

## Machine Id **PIERCE 2589** Component **Diesel Engine** Fluid **CHEVRON DELO 400 XLE 15W40 (35 QTS) RECOMMENDATION**

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

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All component wear rates are normal.

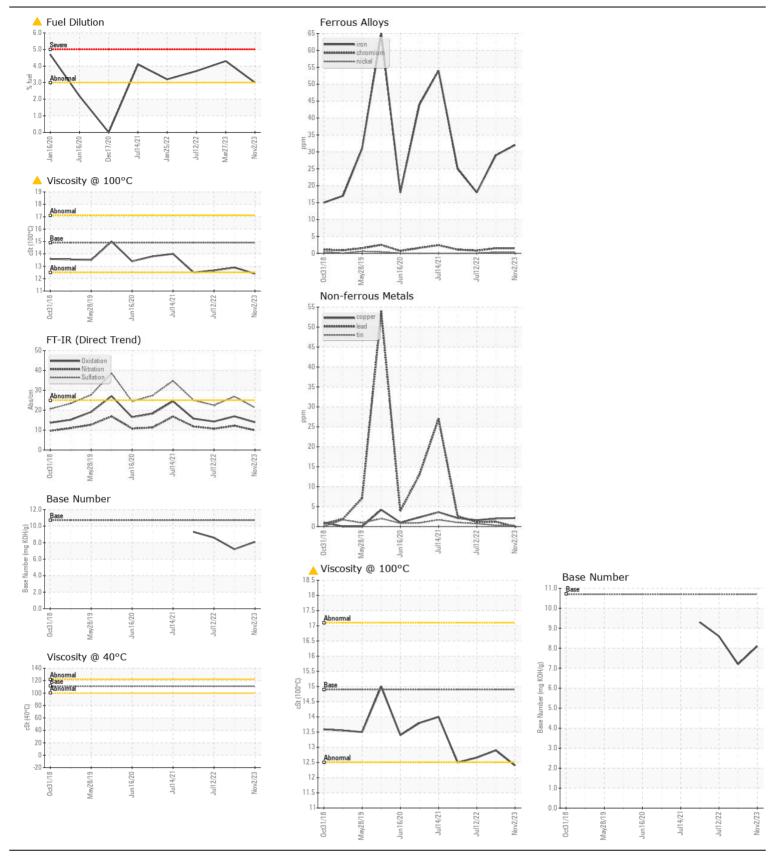
Light fuel dilution occurring.

WEAR

## **FLUID CONDITION**

Fuel is present in the oil and is lowering the viscosity. The BN result indicates that there is suitable alkalinity remaining in the oil.

Sample Date         Client Info         92 Nov 2023         27 Mar 2023         12 Jul 2022           Machine Age         hrs         Client Info         7840         7672         7227           Oil Age         hrs         Client Info         168         395         255           Filter Age         hrs         Client Info         Changed         Changed <th>Test</th> <th>UOM</th> <th>Method</th> <th>Limit/Abn</th> <th>Current</th> <th>History1</th> <th>History2</th>	Test	UOM	Method	Limit/Abn	Current	History1	History2
Machine Age         hrs         Client Info         7840         7672         7227           Oil Age         hrs         Client Info         168         395         255           Filter Age         hrs         Client Info         Changed         Changed         Changed         Changed           Sample Status         Client Info         Changed	Sample Number		Client Info		WC0879838	WC0771944	WC0708749
Oil Age         hrs         Client Info         168         395         255           Filter Age         hrs         Client Info         168         395         255           Oil Changed         Client Info         Changed         Changed         Changed         Changed           Filter Changed         Client Info         Changed         Changed         Changed         Changed           Sample Status         MARGINAL         MARGINAL         MARORMAL         ABNORMAL         ABNORMAL           Iron         ppm         ASTM D5185m         >200         32         29         18           Chromium         ppm         ASTM D5185m         >20         0         <11         0           Titanium         ppm         ASTM D5185m         >20         0         <14         8           Lead         ppm         ASTM D5185m         >30         0         1         1         1           Vanadium         ppm         ASTM D5185m         >30         2         2         2         1           Visual         NONE         NONE         NONE         NONE         NONE         NONE           Yellow Metal         scalar         'Visual         NONE	Sample Date		Client Info		02 Nov 2023	27 Mar 2023	12 Jul 2022
Filter Age         hrs         Client Info         168         395         255           Oil Changed         Client Info         Changed         Chan	Machine Age	hrs	Client Info		7840	7672	7227
Oil ChangedClient InfoChanged ChangedC	Oil Age	hrs	Client Info		168	395	255
Filter Changed Sample Status         Client Info         Changed MARGINAL         Changed ABNORMAL         Changed ABNORMAL         Changed ABNORMAL           Iron         ppm         ASTM D5185m<>200         32         29         18           Chromium         ppm         ASTM D5185m<>10         2         2         <1           Nickel         ppm         ASTM D5185m<>2         16         10         11           Silver         ppm         ASTM D5185m<>20         0         0         <1           Aluminum         ppm         ASTM D5185m<>30         0         1         1           Copper         ppm         ASTM D5185m<>30         2         2         2           Tin         ppm         ASTM D5185m<>30         2         1         0         <1           Vanadium         ppm         ASTM D5185m<>30         15         A         33         5           Potassium         ppm         ASTM D5185m<>30         15         A         33         5           Potassium         ppm         ASTM D5185m<>20         13         8         3         7           Silicon         pp         ASTM D5185m<>20         13         8         3         15 <td< th=""><th>Filter Age</th><th>hrs</th><th>Client Info</th><th></th><th>168</th><th>395</th><th>255</th></td<>	Filter Age	hrs	Client Info		168	395	255
