

OIL ANALYSIS REPORT

AUTOCAR % 3684C Component

Natural Gas Engine

PETRO CANADA DURON GEO LD 15W40 (6 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.



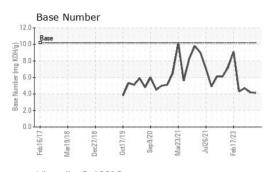


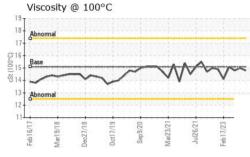
NORMAL

Sample Number Client Info IS De 2023 08 Constraint 08 Constraint	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 18322 17581 17581 Oil Age hrs Client Info 941 1171 977 Oil Changed Client Info Not Changd Changed Not Changed Sample Status Imit/base Current NoRMAL NORMAL Vater WC Method >0.1 NEG NEG NEG Water WC Method >0.1 NEG NEG NEG Iron ppm ASTM D5185m >50 10 17 15 Chromium ppm ASTM D5185m >4 <1 2 2 Nickel ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >3 3 19 15 Copper ppm ASTM D5185m >3 0 0 0 Copper ppm ASTM D5185m >4 0 1 1 Vanadium ppm ASTM D	Sample Number		Client Info		GFL0087501	GFL0087517	GFL0087539
Oil Age hrs Client Info 941 1171 977 Oil Changed Client Info Not Changed Not Changed Not Changed Not Changed Sample Status Image Image Image Not Changed Not Changed CONTAMINATION method Imit/base current History1 History2 Water WC Method >0.1 NEG NEG NEG Contraminon ppm ASTM D585m >50 10 17 15 Chromium ppm ASTM D585m >4 <1 2 2 Nickel ppm ASTM D585m >2 <1 <1 <1 <1 Silver ppm ASTM D585m >3 0 0 0 0 0 <1 3 Copper ppm ASTM D585m >3 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 <	Sample Date		Client Info		13 Dec 2023	08 Sep 2023	09 Aug 2023
Oil Changed Sample Status Client Info Not Changed NORMAL Not Changed NORMAL Not Changed NORMAL Not Changed NORMAL CONTAMINATION method imit/base current history1 history2 Water WC Method >0.1 NEG NEG NEG NEG WEAR METALS method imit/base current history1 history2 Iron ppm ASTM D5165m >50 10 17 15 Chromium ppm ASTM D5165m >2 <1	Machine Age	hrs	Client Info		18322	17581	17581
Sample Status Image NORMAL NORMAL NORMAL CONTAMINATION method imit/base current history1 history2 Water WC Method >0.1 NEG NEG NEG Wetar wC Method >0.1 NEG NEG NeG Iron ppm ASTM D5185m >50 10 17 15 Chromium ppm ASTM D5185m >2 <1 <1 <1 Nickel ppm ASTM D5185m >2 <1 <1 <1 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >3 3 19 15 Copper ppm ASTM D5185m >30 3 19 1 Vanadium ppm ASTM D5185m >30 6 0 1 Vanadium ppm ASTM D5185m 50 6 13 9 Barium <th>Oil Age</th> <th>hrs</th> <th>Client Info</th> <th></th> <th>941</th> <th>1171</th> <th>977</th>	Oil Age	hrs	Client Info		941	1171	977
CONTAMINATION method imit/base current history1 history2 Water WC Method >0.1 NEG NEG NEG Wetar METALS method imit/base current history1 history2 Iron ppm ASTM D5185m >50 10 17 15 Chromium ppm ASTM D5185m >2 <1 <1 <1 Nickel ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >9 2 4 3 10 1 Lead ppm ASTM D5185m >9 2 3 3 11 1 Vanadium ppm ASTM D5185m >35 2 3 3 11 1 Vanadium ppm ASTM D5185m >35 2 3 3 17 Vanadium ppm ASTM D5185m >4 0 1 1 1 <t< th=""><th>Oil Changed</th><th></th><th>Client Info</th><th></th><th>Not Changd</th><th>Changed</th><th>Not Changd</th></t<>	Oil Changed		Client Info		Not Changd	Changed	Not Changd
