PROBLEM SUMMARY

VISCOSITY

Sample Rating Trend

Machine Id 729041-361666 Component

Diesel Engine Fluic PETRO CANADA DURON SHP 15W40 (--- GAL)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

PROBLEMATIC TEST RESULTS								
Sample Status				ATTENTION	ATTENTION	ATTENTION		
Visc @ 100°C	cSt	ASTM D445	15.4	<u> </u>	<u> </u>	▲ 12.1		

Customer Id: GFL814 Sample No.: GFL0074729 Lab Number: 05928642 Test Package: FLEET



To discuss the diagnosis or test data: Sean Felton +1 919-379-4092 sfelton@wearcheckusa.com

To change component or sample information: Customer Service +1 1-800-237-1369 customerservice@wearcheck.com

RECOMMENDED ACTIONS						
Action	Status	Date	Done By	Description		
Change Fluid			?	Oil and filter change at the time of sampling has been noted.		
Change Filter			?	Oil and filter change at the time of sampling has been noted.		

HISTORICAL DIAGNOSIS



30 Jun 2023 Diag: Jonathan Hester

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.



view report

view report

07 Jun 2023 Diag: Sean Felton



Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

16 May 2023 Diag: Don Baldridge

VISCOSITY



Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.







OIL ANALYSIS REPORT

SAMPLE INFORMATION method

Sample Rating Trend VISCOSITY

current

history1

history2

7290	941-	·361	666	
Componer	nt			

Diesel Engine

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

DIAGNOSIS

Maahina Id

Recommendation

Oil and filter change at the time of sampling has been noted. 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 oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

