

## WEAR NORMAL CONTAMINATION **SEVERE FLUID CONDITION ABNORMAL**

RECOMMENDATION

## (TX106468) 10261 Diesel Engine

## PETRO CANADA DURON SHP 15W40 (7 GAL)

We advise that you check the fuel injection system. We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

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All component wear rates are normal.

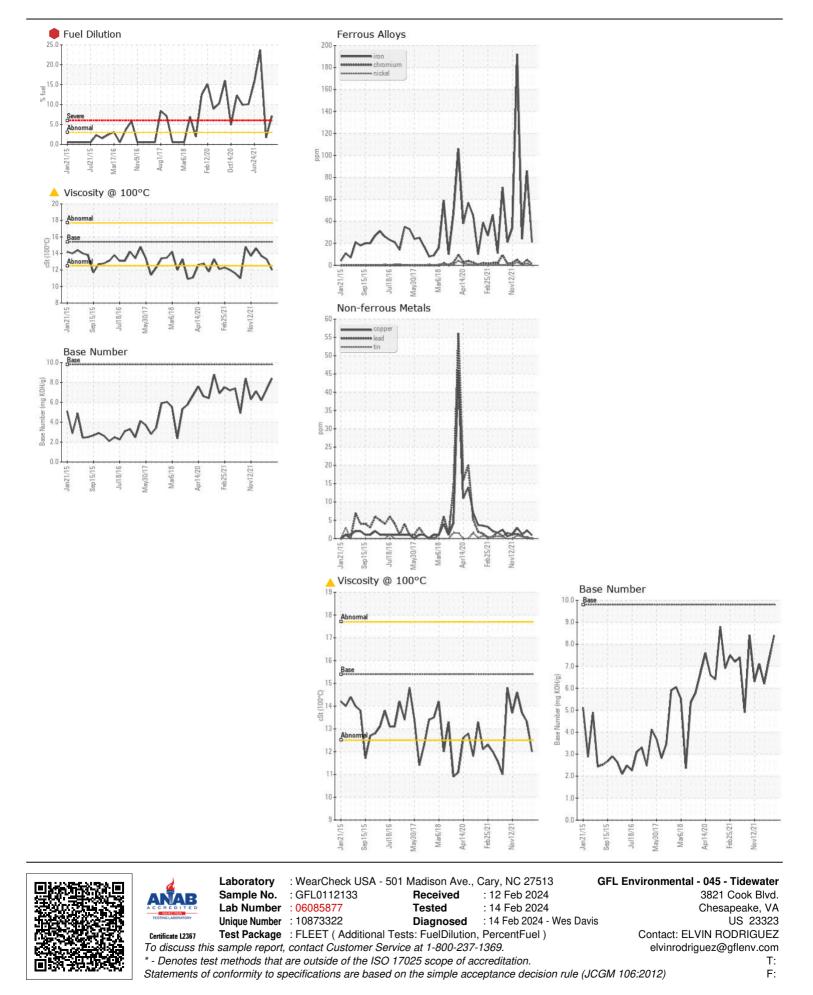
## CONTAMINATION

There is a high amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

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The BN result indicates that there is suitable alkalinity remaining in the oil. Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable due to the presence of contaminants.

