

OIL ANALYSIS REPORT

Area (30KK8A) Machine Id 722028-361658 Component

Diesel Engine Fluid PETRO CANADA DURON SHP 15W40 (8 GAL)

DIAGNOSIS

Recommendation

We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

Wear

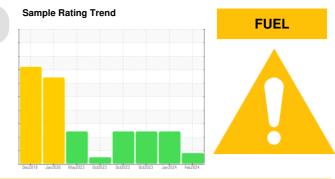
All component wear rates are normal.

Contamination

There is a moderate amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

Fluid Condition

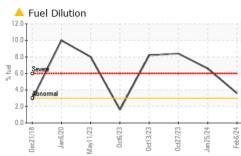
The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

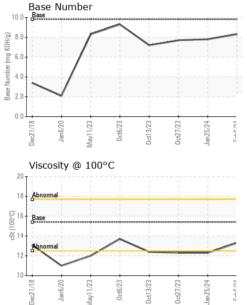


SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0104939	GFL0104854	GFL0065493
Sample Date		Client Info		06 Feb 2024	25 Jan 2024	27 Oct 2023
Machine Age	hrs	Client Info		18700	18681	600
Oil Age	hrs	Client Info		18523	1297	600
Oil Changed		Client Info		N/A	N/A	Changed
Sample Status				ABNORMAL	SEVERE	SEVERE
CONTAMINAT	ION	method	limit/base	current	history1	history2
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron		ASTM D5185m	>75	23	17	21
Chromium	ppm ppm	ASTM D5185m		1	<1	1
Nickel		ASTM D5185m	>4	0	<1	<1
Titanium	ppm ppm	ASTM D5185m		0	0	<1
Silver		ASTM D5185m	>2	0	0	< 1
Aluminum	ppm ppm	ASTM D5185m	>2	2	3	4
Lead			>15	2 <1	3 <1	4 <1
	ppm		>25	<1	<1	2
Copper	ppm	ASTM D5185m		۱ <1	<1	<1
Tin Vanadium	ppm	ASTM D5185m ASTM D5185m	>4	<1	<1	<1
Cadmium	ppm	ASTM D5185m		-	0	<1
	ppm			0	-	
ADDITIVES		method	limit/base	current	history1	history2
		method		Guirent	history1	
Boron	ppm	ASTM D5185m	0	<1	1	1
Boron Barium	ppm ppm		0		1 0	1 <1
Barium		ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	<1	1	1 <1 57
Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m	0 0 60	<1 0	1 0 52 <1	1 <1 57 0
Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	<1 0 55	1 0 52 <1 837	1 <1 57 0 868
Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	<1 0 55 <1	1 0 52 <1	1 <1 57 0
Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	<1 0 55 <1 951	1 0 52 <1 837 898 905	1 <1 57 0 868
Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	<1 0 55 <1 951 960	1 0 52 <1 837 898	1 <1 57 0 868 973
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	<1 0 55 <1 951 960 970	1 0 52 <1 837 898 905	1 <1 57 0 868 973 949
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	<1 0 55 <1 951 960 970 1221	1 0 52 <1 837 898 905 1133	1 <1 57 0 868 973 949 1164
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	<1 0 55 <1 951 960 970 1221 2920	1 0 52 <1 837 898 905 1133 2630	1 <1 57 0 868 973 949 1164 3152
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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	<1 0 55 <1 951 960 970 1221 2920 current	1 0 52 <1 837 898 905 1133 2630 history1	1 <1 57 0 868 973 949 1164 3152 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	<1 0 55 <1 951 960 970 1221 2920 current 4	1 0 52 <1 837 898 905 1133 2630 history1 4	1 <1 57 0 868 973 949 1164 3152 history2 6
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm 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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base	<1 0 55 <1 951 960 970 1221 2920 current 4 4	1 0 52 <1 837 898 905 1133 2630 history1 4 4	1 <1 57 0 868 973 949 1164 3152 history2 6 6
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 1010 1070 1150 1270 2060 limit/base >25	<1 0 55 <1 951 960 970 1221 2920 current 4 4 1	1 0 52 <1 837 898 905 1133 2630 history1 4 4 4 <1	1 <1 57 0 868 973 949 1164 3152 history2 6 6 6 3
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base >25 >20 >20	<1 0 55 <1 951 960 970 1221 2920 current 4 4 1 ▲ 3.6	1 0 52 <1 837 898 905 1133 2630 history1 4 4 4 4 <1 ● 6.6	1 <1 57 0 868 973 949 1164 3152 history2 6 6 6 3 ◆ 8.4
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 >25 >20 >20 >3.0	<1 0 55 <1 951 960 970 1221 2920 current 4 4 1 1 3.6 current	1 0 52 <1 837 898 905 1133 2630 history1 4 4 4 <1 ● 6.6 history1	1 <1 57 0 868 973 949 1164 3152 history2 6 6 6 3 ↓ 8.4 history2 1
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm %	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0	<1 0 55 < 1 951 960 970 1221 2920 current 4 4 1 3.6 current 1	1 0 52 <1 837 898 905 1133 2630 history1 4 4 4 <1 € 6.6 history1 0.9	1 <1 57 0 868 973 949 1164 3152 history2 6 6 6 3 3 ▲8.4 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	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 >3.0 imit/base >20 imit/base	<1 0 55 < 1 951 960 970 1221 2920 current 4 4 4 1 3.6 current 1 10.1	1 0 52 <1 837 898 905 1133 2630 history1 4 4 4 4 <1 € 6.6 history1 0.9 10.0	1 <1 57 0 868 973 949 1164 3152 history2 6 6 6 3 ↓ 8.4 history2 1 1 10.3
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAI	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 >3.0 <i>limit/base</i> >6 >20 >30 <i>limit/base</i>	<1 0 55 < 1 951 960 970 1221 2920 current 4 4 4 1 1 3.6 current 1 10.1 21.9 current	1 0 52 <1 837 898 905 1133 2630 history1 4 4 4 4 4 5 6.6 history1 0.9 10.0 21.4 history1	1 <1 57 0 868 973 949 1164 3152 history2 6 6 6 3 ▲ 8.4 history2 1 10.3 21.8 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel 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 limit/base >25 >20 >3.0 limit/base >6 >20 >30	<1 0 55 < 1 951 960 970 1221 2920 current 4 4 1 3.6 current 1 10.1 21.9	1 0 52 <1 837 898 905 1133 2630 history1 4 4 4 <1 € 6.6 history1 0.9 10.0 21.4	1 <1 57 0 868 973 949 1164 3152 history2 6 6 6 3 3 ▲8.4 history2 1 1 10.3 21.8