Filter Changed Sample Status         Client Info         Changed MARCINAL         Changed ABNORMAL         Changed ABNORMAL         Changed ABNORMAL           Iron         ppm         ASTM D5185m         >200         32         29         18           Chromium         ppm         ASTM D5185m         >10         2         2         <1           Nickel         ppm         ASTM D5185m         >2         16         10         11           Silver         ppm         ASTM D5185m         >2         0         0         <1           Aluminum         ppm         ASTM D5185m         >30         0         1         1           Copper         ppm         ASTM D5185m         >30         0         1         <1           Vanadium         ppm         ASTM D5185m         >30         0         1         <1           Vanadium         ppm         ASTM D5185m         >30         15         A 33         5           Potassium         ppm         ASTM D5185m         >30         15         A 33         5           Potassium         ppm         ASTM D5185m         >20         13         8         3           Fuel         %         ASTM D5185m<	Oil Changed		Client Info		Changed	Changed	Changed
Iron         ppm         ASTM D5185m         >200         32         29         18           Chromium         ppm         ASTM D5185m         >10         2         2         <1           Nickel         ppm         ASTM D5185m         >4         <1         <1         0           Titanium         ppm         ASTM D5185m         >2         0         0         <1           Silver         ppm         ASTM D5185m         >30         15         14         8           Lead         ppm         ASTM D5185m         >30         0         1         1           Copper         ppm         ASTM D5185m         >30         2         2         2           Tin         ppm         ASTM D5185m         >30         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<         <1<         <1<         <1<	Filter Changed		Client Info		-	Changed	Changed
Chromium         ppm         ASTM D5185m         >10         2         2         <1	Sample Status				MARGINAL	ABNORMAL	ABNORMAL
Chromium         ppm         ASTM D5185m         >10         2         2         <1							
Nickel         ppm         ASTM D5185m         >4         <1	Iron	ppm		>200			
Titanium         ppm         ASTM D5185m         >2         16         10         11           Silver         ppm         ASTM D5185m         >2         0         0         <1           Aluminum         ppm         ASTM D5185m         >30         0         1         1           Copper         ppm         ASTM D5185m         >30         0         1         1           Copper         ppm         ASTM D5185m         >30         2         2         2         1           Vanadium         ppm         ASTM D5185m         >30         2         2         2         1           Vanadium         ppm         ASTM D5185m         >30         15         <1         0         <1           White Metal         scalar         *Visual         NONE         NONE         NONE         NONE         NONE           Yellow Metal         scalar         *Visual         NONE         NONE         NONE         NONE         NONE           Yellow Metal         scalar         *Visual         NONE         NONE         NORE         NORE         NEG           Silicon         ppm         ASTM D7844         >3         1.5         2.9 <t< th=""><th></th><th>ppm</th><th>ASTM D5185m</th><th></th><th>2</th><th></th><th></th></t<>		ppm	ASTM D5185m		2		
Silver         ppm         ASTM D5185m         >2         0         0         <11	Nickel	ppm	ASTM D5185m	>4	<1		-
Aluminum         ppm         ASTM D5185m         >30         15         14         8           Lead         ppm         ASTM D5185m         >30         0         1         1           Copper         ppm         ASTM D5185m         >30         2         2         2           Tin         ppm         ASTM D5185m         >4         <1         <1         <1           Vanadium         ppm         ASTM D5185m         >4         <1         0         <1         <1           White Metal         scalar         *Visual         NONE         NONE         NONE         NONE         NONE           Silicon         ppm         ASTM D5185m         >30         15         A 33         5           Potassium         ppm         ASTM D5185m         >30         15         A 33         5           Potasium         ppm         ASTM D5185m         >30         15         A 33         5           Silicon         ppm         ASTM D5185m         >30         15         A 33         5           Silicon         ppm         ASTM D5185m         >0         11.5         2.9         1.9           Nitration         Abs/.tmm<"ASTM D71624 <th>Titanium</th> <th>ppm</th> <th>ASTM D5185m</th> <th>&gt;2</th> <th>16</th> <th>10</th> <th>11</th>	Titanium	ppm	ASTM D5185m	>2	16	10	11
Lead         ppm         ASTM D5185m         >30         0         1         1           Copper         ppm         ASTM D5185m         >30         2         2         2           Tin         ppm         ASTM D5185m         >4         <1	Silver				-	-	
Copper         ppm         ASTM D5185m         >30         2         2         2           Tin         ppm         ASTM D5185m         >4         <1         <1         <1           Vanadium         ppm         ASTM D5185m         <1         0         <1         <1           White Metal         scalar         *Visual         NONE         NONE         NONE         NONE           Yellow Metal         scalar         *Visual         NONE         NONE         NONE         NONE         NONE           Silicon         ppm         ASTM D5185m<>30         15         A 33         5           Potassium         ppm         ASTM D5185m<>20         13         8         3           Fuel         %         ASTM D5185m<>20         13         8         3.7           Water         WC Method         >0.2         NEG         NEG         NEG           Soot %         %         "ASTM D7624<>20         9.9         12.2         10.7           Sulfation         Abs/.tmm<"ASTM D7615<>30         21.3         26.9         22.5           Silt         scalar         "Visual         NONE         NONE         NONE           Appearance		ppm					
Tin         ppm         ASTM D5185m         >4         <1					-		
Vanadium         ppm         ASTM D5185m         <1							
White Metalscalar*VisualNONENONENONENONENONEYellow Metalscalar*VisualNONENONENONENONENONESiliconppmASTM D5185m>3015A 335PotassiumppmASTM D5185m>201383Fuel%ASTM D3524>3.0A 3.04 4.3A 3.7WaterWC Method>0.2NEGNEGNEGGlycolWC Method>0.2NEGNEGNEGSoot %%'ASTM D7844>31.52.91.9NitrationAbs/cm'ASTM D7415>3021.326.922.5Siltscalar*VisualNONENONENONENONEDebrisscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLMolybdenumppmASTM D5185m996665BoronppmASTM D5185m644442MaganeseppmASTM D5185m926665639CalciumppmASTM D5185m1002766685ZincppmASTM D5185m7601002766685ZincppmASTM D5185m770413737763427OxidationAbs/Imm'ASTM D5185m				>4			
Yellow Metal         scalar         *Visual         NONE         NONE         NONE         NONE           Silicon         ppm         ASTM D5185m         >30         15         A 33         5           Potassium         ppm         ASTM D5185m         >20         13         8         3           Fuel         %         ASTM D5185m         >20         13         8         3.7           Water         WC Method         >0.2         NEG         NEG         NEG         NEG           Glycol         WC Method         >0.2         NEG         NEG         NEG         NEG           Soot %         %         'ASTM D7844         >3         1.5         2.9         1.9           Nitration         Abs/cm<'ASTM D7624         >20         9.9         12.2         10.7           Sulfation         Abs/imm<'ASTM D715         >30         21.3         26.9         22.5           Silt         scalar         *Visual         NONE         NONE         NONE         NONE           Debris         scalar         *Visual         NORE         NORML         NORML         NORML         NORML           Appearance         scalar         *Visual						-	
Silicon         ppm         ASTM D5185m         >30         15         ▲ 33         5           Potassium         ppm         ASTM D5185m         >20         13         8         3           Fuel         %         ASTM D5185m         >20         13         8         3.7           Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         >0.2         NEG         NEG         NEG           Soot %         %         'ASTM D7844         >3         1.5         2.9         1.9           Nitration         Abs/cm         'ASTM D7624         >20         9.9         12.2         10.7           Sulfation         Abs/cm         'ASTM D7614         >30         21.3         26.9         22.5           Silt         scalar         'Visual         NONE         NONE         NONE         NONE           Debris         scalar         'Visual         NONE         NONE         NORML         NORML         NORML           Appearance         scalar         'Visual         NORML         NORML         NORML         NORML           Gloron         ppm         ASTM D5185m         9<					-	-	