Sample DateClient Info08 Feb 202404 Apr 202306 Dec 202Machine AgehrsClient Info851038510385103Oil AgehrsClient Info85103023953Filter AgehrsClient Info06001295Oil ChangedClient InfoN/AChangedChanged	JW40 (7 G	<u>¬</u> ∟)			$\frown$		
Sample DateClient Info08 Feb 20204 Apr 202306 Dec 202Machine AgehrsClient Info851038510385103023953Oil AgehrsClient Info06001295Oil ChangedClient InfoN/AChangedChangedFilter AgehrsClient InfoN/AN/AChangedSample StatusClient InfoN/AN/AChangedIronppmASTM D5185>90218624IronppmASTM D5185>20151NickelppmASTM D5185>2001SilverppmASTM D5185>2001ItaniumppmASTM D5185>204710LeadppmASTM D5185>30<1211CopperppmASTM D5185>30<12131Velow Metalscalar'VisualNONENONENONENONENONESiliconppmASTM D5185>2003151510<11Velow Metalscalar'VisualNONENONENONENONENONENONESiliconppmASTM D5185>2003151510<110Velow Metalscalar'VisualNONENONENONENONENONENONESiliconppmASTM D	Test	UOM	Method	Limit/Abn	Current	History1	History2
Machine Age         hrs         Client Info         85103         85103         85103         85103           Oil Age         hrs         Client Info         0         600         1295           Filter Age         hrs         Client Info         N/A         Changed         Changed           Oil Changed         Client Info         N/A         N/A         Changed           Sample Status         SEVERE         NORMAL         NORMAL           Iron         ppm         ASTM D5185m         >20         1         5           Nickel         ppm         ASTM D5185m         >20         0         0         -1           Nickel         ppm         ASTM D5185m         >20         0         0         -1           Nickel         ppm         ASTM D5185m         >20         0         -1         -1           Aluminum         ppm         ASTM D5185m         >20         0         -1         -1           Vanadium         ppm         ASTM D5185m         >30         <1         2         1           Tin         ppm         ASTM D5185m         >30         <1         <1         -1           Vanadium         ppm         ASTM D518	Sample Number		Client Info		GFL0112133	GFL0052205	GFL0060120
Oil AgehrsClient Info85103023953Filter AgehrsClient InfoO6001295Oil ChangedClient InfoN/AChangedChangedFilter ChangedClient InfoSEVERENORMALNORMALIronppmASTM D5185n>2018624ChromiumppmASTM D5185n>20151NickelppmASTM D5185n>20021SilverppmASTM D5185n>20004SilverppmASTM D5185n>20004CopperppmASTM D5185n>20011LeadppmASTM D5185n>330<1211VanadiumppmASTM D5185n>330<1211VanadiumppmASTM D5185n>20031VanadiumppmASTM D5185n>20031VanadiumppmASTM D5185n>20031VanadiumppmASTM D5185n>200315Fuelow Metalscalar"VisualNONENONENONEVallow Metalscalar"VisualNONENONENONEVallow Metalscalar"VisualNONENONENONESiliconppmASTM D5185n>20BAS14.42.1VandumppmASTM D5185n20 </th <th>Sample Date</th> <th></th> <th>Client Info</th> <th></th> <th>08 Feb 2024</th> <th>04 Apr 2023</th> <th>06 Dec 2022</th>	Sample Date		Client Info		08 Feb 2024	04 Apr 2023	06 Dec 2022
Filter Age Oil ChangedInsClient InfoNAChanged ChangedChanged ChangedNAChanged Changed Sample StatusClient InfoNANAChanged ChangedChanged ChangedIronppmASTM D5185m ASTM D5185m>90218624ChromiumppmASTM D5185m ASTM D5185m>20151NickelppmASTM D5185m ASTM D5185m>2000-1SilverppmASTM D5185m ASTM D5185m>204710LeadppmASTM D5185m ASTM D5185m>204-1-1CopperppmASTM D5185m ASTM D5185m0-1-1-1TinppmASTM D5185m ASTM D5185m0-1-1-1VanadiumppmASTM D5185m ASTM D5185m00-1-1 <tr< th=""><th>Machine Age</th><th>hrs</th><th>Client Info</th><th></th><th>85103</th><th>85103</th><th>85103</th></tr<>	Machine Age	hrs	Client Info		85103	85103	85103
Oil ChangedClient InfoN/AChangedChangedFilter ChangedClient InfoNAN/AChangedSample StatusClient InfoNAN/AChangedIronppmASTM D5185m>90218624NickelppmASTM D5185m>20151NickelppmASTM D5185m>202<1SilverppmASTM D5185m>200<1SilverppmASTM D5185m>204710LeadppmASTM D5185m>400<1<1CopperppmASTM D5185m>330<121TinppmASTM D5185m>330<1<1<1VanadiumppmASTM D5185m>50<1<1<1VanadiumppmASTM D5185m>256208PolassiumppmASTM D5185m>200315Fuel%ASTM D5185m>200315FuelWC Method50.2NCRENCRENCRESoliconppmASTM D5185m>200315FuelWC Method50.2NCRENCRENCRESoliconppmASTM D5185m200315FuelWC Method50.2NCRENCRENCRESoliconppmASTM D5185m20NCRENCRE <tr<< th=""><th>Oil Age</th><th>hrs</th><th>Client Info</th><th></th><th>85103</th><th>0</th><th>23953</th></tr<<>	Oil Age	hrs	Client Info		85103	0	23953
