

## (TEMP) Preferred Service-Tractor [Preferred Service-Tractor] 192A32036B Component

**Diesel Engine** 

PETRO CANADA DURON UHP 5W30 (11 GAL)

#### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

Metal levels are typical for a new component breaking in.

#### Contamination

Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. There is no indication of any contamination in the oil.

### Fluid Condition

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

SAMPLE INFORMATION method         Innit/base         current         history2           Sample Number         Client Info         PCA0114386             Sample Date         Client Info         27894             Di Age         mits         Client Info         27894             Di Changed         Client Info         25894              Sample Status         Innit/base         current         History1         History2           CONTAMINATION         method         Innit/base         current         History1         History2           Cuel         WC Method         >6.0         <1.0             Water         WC Method         NEG              WEAR METALS         method         Imit/base         current         History1         History2           Tron         ppm         ASTM D5185m         >100         38             Weater         ppm         ASTM D5185m         >20         <1             Tron         ppm         ASTM D5185m							
SAMPLE INFORMATION         method         Imitibase         current         History1         history2           Sample Date         Client Info         06 Dec 2023             Sample Date         Client Info         27894             Dil Age         mits         Client Info         27894             Dil Changed         Client Info         27894              Dil Changed         Client Info         Not Changd              Sample Status         Imit/base         current         History1         History2           CONTAMINATION         method         Imit/base         current         History1         History2           Vater         WC Method         >6.0         <1.0             Water         WC Method         >20         <1             Water         ppm         ASTM D5185m         >100         38             Silver         ppm         ASTM D5185m         >2         1             Silver         ppm         ASTM D5185m	AL)				Dav2022		
Sample Number         Client Info         PCA0114386             Sample Date         Client Info         06 Dec 2023             Machine Age         mis         Client Info         27894             Dil Age         mis         Client Info         25894             Dil Changed         Client Info         Not Changd             Dil Changed         Client Info         Not Changd             CONTAMINATION         method         Imit/base         current         history1         history2           Fuel         WC Method         >0.0         38             Water         WC Method         >0.0         38             Water         ppm         ASTM 05185m         >20         <1             Vickel         ppm         ASTM 05185m         >22              Numium         ppm         ASTM 05185m         >22         <1             Numium         ppm         ASTM 05185m         >22         <1 </th <th>SAMPLE INFORM</th> <th>ΛΑΤΙΟΝ</th> <th>method</th> <th></th> <th></th> <th>historv1</th> <th>historv2</th>	SAMPLE INFORM	ΛΑΤΙΟΝ	method			historv1	historv2
Sample Date         Client Info         06 Dec 2023             Vachine Age         mis         Client Info         27894             Dil Age         mis         Client Info         25894             Sample Status         Client Info         NorthAnd             CONTAMINATION         method         Imit/base         current         history1         history2           Fuel         WC Method         >6.0         <1.0							
Machine Age         mis         Client Info         27894             Dil Age         mis         Client Info         Not Changd             Dil Changed         Client Info         Not Changd             Sample Status         Imit/base         current         history!            CONTAMINATION         method         imit/base         current         history!            Yeel         WC Method         >0.2         NEG             WEAR METALS         method         limit/base         current         history!            Vickel         ppm         ASTM 05185m         >100         38             Vickel         ppm         ASTM 05185m         >2         2             Silver         ppm         ASTM 05185m         >2         4             Auuminum         ppm         ASTM 05185m         >2         1             Auuminum         ppm         ASTM 05185m         >2         30             Copper							
Dil Age         mis         Client Info         25894             Dil Changed         Client Info         Not Changd             Sample Status         Image         Client Info         Not Changd            CONTAMINATION         method         Imit base         current         history1            Water         WC Method         >0.2         NEG             Water         WC Method         >0.2         NEG             WEAR METALS         method         Imit base         current         history1         history1           Yoron         ppm         ASTM 05185m         >20         <1		mls			27894		
Dil Changed         Client Info         Not Changd             CONTAMINATION         method         imilibase         current         history1         history2           Wel         WC Method         >6.0         <1.0	0						
