

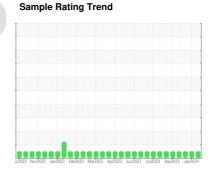
OIL ANALYSIS REPORT



MONTGOMERY MACK 925033-142560

Component **Diesel Engine**

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





DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

There is no indication of any contamination in the

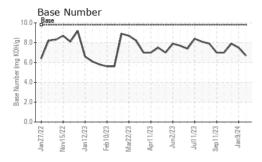
Fluid Condition

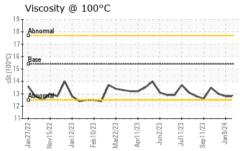
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Date	SAMPLE INFORM	MATION	method	limit/base	current		history2
Machine Age hrs Client Info 24243 24041 23943 305 306 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305 305	Sample Number		Client Info		GFL0088665	GFL0081884	GFL0091304
Machine Age hrs Client Info 24243 24041 23943 Oil Age hrs Client Info 202 403 305 Oil Changed Client Info Not Changed	Sample Date		Client Info		01 Feb 2024	09 Jan 2024	28 Dec 2023
Cilichanged Cilichanged Not Changed NoRMAL NORMAL NORMAL NORMAL NORMAL	Machine Age	hrs	Client Info		24243	24041	23943
CONTAMINATION	Oil Age	hrs	Client Info		202	403	305
CONTAMINATION	Oil Changed		Client Info		Not Changd	Changed	Not Changd
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water Glycol WC Method WC Method >0.2 NEG NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >12.0 16 15 9 Chromium ppm ASTM D5185m >2.0 <1 <1 <1 Nickel ppm ASTM D5185m >5 1 0 0 0 Silver ppm ASTM D5185m >2 <1 0 0 0 Aluminum ppm ASTM D5185m >20 9 6 3 3 <1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	CONTAMINATI	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Irron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1	WEAR METALS	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>120	16	15	9
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Description	Nickel		ASTM D5185m	>5	1	0	0
Aluminum ppm ASTM D5185m >20 9 6 3 Lead ppm ASTM D5185m >40 <1 0 0 Copper ppm ASTM D5185m >330 3 <1 <1 Tin ppm ASTM D5185m >15 1 0 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 2 0 2 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 0 1 0 <1 60 Magnesium ppm ASTM D5185m 1010 879 960 943 Zinc ppm ASTM D5185m 1150	Titanium	ppm	ASTM D5185m	>2	<1	0	<1
Lead	Silver		ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >330 3 <1	Aluminum	ppm	ASTM D5185m	>20	9	6	3
Copper ppm ASTM D5185m >330 3 <1	Lead		ASTM D5185m	>40	<1	0	0
Tin	Copper	ppm	ASTM D5185m	>330	3	<1	<1
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 2 0 2 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 59 61 60 Manganese ppm ASTM D5185m 0 1 0 <1	Tin				1	0	<1
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 2 0 2 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 59 61 60 Manganese ppm ASTM D5185m 0 1 0 <1 Magnesium ppm ASTM D5185m 1010 879 960 947 Calcium ppm ASTM D5185m 1070 978 1076 1061 Phosphorus ppm ASTM D5185m 1270 1171 1199 1263 Sulfur ppm ASTM D5185m 2060 2662 3074 2884 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 25 17 9 6 Sodium ppm ASTM D5185m 25	Vanadium	ppm	ASTM D5185m		0	0	0
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 59 61 60 Manganese ppm ASTM D5185m 0 1 0 <1							
Molybdenum ppm ASTM D5185m 60 59 61 60 Manganese ppm ASTM D5185m 0 1 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Manganese ppm ASTM D5185m 0 1 0 <1	ADDITIVES Boron	ppm					
Magnesium ppm ASTM D5185m 1010 879 960 947 Calcium ppm ASTM D5185m 1070 978 1076 1061 Phosphorus ppm ASTM D5185m 1150 960 983 943 Zinc ppm ASTM D5185m 1270 1171 1199 1263 Sulfur ppm ASTM D5185m 2060 2662 3074 2884 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 17 9 6 Sodium ppm ASTM D5185m 25 20 4 Potassium ppm ASTM D5185m >20 10 6 2 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7624 >20 8.6 8.0 7.3 Sulfation Abs/.1mm *ASTM D7415 >30 20.4 <th>Boron</th> <th></th> <th>ASTM D5185m</th> <th>0</th> <th>2</th> <th>0</th> <th>2</th>	Boron		ASTM D5185m	0	2	0	2