Filter Changed Sample StatusClient InfoN/AN/AChanged NORMALIronppmASTM D5185m>90218624ChromiumppmASTM D5185m>20151NickelppmASTM D5185m>2002<1TitaniumppmASTM D5185m>200<1SilverppmASTM D5185m>200<1LeadppmASTM D5185m>204710LeadppmASTM D5185m>400<1<1CopperppmASTM D5185m>330<121VinadiumppmASTM D5185m>150<1<1VinadiumppmASTM D5185m>256208Pellow Metalscalar'VisualNONENONENONENONEVilioud Metalscalar'VisualNONENONENONENONESiliconppmASTM D5185m>200315Fuel%ASTM D5185m>200315Fuel%ASTM D5185m>200315SiliconppmASTM D5185m>200315Fuel%ASTM D5185m>208.41.4.21.0VistalNORENORENORENORENORESiliconppmASTM D5185m101.42.11.4Sil	Filter Age	hrs	Client Info		0	600	1295
Sample Status         SEVERE         NORMAL         NORMAL           Iron         ppm         ASTM D5185m         >90         21         86         24           Chromium         ppm         ASTM D5185m         >20         1         5         1           Nickel         ppm         ASTM D5185m         >2         0         2         <1           Titanium         ppm         ASTM D5185m         >2         0         0         <1           Silver         ppm         ASTM D5185m         >20         4         7         10           Lead         ppm         ASTM D5185m         >40         0         <1         <1         <1           Copper         ppm         ASTM D5185m         >15         0         <1         <1         <1           Vanadium         ppm         ASTM D5185m         >15         0         <1         <1         <1           Vanadium         ppm         ASTM D5185m         >25         6         20         8           Potassium         ppm         ASTM D5185m         >20         0         3         15           Fuel         %         ASTM D5185m         >20         0         3<	Oil Changed		Client Info		N/A	Changed	Changed
Iron         ppm         ASTM D5185m         >90         21         86         24           Chromium         ppm         ASTM D5185m         >20         1         5         1           Nickel         ppm         ASTM D5185m         >2         0         2         <1           Titanium         ppm         ASTM D5185m         >2         0         0         <1           Silver         ppm         ASTM D5185m         >20         4         7         10           Lead         ppm         ASTM D5185m         >20         4         7         10           Lead         ppm         ASTM D5185m         >30         <1         2         1           Tin         ppm         ASTM D5185m         >15         0         <1         <1           Vanadium         ppm         ASTM D5185m         >15         0         <1         <1           Visual         NONE         NONE         NONE         NONE         NONE         NONE           Yellow Metal         scalar         *Visual         NONE         NONE         NONE         NONE         NONE           Silicon         ppm         ASTM D5185m         >22         <	Filter Changed		Client Info		N/A	N/A	Changed
Chromium         ppm         ASTM D5185m         >20         1         5         1           Nickel         ppm         ASTM D5185m         >2         0         2         <1           Titanium         ppm         ASTM D5185m         >2         0         0         <1           Silver         ppm         ASTM D5185m         >20         4         7         10           Lead         ppm         ASTM D5185m         >20         4         7         10           Lead         ppm         ASTM D5185m         >20         4         7         10           Copper         ppm         ASTM D5185m         >30         <1         2         1           Tin         ppm         ASTM D5185m         >15         0         <1         <1           Vanadium         ppm         ASTM D5185m         >10         <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< <th>Sample Status</th> <th></th> <th></th> <th></th> <th>SEVERE</th> <th>NORMAL</th> <th>NORMAL</th>	Sample Status				SEVERE	NORMAL	NORMAL
Chromium         ppm         ASTM D5185m         >20         1         5         1           Nickel         ppm         ASTM D5185m         >2         0         2         <1           Titanium         ppm         ASTM D5185m         >2         0         0         <1           Silver         ppm         ASTM D5185m         >20         4         7         10           Lead         ppm         ASTM D5185m         >20         4         7         10           Lead         ppm         ASTM D5185m         >20         4         7         10           Copper         ppm         ASTM D5185m         >30         <1         2         1           Tin         ppm         ASTM D5185m         >15         0         <1         <1           Vanadium         ppm         ASTM D5185m         >10         <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< <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>							
Nickel         ppm         ASTM D5185m         >2         0         2         <1							
Titanium         ppm         ASTM D5185m         >2         0         0         <1		ppm					
Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >20         4         7         10           Lead         ppm         ASTM D5185m         >40         0         <1         <1           Copper         ppm         ASTM D5185m         >330         <1         2         1           Tin         ppm         ASTM D5185m         >15         0         <1         <1           Vanadium         ppm         ASTM D5185m         >15         0         <1         <1           Vanadium         ppm         ASTM D5185m         >25         6         20         8           Vellow Metal         scalar         "Visual         NONE         NONE         NONE         NONE           Silicon         ppm         ASTM D5185m         >20         0         3         15           Fuel         %         ASTM D5185m         >20         NEG         NEG         NEG           Vater         WC Method         >0.2         NEG         NEG         NEG         S           Solfation         Abs/rm         "ASTM D7184         >6         0.3		ppm			-		
Aluminum         ppm         ASTM D5185m         >20         4         7         10           Lead         ppm         ASTM D5185m         >40         0         <1         <1           Copper         ppm         ASTM D5185m         >330         <1         2         1           Tin         ppm         ASTM D5185m         >15         0         <1         <1           Vanadium         ppm         ASTM D5185m         >15         0         <1         <1           White Metal         scalar         'Visual         NONE         NONE         NONE         NONE         NONE           Yellow Metal         scalar         'Visual         NONE         NONE         NONE         NONE         NONE           Silicon         ppm         ASTM D5185m         >25         6         20         8           Potassium         ppm         ASTM D5185m         >20         0         3         15           Fuel         %         ASTM D5185m         >20         0         3         15           Fuel         %         ASTM D784         >6         0.3         1.4         2.1           Nitration         Abs/rm         'ASTM D7		ppm			-		
Lead         ppm         ASTM D5185m         >40         0         <1					-		
Copper         ppm         ASTM D5185m         >330         <1		ppm			-		
Tin         ppm         ASTM D5185m         >15         0         <1					-		
Vanadium         ppm         ASTM D5185m         0         <1							
White Metal         scalar         *Visual         NONE         NONE         NONE         NONE         NONE           Yellow Metal         scalar         *Visual         NONE         NONE         NONE         NONE         NONE           Silicon         ppm         ASTM D5185m         >20         0         3         15           Fuel         %         ASTM D5185m         >20         0         3         15           Fuel         %         ASTM D5185m         >20         0         3         15           Glycol         WC Method         >0.2         NEG         NEG         NEG         Seg           Soot %         %         *ASTM D7844         >6         0.3         1.4         2.1           Nitration         Abs/cm<*ASTM D7624         >20         8.4         14.2         18.6           Sulfation         scalar         Visual         NO				>15	-		
Yellow Metal         scalar         *Visual         NONE         NONE         NONE         NONE           Silicon         ppm         ASTM D5185m         >20         6         20         8           Potassium         ppm         ASTM D5185m         >20         0         3         15           Fuel         %         ASTM D5185m         >20         0         3         15           Glycol         WC Method         >0.2         NEG         NEG         NEG           Soot %         %         *ASTM D7624         >20         8.4         14.2         18.6           Sulfation         Abs/tm< *ASTM D7624         >20         8.4         14.2         18.6           Sulfation         Abs/tm< *ASTM D7612         >30         19.4         26.1         32.4           Silt         scalar         *Visual         NONE         NONE         NONE         NORE           Debris         scalar         *Visual         NOR         NORE         NORM         NORM         NORM           Appearance         scalar         *Visual         NORM         NORM         NORM         NORM         NORM           Boron         ppm         ASTM D5185m					-		
Silicon         ppm         ASTM D5185m< >25         6         20         8           Potassium         ppm         ASTM D5185m         >20         0         3         15           Fuel         %         ASTM D5185m         >20         0         3         15           Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         >0.2         NEG         NEG         NEG           Soot %         %         *ASTM D7844         >6         0.3         1.4         2.1           Nitration         Abs/cm         *ASTM D7624         >20         8.4         14.2         18.6           Sulfation         Abs/.1mm         *ASTM D7614         >30         19.4         26.1         32.4           Silt         scalar         *Visual         NONE         NONE         NONE         NONE           Debris         scalar         *Visual         NONE         NONE         NONE         NORM           Appearance         scalar         *Visual         NORM         NORML         NORML         NORM           Boron         ppm         ASTM D5185m         0         13         2							
Potassium         ppm         ASTM D5185m         >20         0         3         15           Fuel         %         ASTM D3524         >3.0         ● 7.1         <1.0         <1.0           Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         NEG         NEG         NEG         NEG           Soot %         %         *ASTM D7844         >6         0.3         1.4         2.1           Nitration         Abs/.mm         *ASTM D7624         >20         8.4         14.2         18.6           Sulfation         Abs/.mm         *ASTM D7624         >20         8.4         14.2         18.6           Sulfation         Abs/.mm         *ASTM D7624         >20         8.4         14.2         18.6           Sulfation         Abs/.mm         *ASTM D7624         >20         8.4         NONE         NONE           Debris         scalar         *Visual         NONE         NONE         NONE         NORM           Appearance         scalar         *Visual         NORM         NORML         NORM         NORM           Gdor         scalar         *Visual         NO2	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Potassium         ppm         ASTM D5185m         >20         0         3         15           Fuel         %         ASTM D3524         >3.0         ● 7.1         <1.0         <1.0           Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         NEG         NEG         NEG         NEG           Soot %         %         *ASTM D7844         >6         0.3         1.4         2.1           Nitration         Abs/.mm         *ASTM D7624         >20         8.4         14.2         18.6           Sulfation         Abs/.mm         *ASTM D7624         >20         8.4         14.2         18.6           Sulfation         Abs/.mm         *ASTM D7624         >20         8.4         14.2         18.6           Sulfation         Abs/.mm         *ASTM D7624         >20         8.4         NONE         NONE           Debris         scalar         *Visual         NONE         NONE         NONE         NORM           Appearance         scalar         *Visual         NORM         NORML         NORM         NORM           Gdor         scalar         *Visual         NO2	Silicon	nom	AGTM D5185m	> 25	6	20	0
Fuel         %         ASTM D3524         >3.0         7.1         <1.0							
Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         NEG         NEG         NEG         NEG           Soot %         %         *ASTM D7844         >6         0.3         1.4         2.1           Nitration         Abs/cm         *ASTM D7624         >20         8.4         14.2         18.6           Sulfation         Abs/.tmm         *ASTM D715         >30         19.4         26.1         32.4           Silt         scalar         *Visual         NONE         NONE         NONE         NONE           Debris         scalar         *Visual         NOR         NORML         NORM         NORM           Appearance         scalar         *Visual         NORM         NORML         NORM         NORM           Emulsified Water         scalar         *Visual							