Potassium         ppm         ASTM D5185m         >20         13         8         3           Fuel         %         ASTM D3524         >3.0         ▲ 3.0         ▲ 4.3         ▲ 3.7           Water         WC Method         >0.2         NEG         NEG         NEG         NEG           Glycol         WC Method         >0.2         NEG         NEG         NEG         NEG           Soot %         %         *ASTM D7844         >3         1.5         2.9         1.9           Nitration         Abs/cm         *ASTM D7624         >20         9.9         12.2         10.7           Sulfation         Abs/cm         *ASTM D7624         >20         P.9         12.2         10.7           Sulfation         scalar         *Visual         NONE         NONE         NONE         NONE           Appearance         scalar<	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Potassium         ppm         ASTM D5185m         >20         13         8         3           Fuel         %         ASTM D3524         >3.0         ▲ 3.0         ▲ 4.3         ▲ 3.7           Water         WC Method         >0.2         NEG         NEG         NEG         NEG           Glycol         WC Method         >0.2         NEG         NEG         NEG         NEG           Soot %         %         *ASTM D7844         >3         1.5         2.9         1.9           Nitration         Abs/cm         *ASTM D7624         >20         9.9         12.2         10.7           Sulfation         Abs/cm         *ASTM D7624         >20         P.9         12.2         10.7           Sulfation         scalar         *Visual         NONE         NONE         NONE         NONE           Appearance         scalar<	Silicon	nom	AGTM D5185m	> 20	15	A 22	5
Fuel         %         ASTM D3524         >3.0         A 3.0         A 4.3         A 3.7           Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         NEG         NEG         NEG         NEG           Soot %         %         *ASTM D7844         >3         1.5         2.9         1.9           Nitration         Abs/cm         *ASTM D7624         >20         9.9         12.2         10.7           Sulfation         Abs/cm         *ASTM D7624         >20         9.9         12.2         10.7           Sulfation         Abs/m         *ASTM D7624         >20         9.9         12.2         10.7           Sulfation         Abs/m         *ASTM D7624         >20         9.9         12.2         10.7           Sulfation         Abs/atar         *Visual         NONE         NONE         NONE         NONE           Debris         scalar         *Visual         NONE         NONE         NONE         NORE           Appearance         scalar         *Visual         NORM         NORML         NORML         NORML           Odor         scalar         *Visual         N							
Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         NEG         NEG         NEG         NEG           Soot %         %         *ASTM D7844         >3         1.5         2.9         1.9           Nitration         Abs/cm         *ASTM D7624         >20         9.9         12.2         10.7           Sulfation         Abs/cm         *ASTM D7624         >20         9.9         12.2         10.7           Sulfation         Abs/tmm         *ASTM D7624         >20         9.9         12.2         10.7           Sulfation         Abs/tmm         *ASTM D7624         >20         9.9         12.2         10.7           Sulfation         Abs/tmm         *ASTM D7624         >20         9.9         12.2         10.7           Sulfation         Abs/tmm *ASTM D7115         >30         21.3         26.9         22.5           Silt         scalar         *Visual         NONE         NONE         NONE         NONE           Debris         scalar         *Visual         NORM         NORML         NORML         NORML           Odor         scalar         *Visual         NORML					-	-	
Glycol         WC Method         NEG         NEG         NEG           Soot %         %         *ASTM D7844         >3         1.5         2.9         1.9           Nitration         Abs/cm         *ASTM D7624         >20         9.9         12.2         10.7           Sulfation         Abs/cm         *ASTM D7614         >30         21.3         26.9         22.5           Silt         scalar         *Visual         NONE         NONE         NONE         NONE         NONE           Debris         scalar         *Visual         NONE         NONE         NONE         NONE         NONE           Sand/Dirt         scalar         *Visual         NOR         NORML         NORML         NORML         NORML           Appearance         scalar         *Visual         NORML         NORML         NORML         NORML           Odor         scalar         *Visual         NOR         NORML         NORML         NORML           Emulsified Water         scalar         *Visual         >0.2         NEG         NEG         NEG           Sodium         ppm         ASTM D5185m         9         9         6         Gistististististististististististististi		/0					