Sample Status         NORMAL             CONTAMINATION         method         imit/base         current         history1         history2           Fuel         WC Method         >6.0         <1.0	-		Client Info		Not Changd		
Fuel         WC Method         >6.0         <1.0             Water         WC Method         >0.2         NEG             Slycol         WC Method         NEG             WEAR METALS         method         limit/base         current         history1         history2           ron         ppm         ASTM D5185m         >100         38             Shronium         ppm         ASTM D5185m         >2         2             Silver         ppm         ASTM D5185m         >2         2             Numinum         ppm         ASTM D5185m         >2         30             Silver         ppm         ASTM D5185m         >25         30             Numinum         ppm         ASTM D5185m         >40         <1	-						
Water         WC Method         >0.2         NEG             Blycol         WC Method         Imilibase         current         history1         history2           WEAR METALS         method         limilibase         current         history1         history2           ron         ppm         ASTM D5185m         >20         <1	CONTAMINATI	ON	method	limit/base	current	history1	history2
Water         WC Method         >0.2         NEG             Blycol         WC Method         Imil/base         current         history1         history2           WEAR METALS         method         limil/base         current         history1         history2           ron         ppm         ASTM D5185m         >100         38             Dromium         ppm         ASTM D5185m         >20         <1	Fuel		WC Method	>6.0	<1.0		
Bilycol         WC Method         NEG             WEAR METALS         method         limit/base         current         history1         history2           ron         ppm         ASTM D5185m         >20         <1							
WEAR METALS         method         imit/base         current         history1         history2           ron         ppm         ASTM D5185m         >100         38             Shromium         ppm         ASTM D5185m         >20         <1							
ron         ppm         ASTM D5185m         >100         38             Chromium         ppm         ASTM D5185m         >20         <1	-	S	method	limit/base	current	history1	history2
Dromium         ppm         ASTM D5185m         >20         <1             Nickel         ppm         ASTM D5185m         >2         2             Nickel         ppm         ASTM D5185m         >2         2             Silver         ppm         ASTM D5185m         >2              Vuminum         ppm         ASTM D5185m         >2              Vuminum         ppm         ASTM D5185m         >2              Vuminum         ppm         ASTM D5185m         >2              Sopper         ppm         ASTM D5185m         >330         321              Adatadium         ppm         ASTM D5185m         0         230              ADDITVES         method         limit/base         current         history1         history2           Aganasium         ppm         ASTM D5185m         0         5             Adaganesium <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>· · · · · ·</td>							· · · · · ·
Nickel       ppm       ASTM D5185m       >2       2           Titanium       ppm       ASTM D5185m       <1	-						
Titanium         ppm         ASTM D5185m         <1             Silver         ppm         ASTM D5185m         >2         <1							
Silver         ppm         ASTM D5185m         >2         <1             Numinum         ppm         ASTM D5185m         >25         30             Lead         ppm         ASTM D5185m         >40         <1				22			
Aluminum         ppm         ASTM D5185m         >25         30            e.ead         ppm         ASTM D5185m         >40         <1				>2			
Lead         ppm         ASTM D5185m         >40         <1             Copper         ppm         ASTM D5185m         >330         321             Vanadium         ppm         ASTM D5185m         >15         5             Aandium         ppm         ASTM D5185m         >15         5             Addium         ppm         ASTM D5185m         0              ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         13             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         5             Adagnesium         ppm         ASTM D5185m         1160         668             Calcium         ppm         ASTM D5185m         1260         890             Sulfur         ppm         ASTM D5185m							
Copper         ppm         ASTM D5185m         >330         321             Tin         ppm         ASTM D5185m         >15         5             Aanadium         ppm         ASTM D5185m         >15         5             Cadmium         ppm         ASTM D5185m         0              ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         230             ADDitiveS         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         13             Magnesium         ppm         ASTM D5185m         0         5             Phosphorus         ppm         ASTM D5185m         1160         668             Sulfur         ppm         ASTM D5185m         1260         890             Sulfur         ppm         ASTM D5185m         2							