Oil Age Oil ChangedIrssClient Info181129153Oil Changed <th>Sample Number Sample Date Machine Age</th> <th>hrs</th> <th>Client Info Client Info Client Info</th> <th></th> <th>GFL0074729 14 Aug 2023 19456</th> <th>GFL0082665 30 Jun 2023 19275</th> <th>GFL0082673 07 Jun 2023 19146</th>	Sample Number Sample Date Machine Age	hrs	Client Info Client Info Client Info		GFL0074729 14 Aug 2023 19456	GFL0082665 30 Jun 2023 19275	GFL0082673 07 Jun 2023 19146
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >2.0 <1.0 <1.0 <1.0 <1.0 Glycol WC Method Imit/base current history1 history2 Iron ppm ASTM D5185m >100 64 36 20 Chromium ppm ASTM D5185m >4 <1 <1 <1 Nickel ppm ASTM D5185m >3 <1 0 0 Aluminum ppm ASTM D5185m >3 <1 0 0 Aluminum ppm ASTM D5185m >30 5 2 2 2 Lead ppm ASTM D5185m >15 1 <1 <1 1 Vanadium ppm ASTM D5185m 0 0 0 0 Copper ppm ASTM D5185m 0 0 0 2 Mandium ppm ASTM D5185m 0 </th <th>Oil Age Oil Changed Sample Status</th> <th>hrs</th> <th>Client Info Client Info</th> <th></th> <th>181 Changed ATTENTION</th> <th>129 Changed ATTENTION</th> <th>153 Changed ATTENTION</th>	Oil Age Oil Changed Sample Status	hrs	Client Info Client Info		181 Changed ATTENTION	129 Changed ATTENTION	153 Changed ATTENTION
Fuel WC Method >2.0 <1.0	CONTAMINAT	ION	method	limit/base	current	history1	history2
Głycol WC Method NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 64 36 20 Chromium ppm ASTM D5185m >20 2 2 <1 Nickel ppm ASTM D5185m >4 <1 <1 <1 Silver ppm ASTM D5185m >4 <1 <1 <1 Glycol ppm ASTM D5185m >20 6 2 2 2 Lead ppm ASTM D5185m >40 5 2 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 11 10 <td< th=""><th>Fuel</th><th></th><th>WC Method</th><th>>2.0</th><th><1.0</th><th><1.0</th><th><1.0</th></td<>	Fuel		WC Method	>2.0	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 64 36 20 Chromium ppm ASTM D5185m >20 2 2 <1 Nickel ppm ASTM D5185m >4 <1 <1 <1 Titanium ppm ASTM D5185m >3 <1 0 0 Aluminum ppm ASTM D5185m >30 5 2 1 Copper ppm ASTM D5185m >15 1 <1 <1 0 Vanadium ppm ASTM D5185m >15 1 <1 <1 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 ASTM D5185m 0 4 7 10 1 <1 <1 <1 Vanadium ppm ASTM D5185m 0 1 <1 <1 <1 Vanadium	Glycol		WC Method		NEG	NEG	NEG
Iron ppm ASTM D5185m >100 64 36 20 Chromium ppm ASTM D5185m >20 2 2 <1 Nickel ppm ASTM D5185m >4 <1 <1 <1 Titanium ppm ASTM D5185m >3 <1 0 0 Aluminum ppm ASTM D5185m >30 5 2 1 Copper ppm ASTM D5185m >330 5 2 2 Lead ppm ASTM D5185m >330 5 2 2 Vanadium ppm ASTM D5185m >330 5 2 2 Vanadium ppm ASTM D5185m >1 <1 <1 21 Vanadium ppm ASTM D5185m 1 <1 <1 10 Cadmium ppm ASTM D5185m 0 1 <1 <1 10 Boron ppm ASTM D5185m 0 1	WEAR METAL	S	method	limit/base	current	history1	history2
Chromium ppm ASTM D5185m >20 2 2 <1	Iron	ppm	ASTM D5185m	>100	64	36	20
Nickel ppm ASTM D5185m >4 <1	Chromium	ppm	ASTM D5185m	>20	2	2	<1
Titanium ppm ASTM D5185m <1	Nickel	ppm	ASTM D5185m	>4	<1	<1	<1
Silver ppm ASTM D5185m >3 <1	Titanium	ppm	ASTM D5185m		<1	<1	<1
Aluminum ppm ASTM D5185m >20 6 2 2 Lead ppm ASTM D5185m >40 5 2 1 Copper ppm ASTM D5185m >330 5 2 2 Tin ppm ASTM D5185m >1 <1 <1 <1 Vanadium ppm ASTM D5185m >15 1 <1 <1 <1 Cadmium ppm ASTM D5185m 0 2 0 0 0 Cadmium ppm ASTM D5185m 0 4 7 10 Boron ppm ASTM D5185m 0 4 7 10 Barium ppm ASTM D5185m 0 1 <1 <1 Magnese ppm ASTM D5185m 0 1 <1 <1 Magnesium ppm ASTM D5185m 1010 907 932 911 Calcium ppm ASTM D5185m 1270	Silver	ppm	ASTM D5185m	>3	<1	0	0
Lead ppm ASTM D5185m >40 5 2 1 Copper ppm ASTM D5185m >330 5 2 2 Tin ppm ASTM D5185m >15 1 <1 <1 Vanadium ppm ASTM D5185m <1 <1 0 Cadmium ppm ASTM D5185m current history1 history2 Boron ppm ASTM D5185m 0 4 7 10 Barium ppm ASTM D5185m 0 4 7 10 Barium ppm ASTM D5185m 0 1 <1 <1 Maganese ppm ASTM D5185m 0 1 <1 <1 Magnesium ppm ASTM D5185m 1010 907 932 911 Calcium ppm ASTM D5185m 1070 1040 1056 1061 Phosphorus ppm ASTM D5185m 1270 1	Aluminum	ppm	ASTM D5185m	>20	6	2	2
Copper ppm ASTM D5185m >330 5 2 2 Tin ppm ASTM D5185m >15 1 <1 <1 Vanadium ppm ASTM D5185m <1 <1 <1 Cadmium ppm ASTM D5185m <1 <1 0 Cadmium ppm ASTM D5185m 0 <1 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 7 10 Barium ppm ASTM D5185m 0 1 <1 <1 Maganese ppm ASTM D5185m 1010 907 932 911 Calcium ppm ASTM D5185m 1010 907 932 911 Calcium ppm ASTM D5185m 1010 907 932 911 Calcium ppm ASTM D5185m 1070 1046	Lead	ppm	ASTM D5185m	>40	5	2	1
Tin ppm ASTM D5185m >15 1 <1	Copper	ppm	ASTM D5185m	>330	5	2	2
Vanadium ppm ASTM D5185m <1	Tin	ppm	ASTM D5185m	>15	1	<1	<1
Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 7 10 Barium ppm ASTM D5185m 0 0 0 0 2 Molybdenum ppm ASTM D5185m 60 75 74 79 Manganese ppm ASTM D5185m 0 1 <1	Vanadium	ppm	ASTM D5185m		<1	<1	0
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 7 10 Barium ppm ASTM D5185m 0 0 0 2 Molybdenum ppm ASTM D5185m 60 75 74 79 Manganese ppm ASTM D5185m 0 1 <1 <1 Magnesium ppm ASTM D5185m 1010 907 932 911 Calcium ppm ASTM D5185m 1070 1040 1056 1061 Phosphorus ppm ASTM D5185m 1070 1040 1053 1035 Zinc ppm ASTM D5185m 1270 1146 1191 1203 Sulfur ppm ASTM D5185m 2060 3247 3498 3255 Solicon ppm ASTM D5185m >25 10 7 5 Sodium ppm ASTM D5185m >20<	Cadmium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 0 4 7 10 Barium ppm ASTM D5185m 0 0 0 2 Molybdenum ppm ASTM D5185m 60 75 74 79 Manganese ppm ASTM D5185m 0 1 <1	ADDITIVES		method	limit/base	current	history1	history2
Barium ppm ASTM D5185m 0 0 0 0 2 Molybdenum ppm ASTM D5185m 60 75 74 79 Manganese ppm ASTM D5185m 0 1 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 907 932 911 Calcium ppm ASTM D5185m 1010 907 932 911 Calcium ppm ASTM D5185m 1070 1040 1056 1061 Phosphorus ppm ASTM D5185m 1270 1146 1191 1203 Sulfur ppm ASTM D5185m 2060 3247 3498 3255 CONTAMINANT method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 7 7 7 Sodium ppm ASTM D5185m >20 7 7 7 Soot %	ABBIIIVE0		method	in the base	Current	HIStory	motory
Molybdenum ppm ASTM D5185m 60 75 74 79 Manganese ppm ASTM D5185m 0 1 <1 <1 Magnesium ppm ASTM D5185m 1010 907 932 911 Calcium ppm ASTM D5185m 1070 1040 1056 1061 Phosphorus ppm ASTM D5185m 1150 939 969 1035 Zinc ppm ASTM D5185m 1270 1146 1191 1203 Sulfur ppm ASTM D5185m 2060 3247 3498 3255 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 7 5 Sodium ppm ASTM D5185m >20 7 7 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 <	Boron	ppm	ASTM D5185m	0	4	7	10
Manganese ppm ASTM D5185m 0 1 <1	Boron Barium	ppm ppm	ASTM D5185m	0	4 0	7 0	10 2
Magnesium ppm ASTM D5185m 1010 907 932 911 Calcium ppm ASTM D5185m 1070 1040 1056 1061 Phosphorus ppm ASTM D5185m 1150 939 969 1035 Zinc ppm ASTM D5185m 1270 1146 1191 1203 Sulfur ppm ASTM D5185m 2060 3247 3498 3255 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 7 5 Sodium ppm ASTM D5185m >20 7 7 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 2 1.1 0.6 Nitration Abs/.imm *ASTM D7844 >3 2 1.4 20.2 18.8 FLUID DEGRADATION method<	Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	4 0 75	7 0 74	10 2 79
Calcium ppm ASTM D5185m 1070 1040 1056 1061 Phosphorus ppm ASTM D5185m 1150 939 969 1035 Zinc ppm ASTM D5185m 1270 1146 1191 1203 Sulfur ppm ASTM D5185m 2060 3247 3498 3255 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 7 5 Sodium ppm ASTM D5185m >25 10 7 5 Sodium ppm ASTM D5185m >20 7 7 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 2 1.1 0.6 Nitration Abs/.m *ASTM D7844 >3 21.4 20.2 18.8 FLUID DEGRADATION method limit/base <th>Boron Barium Molybdenum Manganese</th> <th>ppm ppm ppm ppm</th> <th>ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m</th> <th>0 0 60 0</th> <th>4 0 75 1</th> <th>7 0 74 <1</th> <th>10 2 79 <1</th>	Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	4 0 75 1	7 0 74 <1	10 2 79 <1
Phosphorus ppm ASTM D5185m 1150 939 969 1035 Zinc ppm ASTM D5185m 1270 1146 1191 1203 Sulfur ppm ASTM D5185m 2060 3247 3498 3255 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 7 5 Sodium ppm ASTM D5185m >25 10 7 5 Sodium ppm ASTM D5185m >20 7 7 7 Ntrassium ppm ASTM D5185m >20 7 7 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >3 2 1.1 0.6 Nitration Abs/.mm *ASTM D7415 >30 21.4 20.2 18.8 FLUID DEGRADATION method limit/base	Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	4 0 75 1 907	7 0 74 <1 932	10 2 79 <1 911
Zinc ppm ASTM D5185m 1270 1146 1191 1203 Sulfur ppm ASTM D5185m 2060 3247 3498 3255 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 7 5 Sodium ppm ASTM D5185m >25 10 7 5 Sodium ppm ASTM D5185m >20 7 7 7 Potassium ppm ASTM D5185m >20 7 7 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >3 2 1.1 0.6 Nitration Abs/.m *ASTM D7624 >20 9.1 7.6 6.2 Sulfation Abs/.imm *ASTM D7415 >30 21.4 20.2 18.8 FLUID DEGRADATION method limit/base	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	4 0 75 1 907 1040	7 0 74 <1 932 1056	10 2 79 <1 911 1061
Sulfur ppm ASTM D5185m 2060 3247 3498 3255 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 7 5 Sodium ppm ASTM D5185m >25 10 7 5 Sodium ppm ASTM D5185m >20 7 7 7 Potassium ppm ASTM D5185m >20 7 7 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 2 1.1 0.6 Nitration Abs/cm *ASTM D7624 >20 9.1 7.6 6.2 Sulfation Abs/.1mm *ASTM D7415 >30 21.4 20.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414	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 ASTM D5185m	0 0 60 0 1010 1070 1150	4 0 75 1 907 1040 939	7 0 74 <1 932 1056 969	10 2 79 <1 911 1061 1035
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 7 5 Sodium ppm ASTM D5185m >25 10 7 5 Sodium ppm ASTM D5185m >20 7 7 7 Potassium ppm ASTM D5185m >20 7 7 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 2 1.1 0.6 Nitration Abs/cm *ASTM D7624 >20 9.1 7.6 6.2 Sulfation Abs/.1mm *ASTM D7415 >30 21.4 20.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 14.3 13.1 Base Number (BN) mgKOH/g ASTM D2	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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270	4 0 75 1 907 1040 939 1146	7 0 74 <1 932 1056 969 1191	10 2 79 <1 911 1061 1035 1203
Silicon ppm ASTM D5185m >25 10 7 5 Sodium ppm ASTM D5185m >20 9 6 2 Potassium ppm ASTM D5185m >20 7 7 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >3 2 1.1 0.6 Nitration Abs/cm *ASTM D7624 >20 9.1 7.6 6.2 Sulfation Abs/.1mm *ASTM D7624 >20 9.1 7.6 6.2 Stuffation Abs/.1mm *ASTM D7615 >30 21.4 20.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7614 >25 14.4 14.3 13.1 Base Number (BN) mg KOH/g ASTM D2896 9.8 8.1 9.0 8.8	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm 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	4 0 75 1 907 1040 939 1146 3247	7 0 74 <1 932 1056 969 1191 3498	10 2 79 <1 911 1061 1035 1203 3255
Sodium ppm ASTM D5185m 9 6 2 Potassium ppm ASTM D5185m >20 7 7 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 2 1.1 0.6 Nitration Abs/cm *ASTM D7624 >20 9.1 7.6 6.2 Sulfation Abs/.tmm *ASTM D7415 >30 21.4 20.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.tmm *ASTM D7414 >25 14.4 14.3 13.1 Base Number (BN) mg K0H/g ASTM D2896 9.8 8.1 9.0 8.8	Boron 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 ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	4 0 75 1 907 1040 939 1146 3247 current	7 0 74 <1 932 1056 969 1191 3498 history1	10 2 79 <1 911 1061 1035 1203 3255 history2
Potassium ppm ASTM D5185m >20 7 7 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 2 1.1 0.6 Nitration Abs/cm *ASTM D7624 >20 9.1 7.6 6.2 Sulfation Abs/.1mm *ASTM D7415 >30 21.4 20.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 14.3 13.1 Base Number (BN) mg KOH/g ASTM D2896 9.8 8.1 9.0 8.8	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm 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 ASTM D5185m method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	4 0 75 1 907 1040 939 1146 3247 current 10	7 0 74 <1 932 1056 969 1191 3498 history1 7	10 2 79 <1 911 1061 1035 1203 3255 history2 5
