

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 812037

Component Diesel Engine

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

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. Please specify the component make and model with your next sample.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

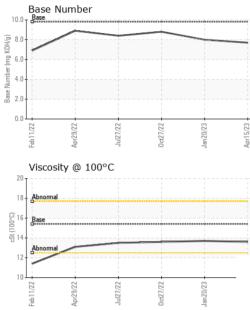
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

AL)		Feb2022	Apr2022 Jul2022	Oct2022 Jan2023	Apr2023	
SAMPLE INFORM	NATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0082538	GFL0064250	GFL0056832
Sample Date		Client Info		15 Apr 2023	20 Jan 2023	27 Oct 2022
Machine Age	hrs	Client Info		4112	2886	2297
Oil Age	hrs	Client Info		604	599	604
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATI	ON	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	16	16	18
Chromium	ppm	ASTM D5185m		0	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	<1	<1
Aluminum	ppm	ASTM D5185m		5	3	9
Lead	ppm	ASTM D5185m		0	0	0
		ASTM D5185m		1	2	2
Copper Tin	ppm			0	<1	<1
Vanadium	ppm	ASTM D5185m	>15			
					\cap	
	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm ppm	ASTM D5185m	line it //s a s a	0	0	0
Cadmium ADDITIVES	ppm	ASTM D5185m method	limit/base	0 current	0 history1	0 history2
Cadmium ADDITIVES Boron	ppm ppm	ASTM D5185m method ASTM D5185m	0	0 current 0	0 history1 4	0 history2 <1
Cadmium ADDITIVES Boron Barium	ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	0	0 current 0 0	0 history1 4 0	0 history2 <1 0
Cadmium ADDITIVES Boron Barium Molybdenum	ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 current 0 0 64	0 history1 4 0 64	0 history2 <1 0 63
Cadmium ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 current 0 0 64 <1	0 history1 4 0 64 <1	0 history2 <1 0 63 <1
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	0 current 0 0 64 <1 1062	0 history1 4 0 64 <1 939	0 history2 <1 0 63 <1 996
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	0 current 0 0 64 <1 1062 1146	0 history1 4 0 64 <1 939 1067	0 history2 <1 0 63 <1 996 1148
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	0 current 0 0 64 <1 1062 1146 1059	0 history1 4 0 64 <1 939 1067 928	0 history2 <1 0 63 <1 996 1148 1019
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	0 current 0 0 64 <1 1062 1146 1059 1333	0 history1 4 0 64 <1 939 1067 928 1178	0 history2 <1 0 63 <1 996 1148 1019 1241
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	0 current 0 0 64 <1 1062 1146 1059	0 history1 4 0 64 <1 939 1067 928 1178 3097	0 history2 <1 0 63 <1 996 1148 1019
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	0 current 0 0 64 <1 1062 1146 1059 1333	0 history1 4 0 64 <1 939 1067 928 1178	0 history2 <1 0 63 <1 996 1148 1019 1241
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m 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	0 current 0 64 <1 1062 1146 1059 1333 3368	0 history1 4 0 64 <1 939 1067 928 1178 3097	0 history2 <1 0 63 <1 996 1148 1019 1241 3408
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method 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	0 current 0 0 64 <1 1062 1146 1059 1333 3368 current	0 history1 4 0 64 <1 939 1067 928 1178 3097 history1	0 history2 <1 0 63 <1 996 1148 1019 1241 3408 history2
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m 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 kimit/base >25	0 current 0 64 <1 1062 1146 1059 1333 3368 current 6	0 history1 4 0 64 <1 939 1067 928 1178 3097 history1 3	0 history2 <1 0 63 <1 996 1148 1019 1241 3408 history2 4
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m 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 kimit/base >25	0 current 0 0 64 <1 1062 1146 1059 1333 3368 current 6 2	0 history1 4 0 64 <1 939 1067 928 11067 928 1178 3097 history1 3 <1	0 history2 <1 0 63 <1 996 1148 1019 1241 3408 history2 4 <1
Cadmium Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25	0 current 0 0 64 <1 1062 1146 1059 1333 3368 current 6 2 1	0 history1 4 0 64 <1 939 1067 928 1178 3097 history1 3 <1 5	0 history2 <1 0 63 <1 996 1148 1019 1241 3408 history2 4 <1 24
Cadmium 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	ASTM D5185m method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 }	0 current 0 0 64 <1 1062 1146 1059 1333 3368 current 6 2 1 current	0 history1 4 0 64 <1 939 1067 928 1178 3097 history1 3 <1 5 history1	0 history2 <1 0 63 <1 996 1148 1019 1241 3408 history2 4 <1 24 history2
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >3 >20	0 current 0 0 64 <1 1062 1146 1059 1333 3368 current 6 2 1 current 0.7	0 history1 4 0 64 <1 939 1067 928 1178 3097 history1 3 <1 5 5 history1 0.7	0 history2 <1 0 63 <1 996 1148 1019 1241 3408 history2 4 <1 24 kistory2 0.8
Cadmium Cadmium 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	ASTM D5185m method ASTM D5185m ASTM D51	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >3 >20	0 current 0 0 64 <1 1062 1146 1059 1333 3368 current 6 2 1 current 0.7 8.2	0 history1 4 0 64 <1 939 1067 928 1178 3097 history1 3 3 <1 5 history1 0.7 8.6	0 history2 <1 0 63 <1 996 1148 1019 1241 3408 history2 4 <1 24 ×1 24 bistory2 0.8 9.4
Cadmium Cadmium 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	ASTM D5185m method ASTM D5185m ASTM D51	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 20 20 20 20 20 20 20 20 20 20 20 20	0 current 0 0 64 <1 1062 1146 1059 1333 3368 current 6 2 1 current 0.7 8.2 19.5	0 history1 4 0 64 <1 939 1067 928 1178 3097 history1 3 <1 5 history1 0.7 8.6 20.0	0 history2 <1 0 63 <1 996 1148 1019 1241 3408 history2 4 <1 24 ×1 24 history2 0.8 9.4 21.8



OIL ANALYSIS REPORT

VISUAL



			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
50/L0110	77/1	Jan 20/23 -		scalar	*Visual	NORML	NORML	NORML	NORML
27/17INC	nctz	Jan2	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
			Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
			Free Water	scalar	*Visual		NEG	NEG	NEG
			FLUID PROPI		method	limit/base	current	history1	history2
			Visc @ 100°C	cSt	ASTM D445	15.4	13.6	13.7	13.6
	1		GRAPHS						
			Ferrous Alloys						
/22 +	- 77	/23	70 - iron						
Jul27/22	nctz //22	Jan 20/23	60 - nickel						
			50		· · · · · · · · · · · · · · · · · · ·				
			툡 40						
			30-						
			20						
			10-						
			52 52	/22 +	/23 -	/23			
			Feb 11/22 Apr29/22	Jul27/22 0ct27/22	Jan 20/23	Apr15/23			
			Non-ferrous Meta	als					
			16 copper]	1	1				
		4 seesseeseese lead							
			12 tin		· · · · · · · · · · · · · · ·				
			2						
			Feb 11/22 Apr29/22	Jul27/22 0ct27/22	Jan20/23	Apr15/23			
					Jan	Apı			
			Viscosity @ 100°	С			Base Number		
			18 - Abnormal			10.0	Base		
			17-			.6 8.0			
			Base			0.0 8.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-		
			00 15 -	1		E 6.0]		
			10				•		
			Abnormal		1	ase			
			11-			[©] 2.0	1		
			10	2	m			2	
			Feb 11/22 Apr29/22	Jul27/22 0ct27/22	Jan20/23	Apr15/23	Feb 1 1/22 Apr2 9/22	Jul27/22 0ct27/22	Jan20/23 Anr15/23
			Ap	й 17	Ца	Ap	Ap	٥ ⁰	An An
d	La	boratory	: WearCheck USA -	501 Madis	son Ave., Ca	ry, NC 27513	GFL Envi	ronmental - 947 ·	- WB Horicon HC
ANAB	Sa	Sample No.	: GFL0082538	Received	d : 22 /	Aug 2023			96 County Rd V
	-	b Number		Diagnos		Aug 2023			Horicon, W
and a second second		ique Numbe st Package		Diagnost	ucian : We	s Davis		Cont	US 53032
artificate Lanca				Contact: Tim Kieffe tim.kieffer@gflenv.cor					
Certificate L2367 O discuss			, contact Customer Ser	vice at 1-8	300-237-1369	Э.			



Submitted By: TECHNICIAN ACCOUNT