

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id **4562M** Component **Diesel Engine** Fluid **PETRO CANADA DURON SHP 15W40 (--- QTS)**

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.

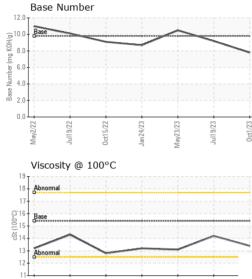
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0087271	GFL0087283	GFL0072911
Sample Date		Client Info		01 Oct 2023	19 Jul 2023	23 May 2023
Machine Age	hrs	Client Info		25332	24742	24358
Oil Age	hrs	Client Info		590	386	674
Oil Changed	1115	Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
				NOTIMAL		
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>90	35	33	21
Chromium	ppm	ASTM D5185m	>20	1	1	<1
Nickel	ppm	ASTM D5185m	>2	2	<1	0
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	0	2	<1
Lead	ppm	ASTM D5185m	>40	<1	0	0
Copper	ppm	ASTM D5185m	>330	1	1	1
Tin	ppm	ASTM D5185m	>15	<1	0	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 2	history1 6	history2 55
	ppm ppm					
Boron		ASTM D5185m	0	2	6	55
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	2 2	6 0	55 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 2 54	6 0 57	55 0 43
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 2 54 <1	6 0 57 <1	55 0 43 <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	2 2 54 <1 765	6 0 57 <1 944	55 0 43 <1 522
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	2 2 54 <1 765 994	6 0 57 <1 944 1179	55 0 43 <1 522 1563
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	2 2 54 <1 765 994 899	6 0 57 <1 944 1179 1060	55 0 43 <1 522 1563 767
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	2 2 54 <1 765 994 899 1040	6 0 57 <1 944 1179 1060 1273	55 0 43 <1 522 1563 767 946
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 0 1010 1070 1150 1270 2060	2 2 54 <1 765 994 899 1040 2648	6 0 57 <1 944 1179 1060 1273 3591	55 0 43 <1 522 1563 767 946 2703
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	2 2 54 <1 765 994 899 1040 2648 current	6 0 57 <1 944 1179 1060 1273 3591 history1	55 0 43 <1 522 1563 767 946 2703 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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 method	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >25	2 2 54 <1 765 994 899 1040 2648 <u>current</u> 8	6 0 57 <1 944 1179 1060 1273 3591 history1 9	55 0 43 <1 522 1563 767 946 2703 history2 17
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	2 2 54 <1 765 994 899 1040 2648 <u>current</u> 8 2	6 0 57 <1 944 1179 1060 1273 3591 history1 9 5	55 0 43 <1 522 1563 767 946 2703 history2 17 3
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 >20	2 2 54 <1 765 994 899 1040 2648 <u>current</u> 8 2 1	6 0 57 <1 944 1179 1060 1273 3591 history1 9 5 0	55 0 43 <1 522 1563 767 946 2703 history2 17 3 <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 2060 225 >25 >20 Limit/base >20	2 2 54 <1 765 994 899 1040 2648 <u>current</u> 8 2 1 1 <u>current</u> 0.3	6 0 57 <1 944 1179 1060 1273 3591 history1 9 5 0 0 history1 0.6	55 0 43 <1 522 1563 767 946 2703 history2 17 3 <17 3 <1 history2 0.3
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 2060 225 >25 >20 Limit/base >20	2 2 54 <1 765 994 899 1040 2648 <i>current</i> 8 2 2 1	6 0 57 <1 944 1179 1060 1273 3591 history1 9 5 0 0 history1	55 0 43 <1 522 1563 767 946 2703 history2 17 3 <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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >20	2 2 54 <1 765 994 899 1040 2648 <i>current</i> 8 2 1 <i>current</i> 0.3 7.1	6 0 57 <1 944 1179 1060 1273 3591 history1 9 5 0 0 history1 0.6 7.9 19.3	55 0 43 <1 522 1563 767 946 2703 history2 17 3 <17 3 <1 history2 0.3 5.5
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 ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 20 20 20 20 20 20 20 20 2	2 2 54 <1 765 994 899 1040 2648 <i>current</i> 8 2 1 <i>current</i> 0.3 7.1 18.9	6 0 57 <1 944 1179 1060 1273 3591 history1 9 5 0 0 history1 0.6 7.9 19.3 history1	55 0 43 <1 522 1563 767 946 2703 history2 17 3 <17 3 <1 history2 0.3 5.5 22.3 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 2060 225 20 225 20 imit/base >6 >20 20	2 2 54 <1 765 994 899 1040 2648 <u>current</u> 8 2 1 1 <u>current</u> 0.3 7.1 18.9	6 0 57 <1 944 1179 1060 1273 3591 history1 9 5 0 0 history1 0.6 7.9 19.3	55 0 43 <1 522 1563 767 946 2703 history2 17 3 <1 17 3 <1 0.3 5.5 22.3



May2/22

OIL ANALYSIS REPORT

VISUAL



Oct15/22

		1				*) // 1	NONE	NONE	NONE	NONE		
				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		
-		-	<u> </u>	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE		
Uct15/22	Jan24/23 -	May23/23	Jul19/23 - 0ct1/23 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML		
0	Jar	Mar		Odor	scalar	*Visual	NORML	NORML	NORML	NORML		
°C				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	13.4	14.2	13.1		
				GRAPHS								
				Ferrous Alloys								
-	<u></u>			60 iron	-							
0ct15/22	Jan 24/23	May23/23	Jul19/23	50 - seeses chromium	\rightarrow							
5	La	Ma		40								
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						Ma	-					
				Non-ferrous Meta	ais							
				copper								
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				ALLASSANDER DIE BERNER DER STREET BERNER								
				22	23	23	23					
				May2/22 Jul19/22 Oct15/22	Jan 24/23	May23/23 Jul19/23	0ct1/23					
				Viscosity @ 100°		2						
				19			12	Base Number				
				18 - Abnormal			10	Base				
				17			(B/H0		~			
				Dia Base			۶ ور ۳	.0				
				(3-00) 15 14 Base 16 Base 15 14			Base Number (mg KOH/g)	.0				
							V as	.0 -				
				Abnormal			2	.0				
				12			0					
				May2/22	4/23	3/23	0ct1/23		4/23 -	oct1/23		
				May2/22 Jul19/22 Oct15/22	Jan 24/23	May23/23 Jul19/23	Oct	May2/22 Jul19/22 0ct15/22	Jan 24/23	Jul19/23 0ct1/23		
					504 M		NOCT					
_	4		Laboratory Sample No.	: WearCheck USA - : GFL0087271	SA - 501 Madison Ave., Cary, NC 27513 Received : 16 Oct 2023			3 GFL Envi	GFL Environmental - 405 - Arbor Hills 7400 Napier Rd			
A	ANAB		Sample No. Lab Number	: 05979465		Diagnosed : 17 Oct 2023			NORTHVILLE, MI			
TESTING LABORATORY Unique Numbe		e Number	: 10696760	Diagnost		s Davis		US 4816				
Certificate L2367 Test Package				: FLEET			_		Contact: John Naha			
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				re outside of the ISO				(JCGM 106·2012)		F:		
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