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 2 1.1 0.6 Nitration Abs/cm *ASTM D7624 >20 9.1 7.6 6.2 Sulfation Abs/.1mm *ASTM D7415 >30 21.4 20.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 14.3 13.1 Base Number (BN) mg KOH/g ASTM D2896 9.8 8.1 9.0 8.8	Boron 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 ASTM D5185m method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	4 0 75 1 907 1040 939 1146 3247 current 10 9	7 0 74 <1 932 1056 969 1191 3498 history1 7 6	10 2 79 <1 911 1061 1035 1203 3255 history2 5 2
Soot % % *ASTM D7844 >3 2 1.1 0.6 Nitration Abs/cm *ASTM D7624 >20 9.1 7.6 6.2 Sulfation Abs/.1mm *ASTM D7615 >30 21.4 20.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 14.3 13.1 Base Number (BN) mg KOH/g ASTM D2896 9.8 8.1 9.0 8.8	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm 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	4 0 75 1 907 1040 939 1146 3247 current 10 9 7	7 0 74 <1 932 1056 969 1191 3498 history1 7 6 7	10 2 79 <1 911 1061 1035 1203 3255 history2 5 2 2 7
Nitration Abs/cm *ASTM D7624 >20 9.1 7.6 6.2 Sulfation Abs/.1mm *ASTM D7415 >30 21.4 20.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 14.3 13.1 Base Number (BN) mg KOH/g ASTM D2896 9.8 8.1 9.0 8.8	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 limit/base	4 0 75 1 907 1040 939 1146 3247 current 10 9 7 current	7 0 74 <1 932 1056 969 1191 3498 history1 7 6 7 6 7	10 2 79 <1 911 1061 1035 1203 3255 history2 5 2 7 7 history2
Sulfation Abs/.1mm *ASTM D7415 >30 21.4 20.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 14.3 13.1 Base Number (BN) mg KOH/g ASTM D2896 9.8 8.1 9.0 8.8	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3	4 0 75 1 907 1040 939 1146 3247 current 10 9 7 current 2	7 0 74 <1 932 1056 969 1191 3498 history1 7 6 7 history1 1.1	10 2 79 <1 911 1061 1035 1203 3255 history2 5 2 7 7 history2 0.6
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 14.3 13.1 Base Number (BN) mg KOH/g ASTM D2896 9.8 8.1 9.0 8.8	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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3 >20	4 0 75 1 907 1040 939 1146 3247 current 10 9 7 current 2 9.1	7 0 74 <1 932 1056 969 1191 3498 history1 7 6 7 6 7 history1 1.1 7.6	10 2 79 <1 911 1061 1035 1203 3255 history2 5 2 7 history2 0.6 6.2
Oxidation Abs/.1mm *ASTM D7414 >25 14.4 14.3 13.1 Base Number (BN) mg KOH/g ASTM D2896 9.8 8.1 9.0 8.8	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 D7844	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3 >20 >30	4 0 75 1 907 1040 939 1146 3247 current 10 9 7 current 2 9.1 21.4	7 0 74 <1 932 1056 969 1191 3498 history1 7 6 7 6 7 history1 1.1 7.6 20.2	10 2 79 <1 911 1061 1035 1203 3255 history2 5 2 7 history2 0.6 6.2 18.8
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.1 9.0 8.8	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	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3 >20 >30 limit/base	4 0 75 1 907 1040 939 1146 3247 current 10 9 7 current 2 9.1 21.4 current	7 0 74 <1 932 1056 969 1191 3498 history1 7 6 7 history1 1.1 7.6 20.2 history1	10 2 79 <1 911 1061 1035 1203 3255 history2 5 2 7 history2 0.6 6.2 18.8 history2
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7414	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3 >20 >30 limit/base >25	4 0 75 1 907 1040 939 1146 3247 current 10 9 7 current 2 9.1 21.4 current 14.4	7 0 74 <1 932 1056 969 1191 3498 history1 7 6 7 history1 1.1 7.6 20.2 history1 14.3	10 2 79 <1 911 1061 1035 1203 3255 history2 5 2 7 history2 0.6 6.2 18.8 history2 13.1

limit/base



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	11.8	1 1.8	▲ 12.1
GRAPHS						
Ferrous Alloys						





* - 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)