

OIL ANALYSIS REPORT

Sample Rating Trend





Component Diesel Engine Fluid

PETRO CANADA DURON SHP 15W40 (--- GAL)

Recommendation

Resample at the next service interval to monitor.

Machine Id 4638M

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

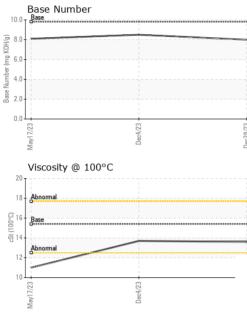
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	NATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0105630	GFL0101475	GFL0069869
Sample Date		Client Info		28 Dec 2023	04 Dec 2023	17 May 2023
Machine Age	hrs	Client Info		17945	17786	16312
Oil Age	hrs	Client Info		0	0	600
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	MARGINAL	SEVERE
CONTAMINATI	ON	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	2 .4	• 7.2
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>90	16	15	33
Chromium	ppm	ASTM D5185m	>20	<1	<1	2
Nickel	ppm	ASTM D5185m	>2	<1	0	<1
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	6	3	12
Lead	ppm	ASTM D5185m	>40	ء <1	0	0
Copper	ppm	ASTM D5185m	>330	<1	<1	1
Tin	ppm	ASTM D5185m	>15	1	0	0
Vanadium	ppm	ASTM D5185m	210	0	0	0
Gaomum	DDM	ASTNUDSISSM		0	0	()
	ppm	ASTM D5185m	limit/base	0 current	0 historv1	0 history2
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current 2	history1 <1	history2 9
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0	current 2 0	history1 <1 2	history2 9 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 2 0 61	history1 <1 2 57	history2 9 0 54
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 2 0 61 <1	history1 <1 2 57 0	history2 9 0 54 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 2 0 61 <1 1044	history1 <1 2 57 0 863	history2 9 0 54 <1 823
ADDITIVES 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 2 0 61 <1 1044 1143	history1 <1 2 57 0 863 1018	history2 9 0 54 <1 823 1031
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm 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 2 0 61 <1 1044 1143 1128	history1 <1 2 57 0 863 1018 925	history2 9 0 54 <1 823 1031 901
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 2 0 61 <1 1044 1143 1128 1327	history1 <1 2 57 0 863 1018 925 1138	history2 9 0 54 <1 823 1031 901 1111
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 0 1010 1070 1150 1270 2060	Current 2 0 61 <1 1044 1143 1128 1327 3232	history1 <1 2 57 0 863 1018 925 1138 2979	history2 9 0 54 <1 823 1031 901 1111 3370
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	current 2 0 61 <1 1044 1143 1128 1327 3232 current	history1 <1 2 57 0 863 1018 925 1138 2979 history1	history2 9 0 54 <1 823 1031 901 1111 3370 history2
ADDITIVES 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 0 1010 1070 1150 1270 2060	current 2 0 61 <1 1044 1143 1327 3232 current 6	history1 <1 2 57 0 863 1018 925 1138 2979 history1 4	history2 9 0 54 <1 823 1031 901 1111 3370 history2 13
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	0 0 60 0 1010 1070 1150 1270 2060 limit/base	current 2 0 61 <1 1044 1143 1128 1327 3232 current 6 7	history1 <1 2 57 0 863 1018 925 1138 2979 history1 4 5	history2 9 0 54 <1 823 1031 901 1111 3370 history2 13 16
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 >20	current 2 0 61 <1 1044 1143 1327 3232 current 6 7 5	history1 <1 2 57 0 863 1018 925 1138 2979 history1 4 5 6	history2 9 0 54 <1 823 1031 901 1111 3370 history2 13 16 11
ADDITIVES 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 2060 225 >25	current 2 0 61 <1 1044 1143 1128 1327 3232 current 6 7 5 current	history1 <1 2 57 0 863 1018 925 1138 2979 history1 4 5 6 history1	history2 9 0 54 <1 823 1031 901 11111 3370 history2 13 16 11 history2
ADDITIVES 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	current 2 0 61 <1 1044 1143 1128 1327 3232 current 6 7 5 current 0.4	history1 <1 2 57 0 863 1018 925 1138 2979 history1 4 5 6 history1 0.4	history2 9 0 54 <1 823 1031 901 1111 3370 history2 13 16 11 history2 0.5
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	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 1imit/base >20	current 2 0 61 <1 1044 1143 1128 1327 3232 current 6 7 5 current 0.4 8.7	history1 <1 2 57 0 863 1018 925 1138 2979 history1 4 5 6 history1 0.4 7.6	history2 9 0 54 <1 823 1031 901 1111 3370 history2 13 16 11 history2 0.5 8.5
ADDITIVES 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	current 2 0 61 <1 1044 1143 1128 1327 3232 current 6 7 5 current 0.4	history1 <1 2 57 0 863 1018 925 1138 2979 history1 4 5 6 history1 0.4	history2 9 0 54 <1 823 1031 901 1111 3370 history2 13 16 11 history2 0.5
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 TS ppm ppm ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 1imit/base >20	current 2 0 61 <1 1044 1143 1128 1327 3232 current 6 7 5 current 0.4 8.7	history1 <1 2 57 0 863 1018 925 1138 2979 history1 4 5 6 history1 0.4 7.6	history2 9 0 54 <1 823 1031 901 1111 3370 history2 13 16 11 history2 0.5 8.5
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 TS ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 <u>imit/base</u> >6 >20 20	current 2 0 61 <1 1044 1143 1128 1327 3232 current 6 7 5 current 0.4 8.7 19.3	history1 <1 2 57 0 863 1018 925 1138 2979 history1 4 5 6 history1 0.4 7.6 19.3	history2 9 0 54 <1 823 1031 901 1111 3370 history2 13 16 11 history2 0.5 8.5 19.2



