

### **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id

# 923059 PETERBILT 320

### TIER ONE 15W40 (--- GAL)

#### 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.

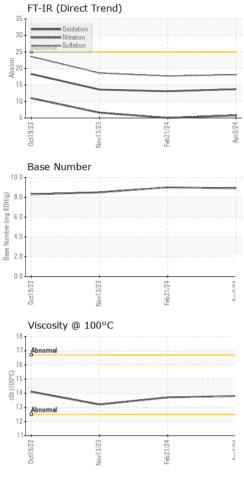
#### Fluid Condition

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

SAMPLE INFORM	<b>MATION</b>	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0102232	GFL0061424	GFL0061439
Sample Date		Client Info		03 Apr 2024	21 Feb 2024	13 Nov 2023
Machine Age	hrs	Client Info		24918	24918	24564
Oil Age	hrs	Client Info		0	522	600
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	>110	8	6	25
Chromium	ppm	ASTM D5185m	>4	0	0	<1
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		0	<1	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	1	1	1
Lead	ppm	ASTM D5185m	>45	0	0	0
Copper	ppm	ASTM D5185m	>85	1	<1	1
Tin	ppm	ASTM D5185m	>4	0	<1	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	<1
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 12	history1 17	history2 3
	ppm ppm		limit/base			
Boron		ASTM D5185m	limit/base	12	17	3
Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	12 0	17 0	3 <1
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	12 0 52	17 0 50	3 <1 54
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	12 0 52 0	17 0 50 <1	3 <1 54 0
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	12 0 52 0 860	17 0 50 <1 801	3 <1 54 0 827
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	12 0 52 0 860 1111	17 0 50 <1 801 1019	3 <1 54 0 827 1000
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	limit/base	12 0 52 0 860 1111 992	17 0 50 <1 801 1019 923	3 <1 54 0 827 1000 894
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	limit/base	12 0 52 0 860 1111 992 1172	17 0 50 <1 801 1019 923 990	3 <1 54 0 827 1000 894 1116
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		12 0 52 0 860 1111 992 1172 3782	17 0 50 <1 801 1019 923 990 2968	3 <1 54 0 827 1000 894 1116 3076
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	limit/base	12 0 52 0 860 1111 992 1172 3782 current	17 0 50 <1 801 1019 923 990 2968 history1	3 <1 54 0 827 1000 894 1116 3076 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b>	limit/base >30	12 0 52 0 860 1111 992 1172 3782 current 10	17 0 50 <1 801 1019 923 990 2968 history1 7	3 <1 54 0 827 1000 894 1116 3076 history2 3
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	limit/base >30	12 0 52 0 860 1111 992 1172 3782 current 10 3	17 0 50 <1 801 1019 923 990 2968 history1 7 1	3 <1 54 0 827 1000 894 1116 3076 history2 3 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185m ASTM D5185m	limit/base >30 >20	12 0 52 0 860 1111 992 1172 3782 <u>current</u> 10 3 <1	17 0 50 <1 801 1019 923 990 2968 history1 7 1 0	3 <1 54 0 827 1000 894 1116 3076 history2 3 <1 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	limit/base >30 >20 limit/base	12 0 52 0 860 1111 992 1172 3782 current 10 3 <1 current	17 0 50 <1 801 1019 923 990 2968 history1 7 1 0 0 history1	3 <1 54 0 827 1000 894 1116 3076 history2 3 <1 3 }
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	limit/base >30 >20 limit/base >3	12 0 52 0 860 1111 992 1172 3782 current 10 3 <1 current 0.2	17 0 50 <1 801 1019 923 990 2968 history1 7 1 0 bistory1 0.1	3 <1 54 0 827 1000 894 1116 3076 history2 3 <1 3 history2 0.3
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 TS ppm ppm ppm ppm spm ppm	ASTM D5185m ASTM D5185m	limit/base >30 >20 limit/base >3 >20	12 0 52 0 860 1111 992 1172 3782 current 10 3 <1 10 3 <1 current 0.2 5.8	17 0 50 <1 801 1019 923 990 2968 history1 7 1 0 history1 0.1 5.0	3 <1 54 0 827 1000 894 1116 3076 history2 3 <1 3 <1 3 history2 0.3 6.6
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 TS ppm ppm ppm ppm spm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7624	Imit/base >30 >20 Imit/base >3 >20 >3 >20 >3 >20 >3 >20	12 0 52 0 860 1111 992 1172 3782 current 10 3 <1 0.2 5.8 18.1	17 0 50 <1 801 1019 923 990 2968 history1 7 1 0 0 history1 0.1 5.0 17.7	3 <1 54 0 827 1000 894 1116 3076 history2 3 <1 3 history2 0.3 6.6 18.6
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 <b>TS</b> ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	imit/base >30 >20 Imit/base >3 >20 >30 >30 >30 >30 >30 >30 >30 >30 >30 >30 >30 >30 >30 >30 >30 >30 >30 >30	12 0 52 0 860 1111 992 1172 3782 current 10 3 <1 current 0.2 5.8 18.1 current	17 0 50 <1 801 1019 923 990 2968 history1 7 1 0 0 history1 0.1 5.0 17.7 history1	3 <1 54 0 827 1000 894 1116 3076 history2 3 <1 3 <1 3 history2 0.3 6.6 18.6 history2



## **OIL ANALYSIS REPORT**



end)	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	
Feb21/24 Apr3/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
Feb	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		13.8	13.7	13.2	
	GRAPHS							
	Ferrous Alloys							
24	80 - iron							
Feb 21/24	70 - nanonanan nickel							
	60							
°C	E 40							
	30							
	20-							
	10-							
	23 53 U		/24	/24				
	0ct19/22 Vov13/23		Feb21/24	Apr3/24				
	Non-ferrous Metal	s						
Feb21/24 -	<sup>10</sup> T							
Feb 2	8 - copper							
	• • • • • • • • • • • • • • • • • • •							
	6							
	u dd							
	2							
	0ct19/22 -		1/24 -	Apr3/24				
	0ct19/22 Nov13/23		Feb21/24	Apr				
	Viscosity @ 100°C	:			Base Number			
	<sup>18</sup> T	<sup>10.0</sup> T						
	17- Abnormal							
	16 -			(B/HC	.0 +			
	© 15-			Base Number (mg KOH/g)	.0 -			
	(3-15- -00[) t <sub>3</sub> 14-			mber				
	13			se Nu	.0 -			
	Abnormal			<sup>60</sup> 2	.0 -			
	11				0			
			Feb21/24 -	Apr3/24 -	0ct19/22	Vov13/23 -	Apr3/24 -	
	0ct19/22 Nov13/23		Feb 2	Apr	0ct1	Nov13/23 Feh21/24	Apr	
Laboratory Sample No. Lab Number Unique Number Test Package To discuss this sample report	: GFL0102232 : 06141933 : 10966741 : FLEET contact Customer Serve	Rece Teste Diagr	Received         : 08 Apr 2024           Tested         : 09 Apr 2024           Diagnosed         : 09 Apr 2024 - Wes Davis           e at 1-800-237-1369.			5826 Alder Conta	nmental - 642- Grand Rapids Hauling 5826 Alden Nash Ave SE Lowell, MI US 49331 Contact: Josh Arnett joshuaarnett@gflenv.com T:	
	are outside of the ISO 17025 scope of accreditation. pecifications are based on the simple acceptance decision rule (JCGM 106:2012)							

Report Id: GFL642 [WUSCAR] 06141933 (Generated: 04/09/2024 15:53:00) Rev: 1

Submitted By: See also GFL642B - Jessica Shearer