Water WC Method >0.1 NEG NEG NEG Wear ppm ASTM D5185m >50 10 17 15 Inon ppm ASTM D5185m >4 <1 2 2 Nickel ppm ASTM D5185m >2 <1 <1 <1 Titanium ppm ASTM D5185m >2 <1 <1 <1 Silver ppm ASTM D5185m >3 0 0 0 0 Aluminum ppm ASTM D5185m >3 2 3 3 3 Lead ppm ASTM D5185m >3 0 0 0 1 Vanadium ppm ASTM D5185m >4 0 1 1 1 Vanadium ppm ASTM D5185m >4 0 0 1 1 Vanadium ppm ASTM D5185m 50 6 13 9 1 Reoron ppm	Sample Status				NORMAL	NORMAL	NORMAL
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 10 17 15 Chromium ppm ASTM D5185m >4 <1 2 2 Nickel ppm ASTM D5185m >4 <1 <1 <1 Titanium ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >9 2 4 3 Lead ppm ASTM D5185m >9 2 3 3 Tin ppm ASTM D5185m >3 0 0 <1 Vanadium ppm ASTM D5185m >4 0 1 1 Vanadium ppm ASTM D5185m 5 0 0 0 0 ADDITVES method limit/base current history1 <th>CONTAMINAT</th> <th>ION</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	CONTAMINAT	ION	method	limit/base	current	history1	history2
Iron ppm ASTM D5185m >50 10 17 15 Chromium ppm ASTM D5185m >4 <1 2 2 Nickel ppm ASTM D5185m >2 <1 <1 <1 Tittanium ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >3 0 0 0 0 Aluminum ppm ASTM D5185m >3 0 0 0 0 Lead ppm ASTM D5185m >30 3 19 15 Copper ppm ASTM D5185m >4 0 1 1 Vanadium ppm ASTM D5185m >4 0 0 0 Cadmium ppm ASTM D5185m 50 6 13 9 Baron ppm ASTM D5185m 50 62 69 64 Magnesium ppm ASTM D5185m 50 <t< th=""><th>Water</th><th></th><th>WC Method</th><th>>0.1</th><th>NEG</th><th>NEG</th><th>NEG</th></t<>	Water		WC Method	>0.1	NEG	NEG	NEG
Chromium ppm ASTM D5185m >4 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >2 <1	Iron	ppm	ASTM D5185m	>50	10	17	15
Titanium ppm ASTM D5185m O <1	Chromium	ppm	ASTM D5185m	>4	<1	2	2
Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >9 2 4 3 Lead ppm ASTM D5185m >30 3 19 15 Copper ppm ASTM D5185m >35 2 3 3 Tin ppm ASTM D5185m >4 0 1 1 Vanadium ppm ASTM D5185m >4 0 1 1 Cadmium ppm ASTM D5185m >4 0 1 1 Cadmium ppm ASTM D5185m 50 6 13 9 Boron ppm ASTM D5185m 50 62 69 64 Manganese ppm ASTM D5185m 50 62 69 64 Manganese ppm ASTM D5185m 50 62 69 64 Manganese ppm ASTM D5185m 50 62 69	Nickel	ppm	ASTM D5185m	>2	<1	<1	<1
Atuminum ppm ASTM D5185m >9 2 4 3 Lead ppm ASTM D5185m >30 3 19 15 Copper ppm ASTM D5185m >35 2 3 3 Tin ppm ASTM D5185m >4 0 1 1 Vanadium ppm ASTM D5185m >4 0 0 <10 Cadmium ppm ASTM D5185m >4 0 0 0 <1 Cadmium ppm ASTM D5185m 0 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 6 13 9 Barium ppm ASTM D5185m 50 62 69 64 Magnaese ppm ASTM D5185m 50 538 711 692 Calcium ppm ASTM D5185m 780	Titanium	ppm	ASTM D5185m		0	<1	<1
Lead ppm ASTM D5185m >30 3 19 15 Copper ppm ASTM D5185m >35 2 3 3 Tin ppm ASTM D5185m >4 0 1 1 Vanadium ppm ASTM D5185m >4 0 1 1 Cadmium ppm ASTM D5185m >4 0 0 <1 Cadmium ppm ASTM D5185m 5 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 6 13 9 Barium ppm ASTM D5185m 50 62 69 64 Manganese ppm ASTM D5185m 50 62 69 64 Manganese ppm ASTM D5185m 50 538 741 692 Calcium ppm ASTM D5185m 750 1038	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper ppm ASTM D5185m >35 2 3 3 Tin ppm ASTM D5185m >4 0 1 1 Vanadium ppm ASTM D5185m <4 0 0 <10 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 6 13 9 Barium ppm ASTM D5185m 50 622 69 64 Manganese ppm ASTM D5185m 50 622 69 64 Magnesium ppm ASTM D5185m 50 622 69 64 Magnesium ppm ASTM D5185m 50 622 69 64 Magnesium ppm ASTM D5185m 50 538 741 692 Calcium ppm ASTM D5185m 780 715	Aluminum	ppm	ASTM D5185m	>9	2	4	3
Tin ppm ASTM D5185m >4 0 1 1 Vanadium ppm ASTM D5185m 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 6 13 9 Barium ppm ASTM D5185m 50 62 69 64 Magnaese ppm ASTM D5185m 50 62 69 64 Magnesium ppm ASTM D5185m 50 538 741 692 Calcium ppm ASTM D5185m 780 715 922 855 Zinc ppm ASTM D5185m 780 715 922 855 Zinc ppm ASTM D5185m 2040 1897 3338 3119 CONTAMINANT method limit/base current histor	Lead	ppm	ASTM D5185m	>30		19	15
Vanadium ppm ASTM D5185m <1	Copper	ppm	ASTM D5185m	>35	2	3	3
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES rnethod limit/base current history1 history2 Boron ppm ASTM D5185m 50 6 13 9 Barium ppm ASTM D5185m 50 6 13 9 Barium ppm ASTM D5185m 50 62 69 64 Manganese ppm ASTM D5185m 50 62 69 64 Magnesium ppm ASTM D5185m 50 62 69 64 Magnesium ppm ASTM D5185m 50 538 741 692 Calcium ppm ASTM D5185m 760 715 922 855 Zinc ppm ASTM D5185m 740 1038 1215 1176 Sulfur ppm ASTM D5185m >4100 5 6 5 Sodium ppm ASTM D5185m >20 1 2	Tin	ppm	ASTM D5185m	>4	0	1	1
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 6 13 9 Barium ppm ASTM D5185m 50 6 0 0 Molybdenum ppm ASTM D5185m 50 62 69 64 Magnesium ppm ASTM D5185m 560 538 741 692 Calcium ppm ASTM D5185m 560 538 741 692 Calcium ppm ASTM D5185m 760 715 922 855 Zinc ppm ASTM D5185m 780 715 922 855 Zinc ppm ASTM D5185m 780 715 922 855 Zinc ppm ASTM D5185m 2040 1897 3338 3119 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20	Vanadium	ppm	ASTM D5185m		<1	0	<1
Boron ppm ASTM D5185m 50 6 13 9 Barium ppm ASTM D5185m 5 0 0 0 Molybdenum ppm ASTM D5185m 50 62 69 64 Manganese ppm ASTM D5185m 0 0 2 <1 Magnesium ppm ASTM D5185m 560 538 741 692 Calcium ppm ASTM D5185m 560 538 741 692 Calcium ppm ASTM D5185m 1510 1706 2008 1969 Phosphorus ppm ASTM D5185m 780 715 922 855 Zinc ppm ASTM D5185m 870 1038 1215 1176 Sulfur ppm ASTM D5185m 2040 1897 3338 3119 CONTAMINANTS method Imit/base current history1 history2 Silicon ppm ASTM D5185m >1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 5 0 0 0 Molybdenum ppm ASTM D5185m 50 62 69 64 Manganese ppm ASTM D5185m 0 0 2 <1 Magnesium ppm ASTM D5185m 560 538 741 692 Calcium ppm ASTM D5185m 