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
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
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	13.3	▲ 12.3	12.3
GRAPHS						
Ferrous Alloys						
⁰ T						
iron						
0 - chromium						
ssssssssnnn nickel						
i0 -						
	^					
10						
	- N -					
0			4			
.0			<u></u>			
	5	\sim	-			
0	1	\sim				
		\sim				
0		~~~				
0	23	24	24			
0	ct6/23	25/24	sb6/24			
0	0ctl3/23	0ct27/23	Feb6/24			
Jan6/20	0	0ct21/23	Feb6/24			
0	0	0ct27/23	Feb6/24			
RUIZOU Non-ferrous Meta	0	0et21/23	Feb6/24			
Non-ferrous Meta	0	0et21723	Feb6/24			
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0	0ct21/23	Feb6/24			
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0	0ct27/23	Feb6/24			
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0	0ct27/23 Jan25/24	Feb6/24			
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0	0ct27/23 -	Feb6/24			
Non-ferrous Meta	0	0et27/23	Feb6/2 4			
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0	0ct27/23	Feb6/24			
Non-ferrous Meta	0	0ct27/23	Feb5/24			
Non-ferrous Meta	0	0ct27/23	Eeb6/24			
Non-ferrous Meta	0	0ct27/23	Feb6/24			
Non-ferrous Meta	0	0ct27/23	Feb5/24			
0 0 0 0 0 0 0 0 0 0 0 0 0 0	IIS					
Non-ferrous Meta	IIS					
Non-ferrous Meta	IIS		Feb6/24 Feb6/24			
Janb.200 Janb.200 May 11/23 May 11/23 May 11/23 Janb.200 May 11/23 May 11/23	0ctp)/33					
0 0 0 0 0 0 0 0 0 0 0 0 0 0	0ctp)/33			Race Numbe	r	
Janb.200 Janb.200 May 11/23 May 11/23 May 11/23 Janb.200 May 11/23 May 11/23	0ctp)/33		Feb6/24	Base Numbe	۰r	
Non-ferrous Meta	0ctp)/33			Base Numbe	r	
Non-ferrous Meta Viscosity @ 100°(0ctp)/33		10.0-	Base Numbe	IT	
Non-ferrous Meta 0 0 0 0 0 0 0 0 0 0 0 0 0	0ctp)/33		Lape 0.54	Base Numbe	ir	
Non-ferrous Meta Non-ferrous Meta Non-ferrous Meta Non-ferrous Meta Non-ferrous Meta Non-ferrous Meta	0ctp)/33		Lape 0.54	Base Numbe	r	
Non-ferrous Meta Non-ferrous Meta Viscosity @ 100°C	0ctp)/33		Lape 0.54	Base Numbe	IT	
Non-ferrous Meta Non-ferrous Meta Viscosity @ 100°C	0ctp)/33		Lape 0.54	Base Numbe	r	
Non-ferrous Meta Non-ferrous Meta Viscosity @ 100°C	0ctp)/33		Lape 0.54	Base Numbe	r	
Non-ferrous Meta Non-ferrous Meta 00 00 00 00 00 00 00 00 00 0	0ctp)/33		Lape 0.54	Base Numbe	IT	
Non-ferrous Meta Non-ferrous Meta Non-fe	0ctp)/33		10.0	Base Numbe	r	
Non-ferrous Meta Non-ferrous Meta Non-ferrous Meta Non-ferrous Meta Non-ferrous Meta Non-ferrous Meta Non-ferrous Meta Non-ferrous Meta Sea Non-ferrous Meta Sea Sea Sea Sea Sea Sea Sea Sea Sea Se	0ctp)/33		10.0 Leaper Virus Leape Virus	Base Numbe	ır	
Non-ferrous Meta Non-ferrous Meta Non-ferrous Meta Viscosity @ 100°C	0ctp)/33		0.01 Per (um KOH/6) 	Base Numbe	۲ ۲	
Non-ferrous Meta Non-ferrous Meta Non-ferrous Meta Non-ferrous Meta Non-ferrous Meta Non-ferrous Meta Non-ferrous Meta Non-ferrous Meta Sea Non-ferrous Meta Sea Sea Sea Sea Sea Sea Sea Sea Sea Se	0ctp)/33		10.0 Leaper Virus Leape Virus	Base Numbe	۲ ۲	

0.0

Dec21/18

Jan6/20 -

May11/23.

0ct6/23 -

0ct13/23 -

0ct27/23 -

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 820 - Joplin Hauling Laboratory Sample No. : GFL0104939 Received : 15 Feb 2024 3700 West 7th Street Lab Number : 06089814 Tested : 19 Feb 2024 Joplin, MO Unique Number : 10882667 Diagnosed : 19 Feb 2024 - Wes Davis US 64801 Test Package : FLEET (Additional Tests: PercentFuel) Contact: James Jarrett Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369. jjarrett@gflenv.com * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (417)310-2802 F:

0ct13/23 -

0ct27/23 -

an25/24 -

Feb6/24 -

0ct6/23 -

10

Dec21/18 -

Jan6/20 -

May11/23 .

eb6/24.

an25/24