar		>0.2			
	Free Water	scalar	*Visual		NEG	NEG	NEG
	FLUID PROPE	RTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.4	13.8	13.7	9 .9
	GRAPHS						
	Ferrous Alloys						
ŝ	40 40 40 40 40 40 40 40 40 40	s	Marilian Contraction Contracti	Aug8/23			
	Apr1/21 Jun10/21 Aug18/21 Dec10/21	Feb18/22	Jul21/22 Mar7/23 May24/23	Aug8/23			
	Viscosity @ 100°C		, - W		Base Number		
10400U	20 18 Abnormal 16 Base 16 12 10 4 12 10 4 12 10 4 12 10 12 12 10 12 12 10 12 12 12 12 12 12 12 12 12 12	Feb 18/22	Juli2/122 Mar7/23 May24/23	10.0 8.0 6.0 8 gase Mumber Mug8/23 0.0 9 gase Mumber 0.0		Dec10/21 +	Mar1/23 Mar24/23 Aug8/23
Certificate L2367 Condiscuss this sample report, condiscuss this sample report, conditional to special Condiscuss of conformity to special	: 05920588 I : 10592502 I : FLEET contact Customer Servi re outside of the ISO 12	Received Diagnos Diagnos Ce at 1-8 7025 sco	d : 10 / ed : 10 / tician : Wes 800-237-1369 ope of accred	Aug 2023 Aug 2023 S Davis		Ste Conta fwo	5 - Michigan East 6200 Elmridge Irling Heights, MI US 48313 act: Frank Wolak olak@gflenv.com 7: (586)825-9514 F:



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Submitted By: Frank Wolak

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