Glycol         WC Method         NEG         NEG         NEG           Soot %         %         *ASTM D7844         >6         0.3         1.4         2.1           Nitration         Abs/cm         *ASTM D7624         >20         8.4         14.2         18.6           Sulfation         Abs/.mm         *ASTM D7624         >20         8.4         14.2         18.6           Sulfation         Abs/.mm         *ASTM D7615         >30         19.4         26.1         32.4           Silt         scalar         *Visual         NONE         NONE         NONE         NONE           Debris         scalar         *Visual         NONE         NONE         NONE         NORE           Sand/Dirt         scalar         *Visual         NOR         NORM         NORM         NORM           Appearance         scalar         *Visual         NORM         NORML         NORM         NORM           Odor         scalar         *Visual         NORM         NORML         NORM         NORM           Barium         ppm         ASTM D5185m         0         13         2         142           Barium         ppm         ASTM D5185m         0		70			-		
Soot %         %         *ASTM D7844         >6         0.3         1.4         2.1           Nitration         Abs/cm         *ASTM D7624         >20         8.4         14.2         18.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.4         26.1         32.4           Silt         scalar         *Visual         NONE         NONE         NONE         NONE         NONE           Debris         scalar         *Visual         NONE         NONE         NONE         NONE         NONE           Sand/Dirt         scalar         *Visual         NOR         NORM         Sditt         Sditt         Sditt </th <th></th> <th></th> <th></th> <th>20.2</th> <th></th> <th></th> <th></th>				20.2			
Nitration         Abs/cm         *ASTM D7624         >20         8.4         14.2         18.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.4         26.1         32.4           Silt         scalar         *Visual         NONE         NONE         NONE         NONE         NONE           Debris         scalar         *Visual         NONE         NONE         NONE         NONE         NONE           Sand/Dirt         scalar         *Visual         NONE         NONE         NONE         NONE         NONE           Appearance         scalar         *Visual         NORM         NORML         NORML         NORML         NORML         NORM           Odor         scalar         *Visual         NORM         NORML         NORML         NORM		0/_		~6			
SulfationAbs/.1mm*ASTM D7415>3019.426.132.4Siltscalar*VisualNONENONENONENONENONEDebrisscalar*VisualNONENONENONENONENONESand/Dirtscalar*VisualNONENONENONENONENONEAppearancescalar*VisualNORMNORMLNORMLNORMLNORMLOdorscalar*VisualNORMNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGNEGSodiumppmASTM D5185m0132142BariumppmASTM D5185m0000MolybdenumppmASTM D5185m0<58911132ManganeseppmASTM D5185m10108881438718CalciumppmASTM D5185m1070100416001764PhosphorusppmASTM D5185m127011851913966SulfurppmASTM D5185m127011851913966SulfurppmASTM D5185m2060275338912926OxidationAbs/.1mm*ASTM D28969.88.47.36.2							
Siltscalar*VisualNONENONENONENONENONEDebrisscalar*VisualNONENONENONENONENONESand/Dirtscalar*VisualNONENONENONENONENONEAppearancescalar*VisualNORMNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORMNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGNEGSodiumppmASTM D5185m0132142BariumppmASTM D5185m0000MolybdenumppmASTM D5185m05891132ManganeseppmASTM D5185m10108881438718CalciumppmASTM D5185m1070100416001764PhosphorusppmASTM D5185m127011851913966SulfurppmASTM D5185m127011851913966SulfurppmASTM D5185m2060275338912926OxidationAbs/.1mm*ASTM D28969.88.47.36.2							
Debrisscalar*VisualNONENONENONENONENONESand/Dirtscalar*VisualNONENONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGNEGSodiumppmASTM D5185m0132142BariumppmASTM D5185m0000MolybdenumppmASTM D5185m05891132ManganeseppmASTM D5185m10108881438718CalciumppmASTM D5185m1070100416001764PhosphorusppmASTM D5185m127011851913966SulfurppmASTM D5185m2060275338912926OxidationAbs/.1mm*ASTM D28969.88.47.36.2							
Sand/Dirtscalar*VisualNONENONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGNEGSodiumppmASTM D5185m0132142BariumppmASTM D5185m0000MolybdenumppmASTM D5185m05891132ManganeseppmASTM D5185m0<11<1MagnesiumppmASTM D5185m10108881438718CalciumppmASTM D5185m1070100416001764PhosphorusppmASTM D5185m127011851913966SulfurppmASTM D5185m2060275338912926OxidationAbs/.1mm*ASTM D28969.88.47.36.2					-		
Appearancescalar*VisualNORMLNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGNEGSodiumppmASTM D5185m0132142BariumppmASTM D5185m0000MolybdenumppmASTM D5185m05891132ManganeseppmASTM D5185m0<111<1MagnesiumppmASTM D5185m10108881438718CalciumppmASTM D5185m1070100416001764PhosphorusppmASTM D5185m127011851913966SulfurppmASTM D5185m2060275338912926OxidationAbs/1mm*ASTM D28969.88.47.36.2							
Odorscalar*VisualNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGNEGSodiumppmASTM D5185m0132142BoronppmASTM D5185m0000BariumppmASTM D5185m0000MolybdenumppmASTM D5185m605891132ManganeseppmASTM D5185m0<11<1MagnesiumppmASTM D5185m10108881438718CalciumppmASTM D5185m1070100416001764PhosphorusppmASTM D5185m127011851913966SulfurppmASTM D5185m2060275338912926OxidationAbs/1mm*ASTM D28969.88.47.36.2					-		
Emulsified Water         scalar         *Visual         >0.2         NEG         NEG         NEG           Sodium         ppm         ASTM D5185m         5         15         0           Boron         ppm         ASTM D5185m         0         13         2         142           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         58         91         132           Manganese         ppm         ASTM D5185m         0         <1         1         <1           Magnesium         ppm         ASTM D5185m         1010         888         1438         718           Calcium         ppm         ASTM D5185m         1070         1004         1600         1764           Phosphorus         ppm         ASTM D5185m         1270         1185         1913         966           Sulfur         ppm         ASTM D5185m         2060         2753         3891         2926           Oxidation         Abs/.1mm         *ASTM D2896         9.8         8.4         7.3         6.2							
Sodium         ppm         ASTM D5185m         5         15         0           Boron         ppm         ASTM D5185m         0         13         2         142           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         58         91         132           Manganese         ppm         ASTM D5185m         0         <1         1         <1           Magnesium         ppm         ASTM D5185m         1010         888         1438         718           Calcium         ppm         ASTM D5185m         1070         1004         1600         1764           Phosphorus         ppm         ASTM D5185m         1150         1008         1482         770           Zinc         ppm         ASTM D5185m         1270         1185         1913         966           Sulfur         ppm         ASTM D5185m         2060         2753         3891         2926           Oxidation         Abs/.1mm<*ASTM D7414         >25         16.8         27.6         37.2           Base Number (BN)         mg KOHg         ASTM D2896         9.8					-		
Boron         ppm         ASTM D5185m         0         13         2         142           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         58         91         132           Manganese         ppm         ASTM D5185m         0         <1         1         <1           Magnesium         ppm         ASTM D5185m         0         <1         1         <1           Calcium         ppm         ASTM D5185m         1010         888         1438         718           Calcium         ppm         ASTM D5185m         1070         1004         1600         1764           Phosphorus         ppm         ASTM D5185m         1270         1185         1913         966           Sulfur         ppm         ASTM D5185m         2260         2753         3891         2926           Oxidation         Abs/.1mm         *ASTM D2896         9.8         8.4         7.3         6.2						NEG	
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         58         91         132           Manganese         ppm         ASTM D5185m         0         <1         1         <1           Magnesium         ppm         ASTM D5185m         1010         888         1438         718           Calcium         ppm         ASTM D5185m         1010         808         1438         718           Phosphorus         ppm         ASTM D5185m         1070         1004         1600         1764           Phosphorus         ppm         ASTM D5185m         1150         1008         1482         770           Zinc         ppm         ASTM D5185m         1270         1185         1913         966           Sulfur         ppm         ASTM D5185m         2060         2753         3891         2926           Oxidation         Abs/.1mm<*ASTM D7414         >25         16.8         27.6         37.2           Base Number (BN)         mg KOH/g         ASTM D2896         9.8         8.4         7.3         6.2	Sodium	ppm	ASTM D5185m		5	15	0
Molybdenum         ppm         ASTM D5185m         60         58         91         132           Manganese         ppm         ASTM D5185m         0         <1         1         <1           Magnesium         ppm         ASTM D5185m         1010         888         1438         718           Calcium         ppm         ASTM D5185m         1010         888         1438         718           Phosphorus         ppm         ASTM D5185m         1070         1004         1600         1764           Phosphorus         ppm         ASTM D5185m         1150         1008         1482         770           Zinc         ppm         ASTM D5185m         1270         1185         1913         966           Sulfur         ppm         ASTM D5185m         2060         2753         3891         2926           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.8         27.6         37.2           Base Number (BN)         mg KOH/g         ASTM D2896         9.8         8.4         7.3         6.2	Boron	ppm	ASTM D5185m	0	13	2	142
Manganese         ppm         ASTM D5185m         0         <1	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium         ppm         ASTM D5185m         1010         888         1438         718           Calcium         ppm         ASTM D5185m         1070         1004         1600         1764           Phosphorus         ppm         ASTM D5185m         1150         1008         1482         770           Zinc         ppm         ASTM D5185m         1270         1185         1913         966           Sulfur         ppm         ASTM D5185m         2060         2753         3891         2926           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.8         27.6         37.2           Base Number (BN)         mg KOH/g         ASTM D2896         9.8         8.4         7.3         6.2	Molybdenum	ppm	ASTM D5185m	60	58	91	132
Calcium         ppm         ASTM D5185m         1070         1004         1600         1764           Phosphorus         ppm         ASTM D5185m         1150         1008         1482         770           Zinc         ppm         ASTM D5185m         1270         1185         1913         966           Sulfur         ppm         ASTM D5185m         2060         2753         3891         2926           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.8         27.6         37.2           Base Number (BN)         mg KOH/g         ASTM D2896         9.8         8.4         7.3         6.2	Manganese	ppm	ASTM D5185m	0	<1	1	<1
Phosphorus         ppm         ASTM D5185m         1150         1008         1482         770           Zinc         ppm         ASTM D5185m         1270         1185         1913         966           Sulfur         ppm         ASTM D5185m         2060         2753         3891         2926           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.8         27.6         37.2           Base Number (BN)         mg KOH/g         ASTM D2896         9.8         8.4         7.3         6.2	Magnesium	ppm	ASTM D5185m	1010	888	1438	718
Zinc         ppm         ASTM D5185m         1270         1185         1913         966           Sulfur         ppm         ASTM D5185m         2060         2753         3891         2926           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.8         27.6         37.2           Base Number (BN)         mg KOH/g         ASTM D2896         9.8         8.4         7.3         6.2	Calcium	ppm	ASTM D5185m	1070	1004	1600	1764
Sulfur         ppm         ASTM D5185m         2060         2753         3891         2926           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.8         27.6         37.2           Base Number (BN)         mg KOH/g         ASTM D2896         9.8         8.4         7.3         6.2	Phosphorus	ppm	ASTM D5185m	1150	1008	1482	770
Oxidation         Abs/.1mm         *ASTM D7414         >25         16.8         27.6         37.2           Base Number (BN)         mg KOH/g         ASTM D2896         9.8         8.4         7.3         6.2	Zinc	ppm	ASTM D5185m	1270	1185	1913	966
Base Number (BN)         mg KOH/g         ASTM D2896         9.8         8.4         7.3         6.2	Sulfur	ppm	ASTM D5185m	2060	2753	3891	2926
	Oxidation	Abs/.1mm	*ASTM D7414	>25	16.8	27.6	37.2
Visc @ 100°C cSt ASTM D445 15.4 ( 12.0 ) 13.3 13.7	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.4	7.3	6.2
	Visc @ 100°C	cSt	ASTM D445	15.4	12.0	13.3	13.7



Submitted By: Matt oversee 654, 654S, 659 - Matthew Shinault