

## Machine Id **158 FRONT ST E** Component **Diesel Engine** Fluid **PETRO CANADA XR 4 SAE 15W40 (--- GAL)**

## RECOMMENDATION

Resample at the next service interval to monitor. Please specify the component make and model with your next sample.

	WEAR	
--	------	--

All component wear rates are normal.

## CONTAMINATION

There is no indication of any contamination in the oil.

## FLUID CONDITION

The condition of the oil is acceptable for the time in service.

TestUOMMethodLimitAbCurrentHistory1History2Sample NumberClient InfoMC0897601Sample DateClient Info12 Feb 2024Machine AgehrsClient Info0Filter AgehrsClient Info0Filter AgehrsClient InfoN/AFilter ChangedClient InfoN/ASample StatusNORMALIronppmASTMD5185(m)>200NickelppmASTMD5185(m)>4NickelppmASTMD5185(m)>4NickelppmASTMD5185(m)>200SilverppmASTMD5185(m)>3<11SilverppmASTMD5185(m)>3<11SilverppmASTMD5185(m)>336SilconppmASTMD5185(m)>336SilconppmASTMD5185(m)>201SilconppmASTMD5185(m)>202SilconppmASTMD5185(m)>202SilconppmASTMD5185(m)202SilconppmASTMD5185(m)201<							
Sample DateClient InfoIz Feb 2024Machine AgehrsClient Info0Oil AgehrsClient Info0Filter AgehrsClient InfoN/AOil ChangedClient InfoN/AFilter ChangedClient InfoN/ASample StatusClient InfoN/AIronppmASTMD5185/m>1004ChromiumppmASTMD5185/m>200NickelppmASTMD5185/m>200SilverppmASTMD5185/m>3 <fd><fd>1AluminumppmASTMD5185/m&gt;3306LeadppmASTMD5185/m&gt;150SiliconppmASTMD5185/m&gt;201SiliconppmASTMD5185/m&gt;2016SultarionppmASTMD5185/m&gt;2016SultarionppmASTMD5185/m&gt;2016SultarionppmASTMD5185/m&gt;2016SultarionppmASTMD5185/m&gt;2016SultarionASTMD7181&gt;3017.6Sultarion<th>Test</th><th>UOM</th><th>Method</th><th>Limit/Abn</th><th>Current</th><th>History1</th><th>History2</th></fd></fd>	Test	UOM	Method	Limit/Abn	Current	History1	History2
Machine AgehrsClient Info0Oil AgehrsClient Info0Filter AgehrsClient InfoN/AOil ChangedClient InfoN/AFilter ChangedQClient InfoN/ASample StatusN/AIronppmASTM05185/m>1004NickelppmASTM05185/m>200NickelppmASTM05185/m>4<1SilverppmASTM05185/m>201AluminumppmASTM05185/m>201LeadppmASTM05185/m>201VanadiumppmASTM05185/m>201VanadiumppmASTM05185/m>201SiliconppmASTM05185/m>201SuliconppmASTM05185/m>202SuliconppmASTM05185/m>202SuliconppmASTM05185/m>202SuliconppmASTM05185/m>202SuliconppmASTM05185/m>202SuliconppmASTM05185/m>	Sample Number		Client Info		WC0897601		
Oil Age Filter AgehrsClient Info0Filter AgehrsClient InfoN/AOil ChangedClient InfoN/AFilter ChangedQClient InfoN/ASample StatusNormalNORMALIronppmASTM05185(m)>1004NickelppmASTM05185(m)>200NickelppmASTM05185(m)>3<1SilverppmASTM05185(m)>3<1AluminumppmASTM05185(m)>306CopperppmASTM05185(m)>2150VanadiumppmASTM05185(m)>2016SiliconppmASTM05185(m)>2016VanadiumppmASTM05185(m)>202VanadiumppmASTM05185(m)>2016SiliconppmASTM05185(m)>2016VanadiumppmASTM05185(m)>2016SiliconppmASTM05185(m)>2016SiliconppmASTM05185(m)>2016Soot %%ASTM0764*>300	Sample Date		Client Info		12 Feb 2024		
Filter Age Oli ChangedIrsClient Info0Cil ChangedClient InfoN/AFilter ChangedClient InfoN/ASample StatusNORMALIronppmASTMD5185(m)>1004ChromiumppmASTMD5185(m)>200NickelppmASTMD5185(m)>200NickelppmASTMD5185(m)>4<1SilverppmASTMD5185(m)>201LeadppmASTMD5185(m)>201CopperppmASTMD5185(m)>3306TinppmASTMD5185(m)>2516SiliconppmASTMD5185(m)>22SiliconppmASTMD5185(m)>221SuliconppmASTMD5185(m)>2216SuliconppmASTMD5185(m)>2216SulitationAbs/cmASTMD5185(m)>2216SulfationAbs/cmASTMD5185(m)>201SulfationAbs/cmASTMD5185(m)>201SulfationAbs/cmASTMD5185(m)>2016SulfationAbs/cmASTMD5185(m)>20NEGSulfationAbs/cmASTMD5185(m)3017.6 <th>Machine Age</th> <th>hrs</th> <th>Client Info</th> <th></th> <th>0</th> <th></th> <th></th>	Machine Age	hrs	Client Info		0		
Cilcin InfoN/AFilter ChangedCilent InfoN/ASample StatusNORMALIronppmASTM D5185(m)>1004ChromiumppmASTM D5185(m)>200NickelppmASTM D5185(m)>4<1TitaniumppmASTM D5185(m)>3<1SilverppmASTM D5185(m)>3<1AuminumppmASTM D5185(m)>306LeadppmASTM D5185(m)>306YanadiumppmASTM D5185(m)>50VanadiumppmASTM D5185(m)>50SiliconppmASTM D5185(m)>2016SiliconppmASTM D5185(m)>2016YanadiumppmASTM D5185(m)>202Watervorwc Method>NEGSoliconppmASTM D5185(m)>202SulfationAbs/-mASTM D5185(m)>202SoliconppmASTM D5185(m)>20ASTM D5185(m)SulfationAbs/-mASTM D5185(m)>20ASTM D5185(m)SoliconppmASTM D5185(m)>20ASTM D5	Oil Age	hrs	Client Info		0		
Filter ChangedClient InfoN/ASample StatusClient InfoN/AIronppmASTM D5185(m)>1004ChromiumppmASTM D5185(m)>200NickelppmASTM D5185(m)>4<1NickelppmASTM D5185(m)>3<1SilverppmASTM D5185(m)>3<1AluminumppmASTM D5185(m)>306LeadppmASTM D5185(m)>100VanadiumppmASTM D5185(m)>150VanadiumppmASTM D5185(m)>2016SiliconppmASTM D5185(m)>202SuliconppmASTM D5185(m)>202YanadiumppmASTM D5185(m)>202SuliconppmASTM D5185(m)>202YatarWC Method>0.2NEGGlycolWC Method>0.2NEGSulfationAbs/:mASTM D5185(m)1<SulfationAbs/:mASTM D5185(m)1SulfationAbs/:mASTM D5185(m)1SulfationAbs/:mASTM D5185(m)1MaterisalVisual*>0.2NEGSulfationAbs/:mASTM D5185(m)1<	Filter Age	hrs	Client Info		0		
Sample Status  NORMAL      Iron  ppm  ASTM D5185(m)  >100  4      Chromium  ppm  ASTM D5185(m)  >20  0      Nickel  ppm  ASTM D5185(m)  >4  <1      Titanium  ppm  ASTM D5185(m)  >3  <1      Silver  ppm  ASTM D5185(m)  >3  <1      Lead  ppm  ASTM D5185(m)  >20  1      Copper  ppm  ASTM D5185(m)  >20  1      Vanadium  ppm  ASTM D5185(m)  >20  1      Vanadium  ppm  ASTM D5185(m)  >20  2      Vanadium  ppm  ASTM D5185(m)  >20  2      Silicon  ppm  ASTM D5185(m)  >20  NEG </th <th>Oil Changed</th> <th></th> <th>Client Info</th> <th></th> <th>N/A</th> <th></th> <th></th>	Oil Changed		Client Info		N/A		