OIL ANALYSIS REPORT

VISUAL



		\A/laita A4-+-1	·	*\/:	NONE	NONE	NONE	NICNIE
		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
		Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
		Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
		- Silt Debris	scalar	*Visual	NONE	NONE	NONE	NONE
			scalar	*Visual	NONE	NONE	NONE	
23		_ Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Dec ⁴ /23	Dec28/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
		0.0.0	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual		NEG	NEG	NEG
1		FLUID PROPI	ERTIES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	15.4	13.6	13.7	1 1.0
		GRAPHS						
		Ferrous Alloys						
/23		30 - iron						
Dec4/23		25 - nickel						
		E 15						
		15-						
		10						
		5						
		0	2		<u></u>			
		May17/23	Dec4/23		Dec28/23			
		-			De			
		Non-ferrous Meta	als					
		copper						
		8 - execution lead						
		0						
		Ed.						
		변 선 4-						
		변 석 4						
		4 2						
		4 2 0						
		4 2 0	ec4/23		28/23			
		4 2 0 2 2/L/keW	Dec4/23	and a state of a state	Dec28/23			
		Viscosity @ 100°			Dec28/23	Base Number		
		Viscosity @ 100°				Base Number		
		Viscosity @ 100°			10	.0 - Base		
		Viscosity @ 100°			10	.0 - Base		
		Viscosity @ 100°			10	.0 - Base		
		Viscosity @ 100°			10	.0 Base		
		4 2 0 CZ/L/key Viscosity @ 100° 19 Abnomal 10 10 10 10 10 10 10 10 10 10			10	.0 - Base		
		4 2 0 CZ/LIVEW Viscosity @ 100° 19 Abnomal 17 6 00015 4 4 4 4 4 4 4 4 4 4 4 4 4			10 (6)HOX Bul) Jaquing ass	.0 Base		
		4 2 0 CZ/LIVEW Viscosity @ 100° 19 Abnomal 17 18 Base 10 10 19 4 4 4 4 10 10 10 10 10 10 10 10 10 10			(0,HOX Buil) Jagen Wasseg 2	0 - Base		
		Viscosity @ 100° Abnomal 0,000) 10 Base Abnomal 12 14 13 12 10	c		10 (0)(10) Mup (0)(10) Mup (0)	0 - Base		
		Viscosity @ 100° Abnomal 0,000) 10 Base Abnomal 12 14 13 12 10			(0,HOX Buil) Jagen Wasseg 2	0 - Base	Dec4/23	
		4 2 0 CZ/LIVEW Viscosity @ 100° 19 Abnomal 10 CZ/LIVEW 19 Abnomal 10 CZ/LIVEW 10 10 10 10 10 10 10 10 10 10	C		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 - Base	Dec4/23	
	Laboratory	Viscosity @ 100° Viscosity @ 100° base base Contraction Base Contraction Contr	C		(0,4) (0,4)) (0,4)	0 - Base	Dec4/23	15 - Michigan Ea
	Sample No.	Viscosity @ 100° Viscosity @ 100° Base Contraction Con	C EZU-90 501 Madis Recieved	: 29	(0,4) (0,4)(0 - Base	EZHOPED ironmental - 4	15 - Michigan Ea 6200 Elmridg
	Sample No. Lab Number	Viscosity @ 100° Viscosity @ 100°	C EUG 501 Madis Recieved Diagnose	l : 29 l ed : 29 l	10 (), HON Bull Jarquin 4 E2082-20 0 FZ782-20 0 10 10 10 10 10 10 10 10 10	0 - Base	EZHOPED ironmental - 4	15 - Michigan Ea
THE CASE OF THE CA	Sample No.	Viscosity @ 100° Viscosity @ 100° Viscosity @ 100°	C EZU-90 501 Madis Recieved	l : 29 l ed : 29 l	(0,4) (0,4)(0 - Base	tironmental - 4	15 - Michigan Ea 6200 Elmridg erling Heights, N
discuss thi	Sample No. Lab Number Unique Number Test Package is sample report,	Viscosity @ 100° Viscosity @ 100° Viscosity @ 100°	C 501 Madis Recieved Diagnose Vice at 1-8	l : 29 ed : 29 ician : We 00-237-1369	10 (), HO y Bul (), HO y Bul	0 - Base	ironmental - 4 Ste Cont	15 - Michigan Ea 6200 Elmridg erling Heights, N US 4831

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Submitted By: Frank Wolak Page 2 of 2