Soot %         %         *ASTM D7844         >3         1.5         2.9         1.9           Nitration         Abs/cm         *ASTM D7624         >20         9.9         12.2         10.7           Sulfation         Abs/cm         *ASTM D7624         >20         9.9         12.2         10.7           Sulfation         Abs/cm         *ASTM D7624         >30         21.3         26.9         22.5           Silt         scalar         *Visual         NONE         NONE         NONE         NONE         NONE           Debris         scalar         *Visual         NONE         NONE         NONE         NONE         NONE           Sand/Dirt         scalar         *Visual         NOR         NORML         NORML         NORML         NORML           Appearance         scalar         *Visual         NORM         NORML         NORML         NORML           Odor         scalar         *Visual         NOR         NORML         NORML         NORML           Emulsified Water         scalar         *Visual         >0.2         NEG         NEG         NEG           Sodium         ppm         ASTM D5185m         0         0         0 <t< th=""><th></th><th></th><th></th><th>20.2</th><th></th><th></th><th></th></t<>				20.2			
Nitration         Abs/cm         *ASTM D7624         >20         9.9         12.2         10.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.3         26.9         22.5           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         NORML           Odor         scalar         *Visual         NORML         NORML         NORML         NORML         NORML           Emulsified Water         scalar         *Visual         >0.2         NEG         NEG         NEG           Sodium         ppm         ASTM D5185m         9         9         6           Boron         ppm         ASTM D5185m         0         0         0           Molybdenum         ppm         ASTM D5185m         <1         <1<<<1         <1           Magnesium         ppm <t< th=""><th></th><th>0/_</th><th></th><th><u>\</u>3</th><th></th><th></th><th></th></t<>		0/_		<u>\</u> 3			
SulfationAbs/.1mm*ASTM D7415>3021.326.922.5Siltscalar*VisualNONENONENONENONEDebrisscalar*VisualNONENONENONENONESand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGSodiumppmASTM D5185m996BoronppmASTM D5185m000MolybdenumppmASTM D5185m6444442ManganeseppmASTM D5185m190214271408PhosphorusppmASTM D5185m7601002766685ZincppmASTM D5185m7601002766685ZincppmASTM D5185m2770413737763427OxidationAbs/.1mm*ASTM D7414>2513.916.914.3Base Number (BN)mg KOHgASTM D289610.78.17.28.6					-	-	
Siltscalar*VisualNONENONENONENONEDebrisscalar*VisualNONENONENONENONESand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGNEGSodiumppmASTM D5185m9966BoronppmASTM D5185m0000MolybdenumppmASTM D5185m6444442ManganeseppmASTM D5185m<100214271408PhosphorusppmASTM D5185m7601002766685ZincppmASTM D5185m7601002766685ZincppmASTM D5185m2770413737763427OxidationAbs/.tmm*ASTM D7414>2513.916.914.3Base Number (BN)mg KOHgASTM D289610.78.17.28.6							
Debrisscalar*VisualNONENONENONENONESand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGNEGSodiumppmASTM D5185m9966BoronppmASTM D5185m0000MolybdenumppmASTM D5185m644442ManganeseppmASTM D5185m<<1<1<1MagnesiumppmASTM D5185m9266655639639CalciumppmASTM D5185m7601002766685ZincppmASTM D5185m7601002766685ZincppmASTM D5185m2770413737763427OxidationAbs/.tmm*ASTM D7414>2513.916.914.3Base Number (BN)mg KOHgASTM D289610.78.17.28.6							
Sand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGNEGSodiumppmASTM D5185m996BoronppmASTM D5185m000MolybdenumppmASTM D5185m000MolybdenumppmASTM D5185m64444442MagnesiumppmASTM D5185m<6165639CalciumppmASTM D5185m190214271408PhosphorusppmASTM D5185m7601002766685ZincppmASTM D5185m8301147923796SulfurppmASTM D5185m2770413737763427OxidationAbs/.tmm*ASTM D7414>2513.916.914.3Base Number (BN)mg KOHgASTM D289610.78.17.28.6					-	-	
Appearancescalar*VisualNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGNEGSodiumppmASTM D5185m996BoronppmASTM D5185m1287873BariumppmASTM D5185m000MolybdenumppmASTM D5185m6444442ManganeseppmASTM D5185m<11<1<1MagnesiumppmASTM D5185m926665639CalciumppmASTM D5185m190214271408PhosphorusppmASTM D5185m7601002766685ZincppmASTM D5185m8301147923796SulfurppmASTM D5185m2770413737763427OxidationAbs/.imm*ASTM D7414>2513.916.914.3Base Number (BN)mg KOHgASTM D289610.78.17.28.6							
Odorscalar*VisualNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGNEGSodiumppmASTM D5185m996BoronppmASTM D5185m1287873BariumppmASTM D5185m000MolybdenumppmASTM D5185m644442ManganeseppmASTM D5185m<11<1<1MagnesiumppmASTM D5185m926665639CalciumppmASTM D5185m190214271408PhosphorusppmASTM D5185m7601002766685ZincppmASTM D5185m8301147923796SulfurppmASTM D5185m2770413737763427OxidationAbs/.imm*ASTM D7414>2513.916.914.3Base Number (BN)mg KOHgASTM D289610.78.17.28.6							
Emulsified Water         scalar         *Visual         >0.2         NEG         NEG         NEG           Sodium         ppm         ASTM D5185m         9         9         6           Boron         ppm         ASTM D5185m         128         78         73           Barium         ppm         ASTM D5185m         0         0         0           Molybdenum         ppm         ASTM D5185m         644         444         42           Manganese         ppm         ASTM D5185m         <1         <1         <1           Magnesium         ppm         ASTM D5185m         <926         6655         639           Calcium         ppm         ASTM D5185m         1902         1427         1408           Phosphorus         ppm         ASTM D5185m         760         1002         766         685           Zinc         ppm         ASTM D5185m         830         1147         923         796           Sulfur         ppm         ASTM D5185m         2770         4137         3776         3427           Oxidation         Abs/.Imm         *ASTM D2896         10.7         8.1         7.2         8.6					-		
Sodium         ppm         ASTM D5185m         9         9         6           Boron         ppm         ASTM D5185m         128         78         73           Barium         ppm         ASTM D5185m         0         0         0           Molybdenum         ppm         ASTM D5185m         64         44         42           Manganese         ppm         ASTM D5185m         <1         <1         <1           Magnesium         ppm         ASTM D5185m         926         665         639           Calcium         ppm         ASTM D5185m         1902         1427         1408           Phosphorus         ppm         ASTM D5185m         760         1002         766         685           Zinc         ppm         ASTM D5185m         830         1147         923         796           Sulfur         ppm         ASTM D5185m         2770         4137         3776         3427           Oxidation         Abs/.tmm         *ASTM D7414<>25         13.9         16.9         14.3           Base Number (BN)         mg KOHg         ASTM D2896         10.7         8.1         7.2         8.6					-		
Boron         ppm         ASTM D5185m         128         78         73           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         64         44         42           Manganese         ppm         ASTM D5185m         <1         <1         <1           Magnesium         ppm         ASTM D5185m         926         665         639           Calcium         ppm         ASTM D5185m         1902         1427         1408           Phosphorus         ppm         ASTM D5185m         760         1002         766         685           Zinc         ppm         ASTM D5185m         2770         4137         3776         3427           Oxidation         Abs/.tmm *ASTM D7414 >25         13.9         16.9         14.3           Base Number (BN)         mg KOH/g         ASTM D2896         10.7         8.1         7.2         8.6							
Barium         ppm         ASTM D5185m         0         0         0           Molybdenum         ppm         ASTM D5185m         64         44         42           Manganese         ppm         ASTM D5185m         <1         <1         <1           Magnesium         ppm         ASTM D5185m         926         665         639           Calcium         ppm         ASTM D5185m         1902         1427         1408           Phosphorus         ppm         ASTM D5185m         760         1002         766         685           Zinc         ppm         ASTM D5185m         830         1147         923         796           Sulfur         ppm         ASTM D5185m         2770         4137         3776         3427           Oxidation         Abs/.tmm *ASTM D7414 >25         13.9         16.9         14.3           Base Number (BN)         mg KOH/g         ASTM D2896         10.7         8.1         7.2         8.6	Sodium	ppm	ASTM D5185m		9	9	6
Molybdenum         ppm         ASTM D5185m         64         44         42           Manganese         ppm         ASTM D5185m         <1         <1         <1           Magnesium         ppm         ASTM D5185m         926         665         639           Calcium         ppm         ASTM D5185m         1902         1427         1408           Phosphorus         ppm         ASTM D5185m         760         1002         766         685           Zinc         ppm         ASTM D5185m         830         1147         923         796           Sulfur         ppm         ASTM D5185m         2770         4137         3776         3427           Oxidation         Abs/.tmm<*ASTM D7414<>25         13.9         16.9         14.3           Base Number (BN)         mg KOH/g         ASTM D2896         10.7         8.1         7.2         8.6	Boron	ppm	ASTM D5185m		128	78	73
Manganese         ppm         ASTM D5185m         <1	Barium	ppm	ASTM D5185m		0		
Magnesium         ppm         ASTM D5185m         926         665         639           Calcium         ppm         ASTM D5185m         1902         1427         1408           Phosphorus         ppm         ASTM D5185m         760         1002         766         685           Zinc         ppm         ASTM D5185m         830         1147         923         796           Sulfur         ppm         ASTM D5185m         2770         4137         3776         3427           Oxidation         Abs/.tmm         *ASTM D7414         >25         13.9         16.9         14.3           Base Number (BN)         mg KOH/g         ASTM D2896         10.7         8.1         7.2         8.6	Molybdenum	ppm	ASTM D5185m		64		
Calcium         ppm         ASTM D5185m         1902         1427         1408           Phosphorus         ppm         ASTM D5185m         760         1002         766         685           Zinc         ppm         ASTM D5185m         830         1147         923         796           Sulfur         ppm         ASTM D5185m         2770         4137         3776         3427           Oxidation         Abs/.tmm         *ASTM D7414         >25         13.9         16.9         14.3           Base Number (BN)         mg KOH/g         ASTM D2896         10.7         8.1         7.2         8.6	-	ppm					
Phosphorus         ppm         ASTM D5185m         760         1002         766         685           Zinc         ppm         ASTM D5185m         830         1147         923         796           Sulfur         ppm         ASTM D5185m         2770         4137         3776         3427           Oxidation         Abs/.tmm         *ASTM D7414         >25         13.9         16.9         14.3           Base Number (BN)         mg KOH/g         ASTM D2896         10.7         8.1         7.2         8.6	0	ppm					
Zinc         ppm         ASTM D5185m         830         1147         923         796           Sulfur         ppm         ASTM D5185m         2770         4137         3776         3427           Oxidation         Abs/.tmm         *ASTM D7141         >25         13.9         16.9         14.3           Base Number (BN)         mg KOH/g         ASTM D2896         10.7         8.1         7.2         8.6							
Sulfur         ppm         ASTM D5185m         2770         4137         3776         3427           Oxidation         Abs/.tmm         *ASTM D7414         >25         13.9         16.9         14.3           Base Number (BN)         mg KOH/g         ASTM D2896         10.7         8.1         7.2         8.6		ppm					
Oxidation         Abs/.1mm         *ASTM D7414         >25         13.9         16.9         14.3           Base Number (BN)         mg KOH/g         ASTM D2896         10.7         8.1         7.2         8.6	-						
Base Number (BN)         mg KOH/g         ASTM D2896         10.7         8.1         7.2         8.6							
Visc @ 100°C cSt ASTM D445 14.9 (4 12.4) 12.9 12.66	( )						
	Visc @ 100°C	cSt	ASTM D445	14.9	12.4	12.9	12.66



TOWN OF CARY Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 Sample No. Received 420 JAMES JACKSON AVENUE : WC0879838 : 20 Nov 2023 Lab Number : 06012003 Tested : 29 Nov 2023 CARY, NC : 29 Nov 2023 - Jonathan Hester US 27513 Unique Number : 10751147 Diagnosed Test Package : CONST (Additional Tests: FuelDilution, KV40, PercentFuel, TBN) Contact: BRANDON PASINSKI Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369. brandon.pasinski@carync.gov \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (919)469-4098 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) F: (919)380-6420

Contact/Location: BRANDON PASINSKI - TOWCARNC