Calcium ppm ASTM D5185m 1070 978 1076 1061 Phosphorus ppm ASTM D5185m 1150 960 983 943 Zinc ppm ASTM D5185m 1270 1171 1199 1263 Sulfur ppm ASTM D5185m 2060 2662 3074 2884 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 17 9 6 Sodium ppm ASTM D5185m 25 20 4 Potassium ppm ASTM D5185m >20 10 6 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.5 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.0 7.3 Sulfation Abs/.1mm *ASTM D7415	Boron	ppm	ASTM D5185m ASTM D5185m	0	2 0	0	2
Phosphorus ppm ASTM D5185m 1150 960 983 943 Zinc ppm ASTM D5185m 1270 1171 1199 1263 Sulfur ppm ASTM D5185m 2060 2662 3074 2884 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 17 9 6 Sodium ppm ASTM D5185m 25 20 4 Potassium ppm ASTM D5185m >20 10 6 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.5 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.0 7.3 Sulfation Abs/.1mm *ASTM D7415 >30 20.4 19.1 18.6 FLUID DEGRADATION method	Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 59	0 0 61	2 0 60
Zinc ppm ASTM D5185m 1270 1171 1199 1263 Sulfur ppm ASTM D5185m 2060 2662 3074 2884 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 17 9 6 Sodium ppm ASTM D5185m 25 20 4 Potassium ppm ASTM D5185m >20 10 6 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.5 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.0 7.3 Sulfation Abs/.1mm *ASTM D7415 >30 20.4 19.1 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM	Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 59 1	0 0 61	2 0 60 <1
Sulfur ppm ASTM D5185m 2060 2662 3074 2884 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 17 9 6 Sodium ppm ASTM D5185m 25 20 4 Potassium ppm ASTM D5185m >20 10 6 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.5 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.0 7.3 Sulfation Abs/.1mm *ASTM D7415 >30 20.4 19.1 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.8 15.1 14.7	Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	2 0 59 1 879	0 0 61 0 960	2 0 60 <1 947
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 17 9 6 Sodium ppm ASTM D5185m 25 20 4 Potassium ppm ASTM D5185m >20 10 6 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.5 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.0 7.3 Sulfation Abs/.1mm *ASTM D7415 >30 20.4 19.1 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.8 15.1 14.7	Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	2 0 59 1 879 978	0 0 61 0 960 1076	2 0 60 <1 947 1061
Silicon ppm ASTM D5185m >25 17 9 6 Sodium ppm ASTM D5185m 25 20 4 Potassium ppm ASTM D5185m >20 10 6 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.5 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.0 7.3 Sulfation Abs/.1mm *ASTM D7415 >30 20.4 19.1 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.8 15.1 14.7	Boron Barium Molybdenum Manganese Magnesium Calcium	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	2 0 59 1 879 978 960	0 0 61 0 960 1076 983	2 0 60 <1 947 1061 943
Sodium ppm ASTM D5185m 25 20 4 Potassium ppm ASTM D5185m >20 10 6 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.5 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.0 7.3 Sulfation Abs/.1mm *ASTM D7415 >30 20.4 19.1 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.8 15.1 14.7	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 ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	2 0 59 1 879 978 960 1171	0 0 61 0 960 1076 983 1199	2 0 60 <1 947 1061 943 1263
Potassium ppm ASTM D5185m >20 10 6 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.5 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.0 7.3 Sulfation Abs/.1mm *ASTM D7415 >30 20.4 19.1 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.8 15.1 14.7	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 ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	2 0 59 1 879 978 960 1171 2662	0 0 61 0 960 1076 983 1199 3074	2 0 60 <1 947 1061 943 1263 2884
INFRA-RED	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	2 0 59 1 879 978 960 1171 2662	0 0 61 0 960 1076 983 1199 3074	2 0 60 <1 947 1061 943 1263 2884 history2