IronppmASTM D5185(m)>1004ChromiumppmASTM D5185(m)>200NickelppmASTM D5185(m)>4<1TitaniumppmASTM D5185(m)>3<1SilverppmASTM D5185(m)>3<1AluminumppmASTM D5185(m)>201LeadppmASTM D5185(m)>401CopperppmASTM D5185(m)>401VanadiumppmASTM D5185(m)>150VanadiumppmASTM D5185(m)>2516SiliconppmASTM D5185(m)>202FuelWC Method>5<1.0WaterWC Method>0.2NEGSoot %%ASTM D7624>204.5SulfationAbs/:mASTM D7624>3017.6SodiumppmASTM D5185(m)1<1SodiumppmASTM D5185(m)1<1MolybdenumppmASTM D5185(m)1<1SodiumppmASTM D5185(m)1<1MolybdenumppmAST	Filter Changed		Client Info		N/A		
Chromium  ppm  ASTM D5185(m)  >20  0      Nickel  ppm  ASTM D5185(m)  >4  <1      Titanium  ppm  ASTM D5185(m)  >3  <1      Silver  ppm  ASTM D5185(m)  >20  1      Aluminum  ppm  ASTM D5185(m)  >20  1      Lead  ppm  ASTM D5185(m)  >20  1      Copper  ppm  ASTM D5185(m)  >330  6      Vanadium  ppm  ASTM D5185(m)  >15  0      Vanadium  ppm  ASTM D5185(m)  >20  2      Silicon  ppm  ASTM D5185(m)  >20  2      Fuel  WC Method  >0.2  NEG      Glycol  WC Method  >0.2  NEG	Sample Status				NORMAL		
Chromium  ppm  ASTM D5185(m)  >20  0      Nickel  ppm  ASTM D5185(m)  >4  <1      Titanium  ppm  ASTM D5185(m)  >3  <1      Silver  ppm  ASTM D5185(m)  >20  1      Aluminum  ppm  ASTM D5185(m)  >20  1      Lead  ppm  ASTM D5185(m)  >20  1      Copper  ppm  ASTM D5185(m)  >330  6      Vanadium  ppm  ASTM D5185(m)  >15  0      Vanadium  ppm  ASTM D5185(m)  >20  2      Silicon  ppm  ASTM D5185(m)  >20  2      Fuel  WC Method  >0.2  NEG      Glycol  WC Method  >0.2  NEG				400			
Nickel  ppm  ASTM D5185(m)  >4  <1							
Titanium  ppm  ASTM D5185(m)  0     Silver  ppm  ASTM D5185(m)  >3  <1     Aluminum  ppm  ASTM D5185(m)  >20  1     Lead  ppm  ASTM D5185(m)  >20  1     Copper  ppm  ASTM D5185(m)  >330  6     Tin  ppm  ASTM D5185(m)  >330  6     Vanadium  ppm  ASTM D5185(m)  >15  0     Vanadium  ppm  ASTM D5185(m)  >20  2     Vanadium  ppm  ASTM D5185(m)  >20  2     Silicon  ppm  ASTM D5185(m)  >20  2     Fuel  WC Method  >0.2  NEG     Glycol  WC Method  >0.2  NEG     Soot %  %  ASTM D5185(m  1      Sulfation  Abs/rm <th></th> <th></th> <th></th> <th></th> <th>-</th> <th></th> <th></th>					-		
Silver  ppm  ASTM D5185(m)  >3  <1				>4			
Aluminum  ppm  ASTM D5185(m)  >20  1     Lead  ppm  ASTM D5185(m)  >40  1     Copper  ppm  ASTM D5185(m)  >330  6     Tin  ppm  ASTM D5185(m)  >15  0     Vanadium  ppm  ASTM D5185(m)  >20  2     Silicon  ppm  ASTM D5185(m)  >20  2     Potassium  ppm  ASTM D5185(m)  >20  2     Fuel  WC Method  >5  <1.0      Water  WC Method  >0.2  NEG      Soot %  %  ASTM D7844*  >3  0      Sulfation  Abs/.m  ASTM D7844*  >3  0      Sodi W  %  ASTM D7844*  >30  17.6      Sodium  ppm  ASTM D5185(m)			· · /	0			
Lead  ppm  ASTM D5185(m)  >40  1     Copper  ppm  ASTM D5185(m)  >330  6      Tin  ppm  ASTM D5185(m)  >15  0      Vanadium  ppm  ASTM D5185(m)  >15  0      Vanadium  ppm  ASTM D5185(m)  >25  16      Silicon  ppm  ASTM D5185(m)  >20  2      Potassium  ppm  ASTM D5185(m)  >20  2      Water  VC Method  >0.2  NEG      Soot %  %  ASTM D7624*  >30  1.6      Sulfation  Abs/cm  ASTM D7624*  >30  17.6      Sodium  ppm  ASTM D5185(m)  1      Sodium  ppm  ASTM D5185(m)  1  <-1			( )				
Copper  ppm  ASTM D5185(m)  >330  6      Tin  ppm  ASTM D5185(m)  >15  0      Vanadium  ppm  ASTM D5185(m)  >25  16      Silicon  ppm  ASTM D5185(m)  >20  2      Potassium  ppm  ASTM D5185(m)  >20  2      Fuel  WC Method  >5  <1.0       Water  WC Method  >0.2  NEG       Soot %  %  ASTM D7844*  >3  0      Sulfation  Abs/cm  ASTM D7624*  >0.2  NEG      Sulfation  Abs/cm  ASTM D7141*  >30  17.6      Sodium  ppm  ASTM D5185(m)  1  <1      Boron  ppm			· · · ·				
Tin  ppm  ASTM D5185(m)  >15  0     Vanadium  ppm  ASTM D5185(m)  >25  16      Silicon  ppm  ASTM D5185(m)  >20  2      Potassium  ppm  ASTM D5185(m)  >20  2      Potassium  ppm  ASTM D5185(m)  >20  2      Potassium  ppm  ASTM D5185(m)  >20  2      Fuel  WC Method  >0.2  NEG      Water  Q  MSTM D7844*  >3  0      Soot %  %  ASTM D7844*  >3  0      Sulfation  Abs/cm  ASTM D7184*  >3  0      Sulfation  Abs/cm  ASTM D7185*  >30  17.6      Sodium  ppm  ASTM D5185(m)  1							
Vanadium  ppm  ASTM D5185(m)  O     Silicon  ppm  ASTM D5185(m)  >25  16     Potassium  ppm  ASTM D5185(m)  >20  2     Fuel  WC Method  >5  <1.0      Water  Image: WC Method  >0.2  NEG      Glycol  WC Method  >0.2  NEG      Soot %  %  ASTM D7844*  >3  0      Sulfation  Abs/cm  ASTM D7624*  >20  4.5      Sulfation  Abs/cm  ASTM D7152*  >30  17.6      Sodium  ppm  ASTM D5185(m)  1       Sodium  ppm  ASTM D5185(m)  1      Boron  ppm  ASTM D5185(m)  1      Manganese  ppm  ASTM					-		
Silicon  ppm  ASTM D5185(m)  >25  16      Potassium  ppm  ASTM D5185(m)  >20  2      Fuel  WC Method  >5  <1.0		ppm	( )	>15			
Potassium  ppm  ASTM D5185(m)  >20  2      Fuel  WC Method  >5  <1.0      Water  WC Method  >0.2  NEG      Glycol  WC Method  >0       Soot %  %  ASTM D7844*  >3  0      Nitration  Abs/cm  ASTM D7624*  >20  4.5      Sulfation  Abs/.1mm  ASTM D7415*  >30  17.6      Sodium  ppm  ASTM D5185(m)  1       Sodium  ppm  ASTM D5185(m)  1       Boron  ppm  ASTM D5185(m)  1  <1      Molybdenum  ppm  ASTM D5185(m)  1  <54      Magnesium  ppm  ASTM D5185(m)  3032  1056 <th>Vanadium</th> <th>ppm</th> <th>ASTM D5185(m)</th> <th></th> <th>0</th> <th></th> <th></th>	Vanadium	ppm	ASTM D5185(m)		0		
Potassium  ppm  ASTM D5185(m)  >20  2      Fuel  WC Method  >5  <1.0      Water  Image: WC Method  >0.2  NEG      Glycol  WC Method  >3  0      Soot %  %  ASTM D7844*  >3  0      Nitration  Abs/cm  ASTM D7624*  >20  4.5      Sulfation  Abs/.1mm  ASTM D7624*  >20  17.6      Sulfation  Abs/.1mm  ASTM D71415*  >30  17.6      Sodium  ppm  ASTM D5185(m)  1       Boron  ppm  ASTM D5185(m)  1  <1      Molybdenum  ppm  ASTM D5185(m)  1  <54      Manganese  ppm  ASTM D5185(m)  3032	Silicon	ppm	ASTM D5185(m)	>25	16		
Water  WC Method  >0.2  NEG     Glycol  WC Method  NEG      Soot %  %  ASTM D7844*  >3  0      Nitration  Abs/cm  ASTM D7844*  >3  0      Sulfation  Abs/cm  ASTM D7624*  >20  4.5      Sulfation  Abs/cm  ASTM D7624*  >20  4.5      Sulfation  Abs/cm  ASTM D7624*  >20  4.5      Sulfation  Abs/cm  ASTM D7624*  >20  17.6      Sulfation  Abs/cm  ASTM D7115*  >30  17.6      Sodium  ppm  ASTM D5185(m)  1       Sodium  ppm  ASTM D5185(m)  1  <1	Potassium		( )	>20	2		
GlycolWC MethodNEGSoot %%ASTM D7844*>30NitrationAbs/cmASTM D7624*>204.5SulfationAbs/cmASTM D7415*>3017.6Bulsified WaterscalarVisual*>0.2NEGSodiumppmASTM D5185(m)1BoronppmASTM D5185(m)1<1BariumppmASTM D5185(m)1<1MolybdenumppmASTM D5185(m)154MagnesiumppmASTM D5185(m)10866PhosphorusppmASTM D5185(m)30321056ZincppmASTM D5185(m)13221126SulfurppmASTM D5185(m)39852846OxidationAbs/.1mmASTM D5185(m)398512.7	Fuel		WC Method	>5	<1.0		
Soot %  %  ASTM D7844*  >3  0      Nitration  Abs/cm  ASTM D7624*  >20  4.5      Sulfation  Abs/lmm  ASTM D7614*  >30  17.6      Sulfation  Abs/lmm  ASTM D7115*  >30  17.6      Emulsified Water  scalar  Visual*  >0.2  NEG      Sodium  ppm  ASTM D5185(m)  1       Boron  ppm  ASTM D5185(m)  1  <1      Barium  ppm  ASTM D5185(m)  1  <1      Malganese  ppm  ASTM D5185(m)  1  54      Magnesium  ppm  ASTM D5185(m)  100  866      Magnesium  ppm  ASTM D5185(m)  3032  1056      Phosphorus <th>Water</th> <th></th> <th>WC Method</th> <th>&gt;0.2</th> <th>NEG</th> <th></th> <th></th>	Water		WC Method	>0.2	NEG		
NitrationAbs/cmASTM D7624*>204.5SulfationAbs/.1mmASTM D7415*>3017.6Emulsified WaterscalarVisual*>0.2NEGSodiumppmASTM D5185(m)1<1BoronppmASTM D5185(m)1<1BariumppmASTM D5185(m)1<1MolybdenumppmASTM D5185(m)154MaganeseppmASTM D5185(m)10866MagnesiumppmASTM D5185(m)1056PhosphorusppmASTM D5185(m)10541006ZincppmASTM D5185(m)13321126SulfurppmASTM D5185(m)39852846OxidationAbs/.1mmASTM D7414*>2512.7	Glycol		WC Method		NEG		
SulfationAbs/.1mmASTM D7415*>3017.6Emulsified WaterscalarVisual*>0.2NEGSodiumppmASTM D5185(m)1BoronppmASTM D5185(m)1<1BariumppmASTM D5185(m)1<1MolybdenumppmASTM D5185(m)154ManganeseppmASTM D5185(m)10866MagnesiumppmASTM D5185(m)30321056PhosphorusppmASTM D5185(m)1041006ZincppmASTM D5185(m)13321126SulfurppmASTM D5185(m)39852846OxidationAbs/.1mmASTM D7414*>2512.7	Soot %	%	ASTM D7844*	>3	0		
Emulsified Water  scalar  Visual*  >0.2  NEG     Sodium  ppm  ASTM D5185(m)  1      Boron  ppm  ASTM D5185(m)  1      Barium  ppm  ASTM D5185(m)  1      Molybdenum  ppm  ASTM D5185(m)  1      Manganese  ppm  ASTM D5185(m)  1  66      Magnesium  ppm  ASTM D5185(m)  10  866      Phosphorus  ppm  ASTM D5185(m)  3032  1056      Zinc  ppm  ASTM D5185(m)  3032  1056      Sulfur  ppm  ASTM D5185(m)  1032  1126      Zinc  ppm  ASTM D5185(m)  3985  2846      Sulfur  ppm  ASTM D5185(m)  3985  2846  -	Nitration	Abs/cm	ASTM D7624*	>20	4.5		
Sodium  ppm  ASTM D5185(m)  1      Boron  ppm  ASTM D5185(m)  1  <1      Barium  ppm  ASTM D5185(m)  1  <1      Barium  ppm  ASTM D5185(m)  1  <1      Molybdenum  ppm  ASTM D5185(m)  1  54      Manganese  ppm  ASTM D5185(m)  10  866      Magnesium  ppm  ASTM D5185(m)  3032  1056      Calcium  ppm  ASTM D5185(m)  3032  1056      Phosphorus  ppm  ASTM D5185(m)  1054  1006      Zinc  ppm  ASTM D5185(m)  1332  1126      Sulfur  ppm  ASTM D5185(m)  3985  2846      Oxidation  Abs/.1mm	Sulfation	Abs/.1mm	ASTM D7415*	>30	17.6		
Boron  ppm  ASTM D5185(m)  1  <1	Emulsified Water	scalar	Visual*	>0.2	NEG		
Boron  ppm  ASTM D5185(m)  1  <1							
Barium  ppm  ASTM D5185(m)  1  <1							
Molybdenum  ppm  ASTM D5185(m)  1  54     Manganese  ppm  ASTM D5185(m)  0      Magnesium  ppm  ASTM D5185(m)  10  866      Magnesium  ppm  ASTM D5185(m)  3032  1056      Calcium  ppm  ASTM D5185(m)  1054  1006      Phosphorus  ppm  ASTM D5185(m)  1054  1006      Zinc  ppm  ASTM D5185(m)  1332  1126      Sulfur  ppm  ASTM D5185(m)  3985  2846      Oxidation  Abs/.1mm  ASTM D7414*  >25  12.7		ppm					
Manganese  ppm  ASTM D5185(m)  0     Magnesium  ppm  ASTM D5185(m)  10  866      Calcium  ppm  ASTM D5185(m)  3032  1056      Phosphorus  ppm  ASTM D5185(m)  1054  1006      Zinc  ppm  ASTM D5185(m)  1332  1126      Sulfur  ppm  ASTM D5185(m)  3985  2846      Oxidation  Abs/.1mm  ASTM D7414*  >25  12.7							
Magnesium  ppm  ASTM D5185(m)  10  866     Calcium  ppm  ASTM D5185(m)  3032  1056     Phosphorus  ppm  ASTM D5185(m)  1054  1006      Zinc  ppm  ASTM D5185(m)  1332  1126      Sulfur  ppm  ASTM D5185(m)  3985  2846      Oxidation  Abs/.1mm  ASTM D7414*  >25  12.7			· · · ·	1			
Calcium  ppm  ASTM D5185(m)  3032  1056     Phosphorus  ppm  ASTM D5185(m)  1054  1006      Zinc  ppm  ASTM D5185(m)  1332  1126      Sulfur  ppm  ASTM D5185(m)  3985  2846      Oxidation  Abs/.1mm  ASTM D7414*  >25  12.7			( )				
Phosphorus  ppm  ASTM D5185(m)  1054  1006     Zinc  ppm  ASTM D5185(m)  1332  1126     Sulfur  ppm  ASTM D5185(m)  3985  2846      Oxidation  Abs/.1mm  ASTM D7414*  >25  12.7	-						
Zinc  ppm  ASTM D5185(m)  1332  1126      Sulfur  ppm  ASTM D5185(m)  3985  2846      Oxidation  Abs/.1mm  ASTM D7414*  >25  12.7			( )				
Sulfur  ppm  ASTM D5185(m)  3985  2846      Oxidation  Abs/.1mm  ASTM D7414*  >25  12.7		ppm					
Oxidation  Abs/.1mm  ASTM D7414*  >25  12.7			( )				
			· · · ·				
Visc @ 100°C cSt ASTM D7279(m) 15.4 13.4							
	Visc @ 100°C	cSt	ASTM D7279(m)	15.4	13.4		

Contact/Location: Selome Afework - NORWOO