560 538 741 692 Calcium ppm ASTM D5185m 560 538 741 692 Calcium ppm ASTM D5185m 780 715 922 855 Zinc ppm ASTM D5185m 780 715 922 855 Zinc ppm ASTM D5185m 780 1038 1215 1176 Sulfur ppm ASTM D5185m 2040 1897 3338 3119 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20			method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 50 62 69 64 Manganese ppm ASTM D5185m 0 0 2 <1 Magnesium ppm ASTM D5185m 560 538 741 692 Calcium ppm ASTM D5185m 1510 1706 2008 1969 Phosphorus ppm ASTM D5185m 780 715 922 855 Zinc ppm ASTM D5185m 870 1038 1215 1176 Sulfur ppm ASTM D5185m 2040 1897 3338 3119 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 5 6 5 5 Sodium ppm ASTM D5185m >20 1 11 10 Potassium ppm ASTM D5185m >20 1 2.5 12.8 Soot % % 'ASTM	ADDITIVES		methou	inniv base	Guirent	Thistory	Thotory E
Manganese ppm ASTM D5185m 0 0 2 <1		ppm					
Magnesium ppm ASTM D5185m 560 538 741 692 Calcium ppm ASTM D5185m 1510 1706 2008 1969 Phosphorus ppm ASTM D5185m 780 715 922 855 Zinc ppm ASTM D5185m 870 1038 1215 1176 Sulfur ppm ASTM D5185m 2040 1897 3338 3119 CONTAMINANT method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 5 6 5 Sodium ppm ASTM D5185m >20 1 10 11 Potassium ppm ASTM D5185m >20 1 2 <1 NFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/.tm *ASTM D7415 >30	Boron		ASTM D5185m	50	6	13	9
Calcum ppm ASTM D5185m 1510 1706 2008 1969 Phosphorus ppm ASTM D5185m 780 715 922 855 Zinc ppm ASTM D5185m 870 1038 1215 1176 Sulfur ppm ASTM D5185m 870 1038 1215 1176 Sulfur ppm ASTM D5185m 2040 1897 3338 3119 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 5 6 5 Sodium ppm ASTM D5185m >20 1 11 10 Potassium ppm ASTM D5185m >20 1 2 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 11.8 12.5 12.8 Sulfation Abs/.tm *ASTM D7415	Boron Barium	ppm	ASTM D5185m ASTM D5185m	50 5	6 0	13 0	9 0
Phosphorus ppm ASTM D5185m 780 715 922 855 Zinc ppm ASTM D5185m 870 1038 1215 1176 Sulfur ppm ASTM D5185m 2040 1897 3338 3119 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 5 6 5 Sodium ppm ASTM D5185m >+100 11 10 11 Potassium ppm ASTM D5185m >20 1 2 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7844 20 11.8 12.5 12.8 Sulfation Abs/.1m *ASTM D7415 >30 24.1 26.2 26.2 FLUID DEGRADATION method limit/base	Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50	6 0 62	13 0 69	9 0 64
Zinc ppm ASTM D5185m 870 1038 1215 1176 Sulfur ppm ASTM D5185m 2040 1897 3338 3119 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 5 6 5 Sodium ppm ASTM D5185m >+100 11 10 11 Potassium ppm ASTM D5185m >20 1 2 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 11.8 12.5 12.8 Sulfation Abs/.tmm *ASTM D7624 >20 11.8 12.5 26.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.tmm *ASTM D77414	Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0	6 0 62 0	13 0 69 2	9 0 64 <1
Sulfur ppm ASTM D5185m 2040 1897 3338 3119 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 5 6 5 Sodium ppm ASTM D5185m >+100 11 10 11 Potassium ppm ASTM D5185m >20 1 2 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 11.8 12.5 12.8 Sulfation Abs/lm *ASTM D7624 >20 11.8 12.5 12.8 Sulfation Abs/lm *ASTM D7624 >20 24.1 26.2 26.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/lm *ASTM D7741	Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560	6 0 62 0 538	13 0 69 2 741	9 0 64 <1 692
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 5 6 5 Sodium ppm ASTM D5185m >+100 5 6 5 Sodium ppm ASTM D5185m >20 10 11 10 Potassium ppm ASTM D5185m >20 1 2 <1	Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560 1510	6 0 62 0 538 1706	13 0 69 2 741 2008	9 0 64 <1 692 1969
Silicon ppm ASTM D5185m >+100 5 6 5 Sodium ppm ASTM D5185m 10 11 10 Potassium ppm ASTM D5185m >20 1 2 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 11.8 12.5 12.8 Sulfation Abs/cm *ASTM D7624 >20 11.8 12.5 12.8 Sulfation Abs/.1mm *ASTM D7615 >30 24.1 26.2 26.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7614 >25 20.6 22.4 22.3	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	50 5 50 0 560 1510 780	6 0 62 0 538 1706 715	13 0 69 2 741 2008 922	9 0 64 <1 692 1969 855
Sodium ppm ASTM D5185m 10 11 10 Potassium ppm ASTM D5185m >20 1 2 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 11.8 12.5 12.8 Sulfation Abs/.1mm *ASTM D7415 >30 24.1 26.2 26.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.6 22.4 22.3	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870	6 0 62 0 538 1706 715 1038	13 0 69 2 741 2008 922 1215	9 0 64 <1 692 1969 855 1176
Potassium ppm ASTM D5185m >20 1 2 <1	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	50 5 50 0 560 1510 780 870 2040	6 0 62 0 538 1706 715 1038 1897	13 0 69 2 741 2008 922 1215 3338	9 0 64 <1 692 1969 855 1176 3119
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 11.8 12.5 12.8 Sulfation Abs/.tmm *ASTM D7415 >30 24.1 26.2 26.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.tmm *ASTM D7414 >25 20.6 22.4 22.3	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	50 5 50 0 560 1510 780 870 2040 limit/base	6 0 62 0 538 1706 715 1038 1897 current	13 0 69 2 741 2008 922 1215 3338 history1	9 0 64 <1 692 1969 855 1176 3119 history2
Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 11.8 12.5 12.8 Sulfation Abs/.1mm *ASTM D7415 >30 24.1 26.2 26.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.6 22.4 22.3	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	50 5 50 0 560 1510 780 870 2040 limit/base	6 0 62 0 538 1706 715 1038 1897 current 5	13 0 69 2 741 2008 922 1215 3338 history1 6	9 0 64 <1 692 1969 855 1176 3119 history2 5
Nitration Abs/cm *ASTM D7624 >20 11.8 12.5 12.8 Sulfation Abs/.1mm *ASTM D7415 >30 24.1 26.2 26.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.6 22.4 22.3	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 method ASTM D5185m	50 5 50 0 560 1510 780 870 2040 limit/base >+100	6 0 62 0 538 1706 715 1038 1897 current 5 10	13 0 69 2 741 2008 922 1215 3338 history1 6 11	9 0 64 <1 692 1969 855 1176 3119 history2 5 10
Sulfation Abs/.1mm *ASTM D7415 >30 24.1 26.2 26.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.6 22.4 22.3	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	50 5 50 0 560 1510 780 870 2040 limit/base >+100	6 0 62 0 538 1706 715 1038 1897 current 5 10 1	13 0 69 2 741 2008 922 1215 3338 history1 6 11 2	9 0 64 <1 692 1969 855 1176 3119 history2 5 10 <1 history2
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.6 22.4 22.3	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	ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870 2040 limit/base >+100	6 0 62 0 538 1706 715 1038 1897 current 5 10 1 1 current 0	13 0 69 2 741 2008 922 1215 3338 history1 6 11 2 history1 0.1	9 0 64 <1 692 1969 855 1176 3119 history2 5 10 <1 +istory2 0.1
Oxidation Abs/.1mm *ASTM D7414 >25 20.6 22.4 22.3	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	ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870 2040 limit/base >+100 	6 0 62 0 538 1706 715 1038 1897 current 5 10 1 1 current 0	13 0 69 2 741 2008 922 1215 3338 history1 6 11 2 history1 0.1	9 0 64 <1 692 1969 855 1176 3119 history2 5 10 <1 +istory2 0.1
	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	ASTM D5185m ASTM D5185m	50 5 50 0 560 1510 780 870 2040 limit/base >+100 . 20 . . 20 . . . 20 . . . 20	6 0 62 0 538 1706 715 1038 1897 <i>current</i> 5 10 1 1 <i>current</i> 0 11.8	13 0 69 2 741 2008 922 1215 3338 history1 6 11 2 history1 0.1 12.5	9 0 64 <1 692 1969 855 1176 3119 history2 5 10 <1 history2 0.1 12.8
Base Number (BN) mg KOH/g ASTM D2896 10.2 4.1 4.2 4.7	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	50 5 50 0 560 1510 780 870 2040 imit/base >+100 >20 imit/base	6 0 62 0 538 1706 715 1038 1897 current 5 10 1 1 current 0 11.8 24.1	13 0 69 2 741 2008 922 1215 3338 history1 6 11 2 history1 0.1 12.5 26.2	9 0 64 <1 692 1969 855 1176 3119 history2 5 10 <1 <1 history2 0.1 12.8 26.2
	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	50 5 50 0 560 1510 780 870 2040 limit/base >20 limit/base >20 limit/base	6 0 62 0 538 1706 715 1038 1897 <i>current</i> 5 10 1 1 <i>current</i> 0 11.8 24.1	13 0 69 2 741 2008 922 1215 3338 history1 6 11 2 history1 0.1 12.5 26.2 history1	9 0 64 <1 692 1969 855 1176 3119 history2 5 10 <1 5 10 <1 history2 0.1 12.8 26.2 history2

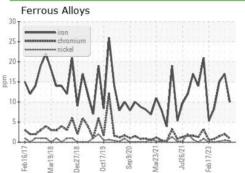


OIL ANALYSIS REPORT

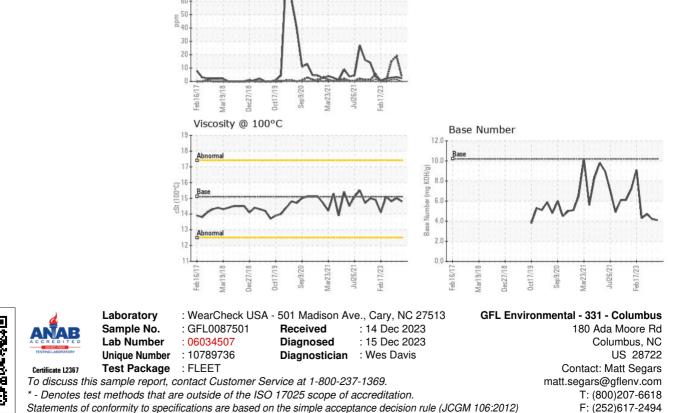




VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	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	15.1	14.8	15.0	14.8
GRAPHS						



Non-ferrous Metals



Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)