Soot % % *ASTM D7844 >4 0.5 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.0 7.3 Sulfation Abs/.1mm *ASTM D7415 >30 20.4 19.1 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.8 15.1 14.7	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	2 0 59 1 879 978 960 1171 2662 current	0 0 61 0 960 1076 983 1199 3074 history1	2 0 60 <1 947 1061 943 1263 2884 history2
Nitration Abs/cm *ASTM D7624 >20 8.6 8.0 7.3 Sulfation Abs/.1mm *ASTM D7415 >30 20.4 19.1 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.8 15.1 14.7	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	2 0 59 1 879 978 960 1171 2662 current 17	0 0 61 0 960 1076 983 1199 3074 history1	2 0 60 <1 947 1061 943 1263 2884 history2 6
Sulfation Abs/.1mm *ASTM D7415 >30 20.4 19.1 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.8 15.1 14.7	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	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	2 0 59 1 879 978 960 1171 2662 current 17 25 10	0 0 61 0 960 1076 983 1199 3074 history1 9 20 6	2 0 60 <1 947 1061 943 1263 2884 history2 6 4
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.8 15.1 14.7	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	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	2 0 59 1 879 978 960 1171 2662 current 17 25 10	0 0 61 0 960 1076 983 1199 3074 history1 9 20 6	2 0 60 <1 947 1061 943 1263 2884 history2 6 4 2
Oxidation Abs/.1mm *ASTM D7414 >25 15.8 15.1 14.7	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 ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	2 0 59 1 879 978 960 1171 2662 current 17 25 10 current 0.5	0 0 61 0 960 1076 983 1199 3074 history1 9 20 6 history1 0.4	2 0 60 <1 947 1061 943 1263 2884 history2 6 4 2
	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 ppm	ASTM D5185m method *ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1150 1270 2060 limit/base >25 >20 limit/base	2 0 59 1 879 978 960 1171 2662 current 17 25 10 current 0.5 8.6	0 0 61 0 960 1076 983 1199 3074 history1 9 20 6 history1 0.4 8.0	2 0 60 <1 947 1061 943 1263 2884 history2 6 4 2 history2 0.3 7.3
Base Number (BN) mg KOH/g ASTM D2896 9.8 6.7 7.5 7.9	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 Method *ASTM D7844 *ASTM D7624 *ASTM D76145	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >4 >20 >30	2 0 59 1 879 978 960 1171 2662 current 17 25 10 current 0.5 8.6 20.4	0 0 61 0 960 1076 983 1199 3074 history1 9 20 6 history1 0.4 8.0 19.1	2 0 60 <1 947 1061 943 1263 2884 history2 6 4 2 history2 0.3 7.3 18.6
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m Method *ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method *ASTM D7844 *ASTM D7624 *ASTM D7415 Method	0 0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >4 >20 >30 limit/base	2 0 59 1 879 978 960 1171 2662 current 17 25 10 current 0.5 8.6 20.4	0 0 61 0 960 1076 983 1199 3074 history1 9 20 6 history1 0.4 8.0 19.1	2 0 60 <1 947 1061 943 1263 2884 history2 6 4 2 history2 0.3 7.3 18.6 history2



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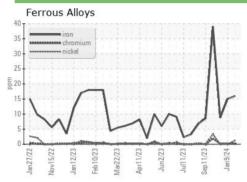


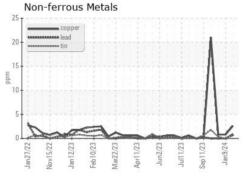


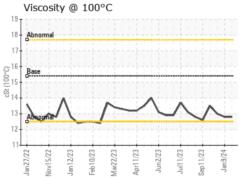
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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

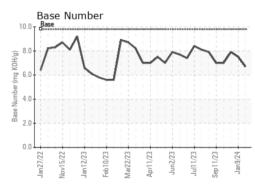
FLUID PROPI	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	12.8	12.8	13.0

GRAPHS













Certificate L2367

Laboratory Sample No.

Lab Number : 06081860 Unique Number : 10869305 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0088665 Received : 06 Feb 2024

Tested : 07 Feb 2024 Diagnosed

: 07 Feb 2024 - Wes Davis

GFL Environmental - 955 - Montgomery

1121 Wilbanks St Montgomery, AL US 36108

Contact: LISA REEVES

To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - 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)

T:

F: