

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 526075

Component Diesel Engine

Fluid PETRO CANADA DURON SHP 15W40 (40 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

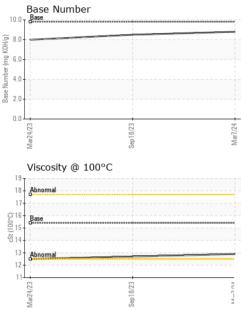
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI		method	limit/bace	ourront	history1	history
	MATION		limit/base		history1	history2
Sample Number		Client Info		GFL0098392	GFL0079524	GFL0076857
Sample Date		Client Info		07 Mar 2024	18 Sep 2023	24 Mar 2023
Machine Age	hrs	Client Info		4456	4782	4742
Oil Age	hrs	Client Info		4456	4031	4742
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
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
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	6	5	30
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		<1	<1	0
Silver	ppm	ASTM D5185m	>3	<1	0	0
Aluminum	ppm	ASTM D5185m	>20	2	1	2
Lead	ppm	ASTM D5185m	>40	4	<1	12
Copper	ppm	ASTM D5185m	>330	8	3	9
Tin	ppm	ASTM D5185m	>15	2	<1	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		<1	0	0
					0	
ADDITIVES		method	limit/base	current	history1	history2
		method		current	history1	
Boron	ppm	method ASTM D5185m	0	current 176	history1 351	228
Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0	current 176 0	history1 351 0	228 0
Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 176 0 85	history1 351 0 112	228 0 100
Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 176 0 85 <1	history1 351 0 112 <1	228 0 100 <1
Boron Barium Molybdenum	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 176 0 85 <1 744	history1 351 0 112 <1 677	228 0 100 <1 636
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	Current 176 0 85 <1 744 1400	history1 351 0 112 <1 677 1530	228 0 100 <1 636 1629
Boron Barium Molybdenum Manganese Magnesium	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 176 0 85 <1 744 1400 817	history1 351 0 112 <1 677 1530 721	228 0 100 <1 636 1629 719
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	Current 176 0 85 <1 744 1400	history1 351 0 112 <1 677 1530	228 0 100 <1 636 1629
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270	current 176 0 85 <1 744 1400 817 990	history1 351 0 112 <1 677 1530 721 867	228 0 100 <1 636 1629 719 903
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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	0 0 60 1010 1070 1150 1270 2060	current 176 0 85 <1 744 1400 817 990 3245 current	history1 351 0 112 <1 677 1530 721 867 2782 history1	228 0 100 <1 636 1629 719 903 2737 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	current 176 0 85 <1 744 1400 817 990 3245 current 4	history1 351 0 112 <1 677 1530 721 867 2782	228 0 100 <1 636 1629 719 903 2737
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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	0 0 60 1010 1070 1150 1270 2060 limit/base	current 176 0 85 <1 744 1400 817 990 3245 current	history1 351 0 112 <1 677 1530 721 867 2782 history1 5	228 0 100 <1 636 1629 719 903 2737 history2 7
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 176 0 85 <1 744 1400 817 990 3245 current 4 1	history1 351 0 112 <1 677 1530 721 867 2782 history1 5 1	228 0 100 <1 636 1629 719 903 2737 history2 7 1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Jimit/base >25	current 176 0 85 <1 744 1400 817 990 3245 current 4 1 4 current current	history1 351 0 112 <1 677 1530 721 867 2782 history1 5 1 <1 <1 <1 history1	228 0 100 <1 636 1629 719 903 2737 history2 7 1 <1 <1 +istory2
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 >3	current 176 0 85 <1 744 1400 817 990 3245 current 4 1 4 0.1	history1 351 0 112 <1 677 1530 721 867 2782 history1 5 1 <1 <1 <1 <1 0.1	228 0 100 <1 636 1629 719 903 2737 history2 7 1 <1 <1 history2 0.4
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	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >25	current 176 0 85 <1 744 1400 817 990 3245 current 4 1 4 current current	history1 351 0 112 <1 677 1530 721 867 2782 history1 5 1 <1 <1 <1 history1	228 0 100 <1 636 1629 719 903 2737 history2 7 1 <1 <1 +istory2
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 t t t t	method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >3 >20	current 176 0 85 <1 744 1400 817 990 3245 current 4 1 4 0.1 5.8 20.6	history1 351 0 112 <1 677 1530 721 867 2782 history1 5 1 <1 <1 <1 0.1 5.3 21.4	228 0 100 <1 636 1629 719 903 2737 history2 7 1 <1 <1 <1 history2 0.4 8.2 23.1
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	method ASTM D5185m ASTM D7185M *ASTM D7624 *ASTM D7415 method	0 0 0 1010 1070 1150 2260 225 220 220 imit/base >3 >20 >30 3 imit/base	current 176 0 85 <1 744 1400 817 990 3245 current 4 1 4 0.1 5.8 20.6 current	history1 351 0 112 <1 677 1530 721 867 2782 history1 5 1 <1 bistory1 0.1 5.3 21.4 history1	228 0 100 <1 636 1629 719 903 2737 history2 7 1 1 <1 history2 0.4 8.2 23.1 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 t t t t	method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 2260 225 220 220 imit/base >3 >20 >30 3 imit/base	current 176 0 85 <1 744 1400 817 990 3245 current 4 1 4 0.1 5.8 20.6	history1 351 0 112 <1 677 1530 721 867 2782 history1 5 1 <1 <1 <1 0.1 5.3 21.4	228 0 100 <1 636 1629 719 903 2737 history2 7 1 <1 <1 kistory2 0.4 8.2 23.1

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	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
Sep 18/23 Mar7/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Sep 1	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
	Free Water	scalar	*Visual		NEG	NEG	NEG
	FLUID PROP	ERTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.4	12.9	12.7	12.5
	GRAPHS						
	Ferrous Alloys						
23	iron						
Sep 18/23 Arr 7	25 - chromium						
0	20						
	<u>ة</u> 15						
	10						
	5-			-			
	33	23	***************************************	24			
	Mar24/23	Sep18/23		Mar7/24			
		•••		_			
	Non-ferrous Met	tais					
	copper]						
	10 - management lead						
	8-			/			
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	10	8/23		24			
	ar24/23	ep 18/		Mar7/24			
	M	š		~			
	Viscosity @ 100	°C			Base Number		
				10.0	Base		
	18 - Abnormal				Dase		
	18 - Abnormal 17 -				Base		
	18 - Abnormal 17 -						
	18 - Abnormal 17 -				Dase		
	18 - Abnormal 17-				Dase		
	18 - Abnormal 17 -			(B)HOX BU) Jaquinn 4.0 -			
	18 - Abnormal						
	18 - Abnormal	m		6.0 (JU) (JU) (JU) (JU) (JU) (JU) (JU) (JU)		m	
	18 - Abnormal	18/23		6.0 (JU) (JU) (JU) (JU) (JU) (JU) (JU) (JU)		18/23	
	18 - Abnormal 17 - Base 16 - Base 15 - 6 - 15 - 6 - 15 - 6 - 15 - 15 - 15	Sep 18/23		0.0 (0)(HOX) (0)) add (0)) add (0)) add (0)) add (0)) (0)) add (0)) (0)) (0)) (0)) (0)) (0)) (0)) (0	Mar24/23	Sep18/23	
Laboratory	18 - Abnormal		n Ave., Cary	(0, HOX Bu) HOX BU HOX BU) HOX BU HOX BU HO	Mar24/23	vironmental - 409	
Sample No.	Abnormal Abnormal Abnormal Abnormal Abnormal Contist Solution Contist Contis	501 Madiso Rece i	ived : 14	(0,Hox 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,	Mar24/23	vironmental - 409 ·	· Wood Island I
Sample No. Lab Number	Abnormal Abnormal Abnormal Abnormal Abnormal Abnormal CCV S S S S S S S S S S S S S	501 Madiso Rece Teste	ived : 14 d : 15	, NC 27513 Mar 2024 Mar 2024	GFL En	vironmental - 409 ·	State Hwy M2 Wetmore, N
Sample No. Lab Number Unique Number	Abnormal Abnormal Abnormal Abnormal CC CC CC CC CC CC CC CC CC C	501 Madiso Rece Teste	ived :14 d :15	(0,Hox 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,	GFL En	vironmental - 409 E10081	Wood Island I State Hwy M2 Wetmore, M US 4989
Sample No. Lab Number Unique Number Test Package	Abnormal Abnormal Abnormal Base	501 Madisc Rece Teste Diagr	ived : 14 id : 15 nosed : 15	, NC 27513 Mar 2024 Mar 2024 - We	GFL En	vironmental - 409 E10081	Wood Island I State Hwy M2 Wetmore, I
Sample No. Lab Number Unique Number	Abnormal Abnormal Abnormal Abnormal Abnormal Control of the second	501 Madisc Rece Teste Diagr	ived : 14 id : 15 nosed : 15 800-237-1369	, NC 27513 Mar 2024 Mar 2024 - We	GFL En	vironmental - 409 E10081	Wood Island I State Hwy M2 Wetmore, I US 4989

Submitted By: TECHNICIAN ACCOUNT