

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



Machine Id **776M** 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.

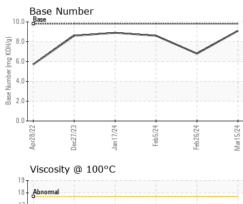
Fluid Condition

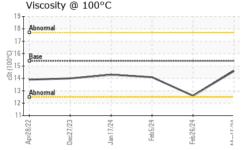
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0104309	GFL0104332	GFL0110151
Sample Date		Client Info		15 Mar 2024	26 Feb 2024	05 Feb 2024
Machine Age	hrs	Client Info		13162	13083	12954
Oil Age	hrs	Client Info		600	13083	600
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<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	>90	3	9	1
Chromium	ppm	ASTM D5185m	>20	<1	<1	0
Nickel	ppm	ASTM D5185m	>2	<1	<1	0
Titanium	ppm	ASTM D5185m	>2	<1	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	4	1
Lead	ppm	ASTM D5185m	>40	0	<1	<1
Copper	ppm	ASTM D5185m	>330	<1	0	<1
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	nnm	ACTM DE10Em		_		4
Caumum	ppm	ASTM D5185m		0	0	<1
ADDITIVES	ррп	method	limit/base	-	0 history1	<1 history2
	ppm		limit/base	-	-	
ADDITIVES		method ASTM D5185m		current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current 1	history1 2	history2 <1
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0 0 60	current 1 0	history1 2 0	history2 <1 <1
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 1 0 61	history1 2 0 53	history2 <1 <1 55
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	Current 1 0 61 0	history1 2 0 53 <1	history2 <1 <1 55 0
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 1 0 61 0 914	history1 2 0 53 <1 987	history2 <1 <1 55 0 868
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	Current 1 0 61 0 914 1033	history1 2 0 53 <1 987 1049	<1 <1 55 0 868 974
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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 1 0 61 0 914 1033 946	history1 2 0 53 <1 987 1049 992	history2 <1 55 0 868 974 959
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	Current 1 0 61 0 914 1033 946 1181 2978	history1 2 0 53 <1 987 1049 992 1333	<1 <1 55 0 868 974 959 1145
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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 1 0 61 0 914 1033 946 1181 2978	history1 2 0 53 <1 987 1049 992 1333 3168	<1 <1 55 0 868 974 959 1145 3151
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	Current 1 0 61 0 914 1033 946 1181 2978 current	history1 2 0 53 <1 987 1049 992 1333 3168 history1	<1 <1 55 0 868 974 959 1145 3151 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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 method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	Current 1 0 61 0 914 1033 946 1181 2978 Current 5	history1 2 0 53 <1 987 1049 992 1333 3168 history1 3	<1 <1 55 0 868 974 959 1145 3151 history2 2
ADDITIVES 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 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 Limit/base	Current 1 0 61 0 914 1033 946 1181 2978 current 5 <1 1	history1 2 0 53 <1 987 1049 992 1333 3168 history1 3 4	<1 <1 55 0 868 974 959 1145 3151 history2 2 0
ADDITIVES 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 limit/base >25	Current 1 0 61 0 914 1033 946 1181 2978 current 5 <1 1	history1 2 0 53 <1 987 1049 992 1333 3168 history1 3 4 7 history1 0.2	<1 <1 55 0 868 974 959 1145 3151 history2 2 0 2 0 2 0.1
ADDITIVES 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 ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25	current 1 0 61 0 914 1033 946 1181 2978 current 5 <1 1 current	history1 2 0 53 <1 987 1049 992 1333 3168 history1 3 4 7 history1	<1 <1 55 0 868 974 959 1145 3151 history2 2 0 2 0 2 0 2 0 2 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium 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 2060 225 >25 >20 Limit/base >20	current 1 0 61 0 914 1033 946 1181 2978 current 5 <1 1 current 0.1	history1 2 0 53 <1 987 1049 992 1333 3168 history1 3 4 7 history1 0.2	<1 <1 55 0 868 974 959 1145 3151 history2 2 0 2 0 2 0.1
ADDITIVES 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	method ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 2060 225 225 220 1imit/base >20	Current 1 0 61 0 914 1033 946 1181 2978 current 5 <1 1 current 0.1 4.5 17.4	history1 2 0 53 <1 987 1049 992 1333 3168 history1 3 4 7 history1 0.2 12.7	<1 <1 55 0 868 974 959 1145 3151 history2 2 0 2 0 2 0.1 4.4
ADDITIVES 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 D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >6 >20	Current 1 0 61 0 914 1033 946 1181 2978 current 5 <1 1 current 0.1 4.5 17.4	history1 2 0 53 <1 987 1049 992 1333 3168 history1 3 4 7 history1 0.2 12.7 22.4	<1 <1 55 0 868 974 959 1145 3151 history2 2 0 2 0.1 4.4 17.5



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		VISUAL		method				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
Feb5/24	Feb26/24 Mar15/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Fer	Feb2 Mar1	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			limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	15.4	14.6	12.6	14.1
	$\langle /$	GRAPHS						
	~	Ferrous Alloys						
24 -	24	iron						
Feb 5/24	Feb26/24	25 - chromium						
	ш 2	20						
		<u>۾</u> 15						
		10						
		5						
			4 4	4-	4			
		Apr28/22 Dec27/23	Jan 17/24 Feb5/24	Feb26/24	Mar15/24			
			7	ů.	N			
		Non-ferrous Met	als					
		copper						
		8 - copper lead						
		8 Beanseneeneeneelead						
		8 - tin						
		8 Beanseneeneeneelead						
		8 - Lead						
		8 - tin						
		8 6 4 2 0	2. 2					
		8 6 4 2 0	n17/24 (426.24	ar15/24 #			
		Percent of the second s	Fel	Feb.28/24	Mar15/24			
		8 6 4 2 0	7	Feb.26/24	2	Base Number		
		Viscosity @ 100°	7	Feb26/24	2	Base Number		
		B C C C C C C C C C C C C C	7	Feb28/24	≥ 10.1	Base		
		Viscosity @ 100°	7	Feb28/24	≥ 10.1	Base		
		Viscosity @ 100°	7	Feb.26/24	≥ 10.1	Base		
		B C C C C C C C C C C C C C	7	Feb26/24	≥ 10.1	Base		
		Base 0 0 0 0 0 0 0 0 0 0 0 0 0	7	Feb26/24	N 10.1 (0)HOX bul) John 10.4 (0)HOX bul) Joh	D - Base.		
		Base (1) (1) (1) (1) (1) (1) (1) (1)	7	Feb2624	10. (8.) (8.) (8.) (9.) (9.) (9.) (9.) (9.) (9.) (9.) (9	D - Base.		
		Base 0 0 0 0 0 0 0 0 0 0 0 0 0			N 10.1 (0)HOX bul) John 10.4 (0)HOX bul) Joh	D - Base.		
		Base Circle Circle Cir			≥ 10.1 (b)HOX 60.1 → aquunty aseg 2.1 0.1			6/24
		Base Control 10 Control 15 Control 15	7		N (0)HOX 66.1 (0)HOX 66.1 Nagum 4.1, See g 2.1	D - Base.	Jan 17/24	Feb26/24
	Laboratory	Viscosity @ 100° 4 4 2 0 2 0 2 2 0 2 2 2 2 2 2 2 2 2 2 2 2 2	Jan 17/24	Feb26/24	Mart State Mart State	Apri28/22 Dec2/23	Jan 17/24	
	Laboratory Sample No.	Viscosity @ 100° Abnomal Base Abnomal 12 11 Abnomal	Jan 17/24	http://www.	Mart State Mart State	Apri28/22 Dec2/23	hironmental - 410) - Michigan W
	Sample No. Lab Number	Viscosity @ 100° Viscosity @ 100° babonmal Cooling Co	- +02C	brin Ave., Cary ived : 19 ed : 20	2 10.1 (0)Hoy Bull and 10.1	GFL Env	hironmental - 410) - Michigan W o 00 Van Born I Wayne,
	Sample No.	Viscosity @ 100° Viscosity @ 100° Viscosity @ 100°	PCC +BZ(LIUR) 01 Madisco Recei Teste	brin Ave., Cary ived : 19 ed : 20	≥ 10.1 (0)HOX Bull = 10.1 (0)HO	GFL Env	4100 3900) - Michigan W e 00 Van Born I

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

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