Tin         ppm         ASTM D5185m         >15         5            Aanadium         ppm         ASTM D5185m         0             Cadmium         ppm         ASTM D5185m         <1							
Vanadium         ppm         ASTM D5185m         0             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         230             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         13             Adolybdenum         ppm         ASTM D5185m         0         5             Maganese         ppm         ASTM D5185m         0         5             Aggnesium         ppm         ASTM D5185m         1160         668             Calcium         ppm         ASTM D5185m         1260         890             Consphorus         ppm         ASTM D5185m         1260         890             Sulfur         ppm         ASTM D5185m         3000         2438             Solicon         ppm         ASTM D5185m	••				-		
CadmiumppmASTM D5185m<1ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185m0230BariumppmASTM D5185m013MolybdenumppmASTM D5185m05MaganeseppmASTM D5185m05MagnesiumppmASTM D5185m1160668CalciumppmASTM D5185m1160691CalciumppmASTM D5185m1260890PhosphorusppmASTM D5185m1260890CONTAMINANTSmethodlimit/basecurrenthistory1history2SoliumppmASTM D5185m>2571SoliumppmASTM D5185m>2072INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.5SulfationAbs/rm*ASTM D7415>3024.9FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2DxidationAbs/rm*ASTM D7414>2523.0				210			
ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185m0230BariumppmASTM D5185m013MolybdenumppmASTM D5185m64128MaganeseppmASTM D5185m05MagnesiumppmASTM D5185m1160668DalciumppmASTM D5185m1160691CalciumppmASTM D5185m1260890PhosphorusppmASTM D5185m1260890SulfurppmASTM D5185m30002438CONTAMINANTSmethodlimit/basecurrenthistory1history2SoliconppmASTM D5185m>2072INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7624>2010.1SulfationAbs/cm*ASTM D7414>3024.9FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2DxidationAbs/:1mm*ASTM D7414>2523.0					-		
Barium         ppm         ASTM D5185m         0         13             Molybdenum         ppm         ASTM D5185m         64         128             Manganese         ppm         ASTM D5185m         0         5             Magnesium         ppm         ASTM D5185m         0         5             Calcium         ppm         ASTM D5185m         1160         668             Calcium         ppm         ASTM D5185m         820         1489             Phosphorus         ppm         ASTM D5185m         820         1489             Sulfur         ppm         ASTM D5185m         1260         890             Sulfur         ppm         ASTM D5185m         1260         890             CONTAMINANTS         method         limit/base         current         history1         history2           Solicon         ppm         ASTM D5185m         >20         72             Sodium         ppm         ASTM D5185m	ADDITIVES		method	limit/base	current	history1	history2
Barium         ppm         ASTM D5185m         0         13             Molybdenum         ppm         ASTM D5185m         64         128             Manganese         ppm         ASTM D5185m         0         5             Magnesium         ppm         ASTM D5185m         1160         668             Calcium         ppm         ASTM D5185m         1160         691             Calcium         ppm         ASTM D5185m         1260         890             Phosphorus         ppm         ASTM D5185m         1260         890             Sulfur         ppm         ASTM D5185m         1260         890             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         71             Sodium         ppm         ASTM D5185m         >20         72             Sodium         ppm         ASTM D5185m	Boron	maa	ASTM D5185m	0	230		
Molybdenum         ppm         ASTM D5185m         64         128             Manganese         ppm         ASTM D5185m         0         5	Barium		ASTM D5185m	0			
Manganese         ppm         ASTM D5185m         0         5             Magnesium         ppm         ASTM D5185m         1160         668             Calcium         ppm         ASTM D5185m         820         1489             Phosphorus         ppm         ASTM D5185m         1160         691             Zinc         ppm         ASTM D5185m         1260         890             Sulfur         ppm         ASTM D5185m         1260         890             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         71             Sodium         ppm         ASTM D5185m         >20         72             Potassium         ppm         ASTM D5185m         >20         72             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM	/lolvbdenum			64	128		
Magnesium         ppm         ASTM D5185m         1160         668             Calcium         ppm         ASTM D5185m         820         1489   690                1160         691				0	5		
Calcium         ppm         ASTM D5185m         820         1489             Phosphorus         ppm         ASTM D5185m         1160         691             Zinc         ppm         ASTM D5185m         1260         890             Sulfur         ppm         ASTM D5185m         1260         890             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         71             Sodium         ppm         ASTM D5185m         >20         72             Potassium         ppm         ASTM D5185m         >20         72             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.5             Soot %         %         *ASTM D7624         >20         10.1             Sulfation         Abs/.1mm         *ASTM D7415	-		ASTM D5185m	1160	668		
Phosphorus         ppm         ASTM D5185m         1160         691             Zinc         ppm         ASTM D5185m         1260         890             Sulfur         ppm         ASTM D5185m         1260         890             CONTAMINANTS         method         limit/base         current         history1         history2           Solicon         ppm         ASTM D5185m         >25         71             Solicon         ppm         ASTM D5185m         >25         71             Solicon         ppm         ASTM D5185m         >20         72             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.5             Soot %         %         *ASTM D7624         >20         10.1             Soot %         %         *ASTM D7644         >30         24.9             Soot %         %s         *ASTM D7415 <td>Calcium</td> <td></td> <td>ASTM D5185m</td> <td>820</td> <td>1489</td> <td></td> <td></td>	Calcium		ASTM D5185m	820	1489		
ZincppmASTM D5185m1260890SulfurppmASTM D5185m30002438CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>2571SodiumppmASTM D5185m>2072PotassiumppmASTM D5185m>2072INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.5SoulfationAbs/cm*ASTM D7624>2010.1FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2523.0	Phosphorus		ASTM D5185m	1160	691		
SulfurppmASTM D5185m30002438CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>2571SodiumppmASTM D5185m>2072PotassiumppmASTM D5185m>2072INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.5Soot %%*ASTM D7624>2010.1SulfationAbs/cm*ASTM D7624>3024.9FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2523.0	Zinc	ppm	ASTM D5185m	1260	890		
Silicon         ppm         ASTM D5185m         >25         71             Sodium         ppm         ASTM D5185m         >20         72             Potassium         ppm         ASTM D5185m         >20         72             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.5             Nitration         Abs/cm         *ASTM D7624         >20         10.1             Soulfation         Abs/.1mm         *ASTM D7415         >30         24.9             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         23.0	Sulfur	ppm	ASTM D5185m	3000			
Sodium         ppm         ASTM D5185m         4             Potassium         ppm         ASTM D5185m         >20         72             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.5             Soot %         %         *ASTM D7624         >20         10.1             Sulfation         Abs/.1mm         *ASTM D7415         >30         24.9             FLUID DEGRADATION         method         limit/base         current         history1         history2           Dxidation         Abs/.1mm         *ASTM D7414         >25         23.0	CONTAMINAN	TS	method	limit/base	current	history1	history2
Sodium         ppm         ASTM D5185m         4             Potassium         ppm         ASTM D5185m         >20         72             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.5             Mitration         Abs/cm         *ASTM D7624         >20         10.1             Sulfation         Abs/.1mm         *ASTM D7415         >30         24.9             FLUID DEGRADATION         method         limit/base         current         history1         history2           Dxidation         Abs/.1mm         *ASTM D7414         >25         23.0	Silicon	ppm	ASTM D5185m	>25	71		
PotassiumppmASTM D5185m>2072INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.5VitrationAbs/cm*ASTM D7624>2010.1SulfationAbs/.1mm*ASTM D7415>3024.9FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2DxidationAbs/.1mm*ASTM D7414>2523.0	Sodium		ASTM D5185m		4		
Soot %         %         *ASTM D7844         >3         0.5             Nitration         Abs/cm         *ASTM D7624         >20         10.1             Sulfation         Abs/.1mm         *ASTM D7415         >30         24.9             FLUID DEGRADATION         method         limit/base         current         history1         history2           Dxidation         Abs/.1mm         *ASTM D7414         >25         23.0	Potassium		ASTM D5185m	>20	72		
Nitration         Abs/cm         *ASTM D7624         >20         10.1             Sulfation         Abs/.1mm         *ASTM D7615         >30         24.9             FLUID DEGRADATION         method         limit/base         current         history1         history2           Dxidation         Abs/.1mm         *ASTM D7414         >25         23.0	INFRA-RED		method	limit/base	current	history1	history2
Nitration         Abs/cm         *ASTM D7624         >20         10.1             Sulfation         Abs/.1mm         *ASTM D7615         >30         24.9             FLUID DEGRADATION         method         limit/base         current         history1         history2           Dxidation         Abs/.1mm         *ASTM D7414         >25         23.0	Soot %	%	*ASTM D7844	>3	0.5		
Sulfation       Abs/.1mm       *ASTM D7415       >30       24.9           FLUID DEGRADATION       method       limit/base       current       history1       history2         Dxidation       Abs/.1mm       *ASTM D7414       >25       23.0		Abs/cm					
Dxidation         Abs/.1mm         *ASTM D7414         >25         23.0	Sulfation						
	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2
	Dxidation	Abs/.1mm	*ASTM D7414	>25	23.0		
	Base Number (BN)	mg KOH/g	ASTM D2896	11.0	7.4		

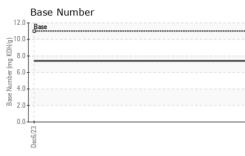
Sample Rating Trend

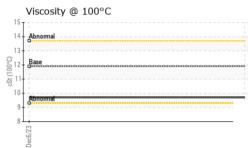


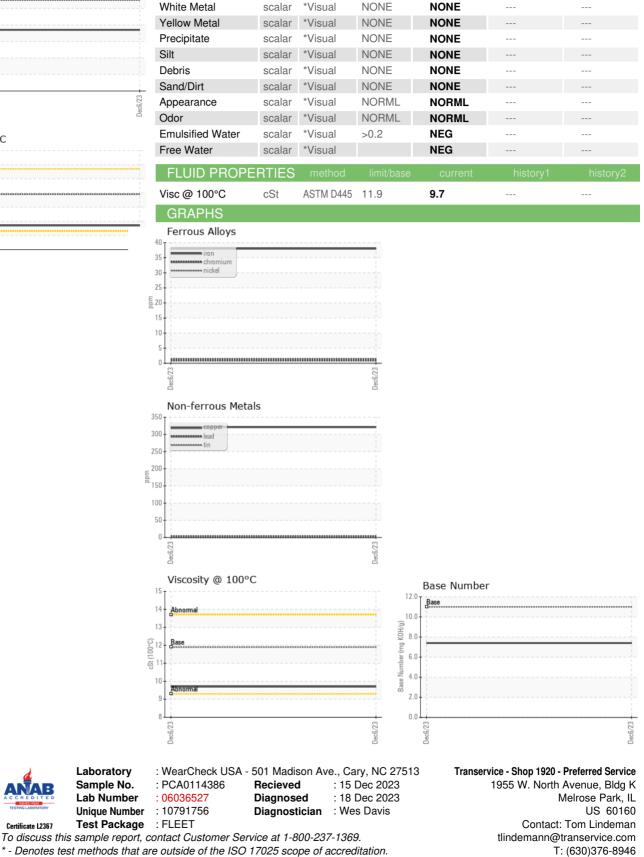


# **OIL ANALYSIS REPORT**

VISUAL







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

Certificate L2367

F: