

OIL ANALYSIS REPORT

Sample Rating Trend





Component **Diesel Engine** Fluid

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

SAMPLE INFORMATION method

DIAGNOSIS	
Recommendation	

Resample at the next service interval to monitor.

Machine Id 712029

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

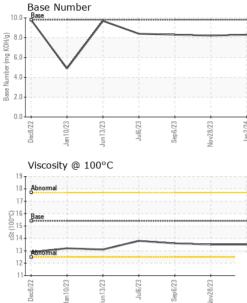
Fluid Condition

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

Sample Number		Client Info		GFL0100876	GFL0086808	GFL0086866
Sample Date		Client Info		02 Jan 2024	28 Nov 2023	06 Sep 2023
Machine Age	hrs	Client Info		4863	4846	2926
Oil Age	hrs	Client Info		600	4846	2926
Oil Changed		Client Info		Changed	Not Changd	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATI	ON	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 METALS	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>80	11	10	12
Chromium	ppm	ASTM D5185m	>5	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	<1	0	0
Titanium	ppm	ASTM D5185m		<1	<1	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>30	3	2	<1
Lead	ppm	ASTM D5185m	>30	<1	0	0
Copper	ppm	ASTM D5185m	>150	<1	<1	<1
Tin	ppm	ASTM D5185m	>5	<1	0	<1
Vanadium	ppm	ASTM D5185m		<1	<1	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 4	history1 4	history2 3
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m	0	4	4	3
Boron Barium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	4 0	4	3
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	4 0 63	4 0 59	3 0 61
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	4 0 63 <1	4 0 59 0	3 0 61 <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	4 0 63 <1 953	4 0 59 0 883	3 0 61 <1 995
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	4 0 63 <1 953 1085	4 0 59 0 883 1068	3 0 61 <1 995 1183
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	0 0 60 0 1010 1070 1150	4 0 63 <1 953 1085 1023	4 0 59 0 883 1068 953	3 0 61 <1 995 1183 1021
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	4 0 63 <1 953 1085 1023 1245	4 0 59 0 883 1068 953 1143	3 0 61 <1 995 1183 1021 1287
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	4 0 63 <1 953 1085 1023 1245 2966	4 0 59 0 883 1068 953 1143 2714	3 0 61 <1 995 1183 1021 1287 3597
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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	4 0 63 <1 953 1085 1023 1245 2966 current	4 0 59 0 883 1068 953 1143 2714 history1	3 0 61 <1 995 1183 1021 1287 3597 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Chosphorus Zinc Sulfur CONTAMINAN Silicon	ppm	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	4 0 63 <1 953 1085 1023 1245 2966 current 2	4 0 59 0 883 1068 953 1143 2714 history1 2	3 0 61 <1 995 1183 1021 1287 3597 history2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm	ASTM D5185m 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	4 0 63 <1 953 1085 1023 1245 2966 current 2 5	4 0 59 0 883 1068 953 1143 2714 history1 2 5	3 0 61 <1 995 1183 1021 1287 3597 history2 4 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20	4 0 63 <1 953 1085 1023 1245 2966 current 2 5 3	4 0 59 0 883 1068 953 1143 2714 history1 2 5 2	3 0 61 <1 995 1183 1021 1287 3597 history2 4 4 3
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >20	4 0 63 <1 953 1085 1023 1245 2966 current 2 5 3 3 current	4 0 59 0 883 1068 953 1143 2714 history1 2 5 2 2 history1	3 0 61 <1 995 1183 1021 1287 3597 history2 4 4 3 3 bistory2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 220 220 220 220	4 0 63 <1 953 1085 1023 1245 2966 current 2 5 3 3 current 0.5	4 0 59 0 883 1068 953 1143 2714 history1 2 5 2 5 2 history1 0.5	3 0 61 <1 995 1183 1021 1287 3597 history2 4 4 3 bistory2 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 t ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >20	4 0 63 <1 953 1085 1023 1245 2966 current 2 5 3 current 0.5 8.3	4 0 59 0 883 1068 953 1143 2714 history1 2 5 2 5 2 history1 0.5 7.9	3 0 61 <1 995 1183 1021 1287 3597 history2 4 4 4 3 history2 0.4 7.5
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 t ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >3 >20 >3	4 0 63 <1 953 1085 1023 1245 2966 <u>current</u> 2 5 3 3 <u>current</u> 0.5 8.3 19.1	4 0 59 0 883 1068 953 1143 2714 history1 2 5 2 history1 0.5 7.9 19.4	3 0 61 <1 995 1183 1021 1287 3597 history2 4 4 3 bistory2 0.4 7.5 18.8



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
Nov28/23 Jan2/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
NoN	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	RTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.4	13.5	13.5	13.6
	GRAPHS						
	Ferrous Alloys						
	160						
Nov28/23	140 - nickel						
	120						
	100 80						
	80						
	40						
	20	-					
			23	24			
	Dec8/22 Jan 10/23 Jun 13/23	Jul6/23	Sep6/23	Jan 2/24			
	Non-ferrous Meta	le	2				
	¹⁶ T	15					
	14 - copper lead						
	12 tin						
	10						
	Mdd 8						
	O Contraction of the second			Texture 10			
	Dec8/22 Jan10/23 Jun13/23	Jul6/23	Sep6/23 Nov28/23	Jan 2/24			
	Jan	Jr	Sel	Jai			
	Viscosity @ 100°	2			Base Number		
	18 - Abnormal			10.0	Base	\wedge	
	17-						
				KOH/(
	(2) 16 (2) 15 (3) 14 (3) 16 (4) 16 (5) 16 (5) 16 (5) 16 (6) 16 (7) 16			<u>B</u> 6.0			
			_		•		
	13 Abnormal						
	12			° 2.0	1		
	Dec8/22 Jan 10/23 Jun 13/23	Jul6/23	Sep6/23 Nov28/23	Jan 2/24	Dec8/22 Jan 10/23	Jun 13/23 Jul6/23 Sen6/23	Nov28/23
	D Jai	,	No.	7	Jai C		N N
ooratory	: WearCheck USA -	501 Madi	son Ave Ca	rv. NC 27513	GFL Env	vironmental - 419	- Metro Sagina
mple No.	: GFL0100876	Recieve	d :04,	Jan 2024			950 N Michiga
Number	: 06050611	Diagnos		Jan 2024			Saginaw, N
que Number	: 10816560	Diagnos	tician : We	s Davis			US 4860

VISUAI method limit/base current historv1 historv2



Test Package : FLEET Certificate L2367 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)

Contact: Jeremy Hines

jhines@gflenv.com

T: (800)684-1277

F: