

## **OIL ANALYSIS REPORT**



#### Machine Id **33897** Component **Diesel Engine** Fluid **PETRO CANADA DURON SHP 10W30 (--- QTS**

### DIAGNOSIS

#### 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

Elevated aluminum (AI) 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.

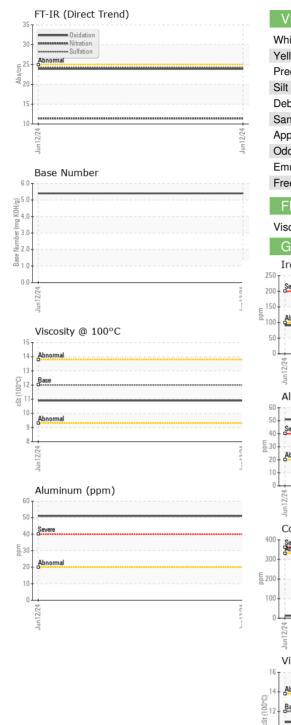
#### Fluid Condition

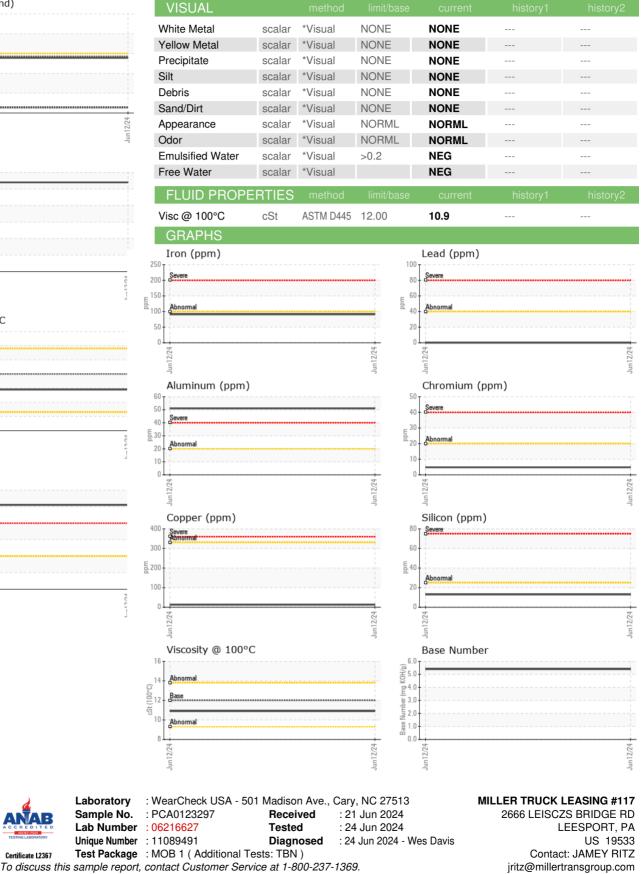
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample NumberClient InfoPCA0123297Sample DateClient Info12 Jun 2024Machine AgemlsClient Info404576Oil AgemlsClient Info0Oil AgemlsClient Info0Oil ChangedClient InfoChangedSample StatusImatherClient InfoNORMALSample StatusImatherVC Method>5<1.0FuelWC Method>5<1.0WaterWC Method>0.2NEGGlycolWC Method>0.2NEGVEAR METALSmethodlimit/basecurrenthistory1history1IronppmASTM D5185m>10091NickelppmASTM D5185m>400SilverppmASTM D5185m>30AluminumppmASTM D5185m>400LeadppmASTM D5185m>15<1VanadiumppmASTM D5185m>15<1QuerterppmASTM D5185m>15<1ChromiumppmASTM D5185m>15<1Glycol	TS)				Jun2024		
Sample Date    Client Info    12 Jun 2024        Machine Age    mis    Client Info    404576        Oil Age    mis    Client Info    0        Sample Status    Client Info    Changed        Sample Status    Client Info    Changed        Fuel    WC Method    >5    <1.0        Water    WC Method    >0.2    NEG        Glycol    WC Method    >0.2    NEG        Method    MEG     Nistory1    history1    history1      Inn    ppm    ASTM D5185m    >100    91        Silver    ppm    ASTM D5185m    >20    51        Silver    ppm    ASTM D5185m    >3    0        Auminum    ppm    ASTM D5185m    >30    13 <th>SAMPLE INFOR</th> <th>MATION</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Date    Client Info    12 Jun 2024        Machine Age    mls    Client Info    404576        Oil Age    mls    Client Info    0        Sample Status    Client Info    0         CONTAMINATION    method    Imit/base    current    history1    history1      Fuel    WC Method    >5    <1.0	Sample Number		Client Info		PCA0123297		
Machine Age    mis    Client Info    404576        Oil Age    mis    Client Info    0         Oil Age    Mis    Client Info    0         Sample Status    Imit/base    current    history1        CONTAMINATION    method    5    <1.0			Client Info		12 Jun 2024		
Oil Age    mis    Client Info    0        Sample Status    Client Info    Changed        CONTAMINATION    method    limit/base    current    history1       Fuel    WC Method    >5    <1.0	•	mls					
Oil Changed    Client Info    Changed        Sample Status    Imit Not Not Not Not Not Not Not Not Not No	•	mls	Client Info		0		
CONTAMINATION    method    limit/base    current    history1    history1      Fuel    WC Method    >5    <1.0	-		Client Info		Changed		
Fuel    WC Method    >5    <1.0        Water    WC Method    >0.2    NEG        Glycol    WC Method    NEG         WEAR METALS    method    limit/base    current    history1    history1      Iron    ppm    ASTM D5185m    >100    91        Chromium    ppm    ASTM D5185m    >20    5        Nickel    ppm    ASTM D5185m    >4    0        Aluminum    ppm    ASTM D5185m    >3    0        Naddium    ppm    ASTM D5185m    >20    51        Cadmium    ppm    ASTM D5185m    >40    0        Manadum    ppm    ASTM D5185m    0         Cadmium    ppm    ASTM D5185m    2    9	-				-		
Water    WC Method    >0.2    NEG        Glycol    WC Method    NEG        WEAR METALS    method    limit/base    current    history1    history1      Iron    ppm    ASTM D5185m    >100    91        Chromium    ppm    ASTM D5185m    >20    5        Nickel    ppm    ASTM D5185m    >4    0        Aluminum    ppm    ASTM D5185m    >40    0        Silver    ppm    ASTM D5185m    >20    51        Aduminum    ppm    ASTM D5185m    >20    51        Vanadium    ppm    ASTM D5185m    >20    51        Aduminum    ppm    ASTM D5185m    0    0        Vanadium    ppm    ASTM D5185m    0    0	CONTAMINAT	ION	method	limit/base	current	history1	history2
Glycol    WC Method    NEG        WEAR METALS    method    limit/base    current    history1    history1      Iron    ppm    ASTM D5185m    >20    5        Chromium    ppm    ASTM D5185m    >20    5        Nickel    ppm    ASTM D5185m    >4    0        Silver    ppm    ASTM D5185m    >3    0        Aluminum    ppm    ASTM D5185m    >30    0        Copper    ppm    ASTM D5185m    >30    13        Vanadium    ppm    ASTM D5185m    >15    <1	Fuel		WC Method	>5	<1.0		
WEAR METALS    method    limit/base    current    history1    history1      Iron    ppm    ASTM D5185m    >100    91        Othromium    ppm    ASTM D5185m    >20    5        Nickel    ppm    ASTM D5185m    >4    0        Titanium    ppm    ASTM D5185m    >3    0        Silver    ppm    ASTM D5185m    >3    0        Lead    ppm    ASTM D5185m    >40    0        Copper    ppm    ASTM D5185m    >40    0        Cadmium    ppm    ASTM D5185m    20    51        ADDITIVES    method    limit/base    current    history1    history1      Boron    ppm    ASTM D5185m    2    9        Magnesium    ppm    ASTM D5185m    50    6	Water		WC Method	>0.2	NEG		
Iron    ppm    ASTM D5185m    >100    91        Chromium    ppm    ASTM D5185m    >20    5        Nickel    ppm    ASTM D5185m    >4    0        Titanium    ppm    ASTM D5185m    >3    0        Aluminum    ppm    ASTM D5185m    >30    0        Lead    ppm    ASTM D5185m    >20    51        Copper    ppm    ASTM D5185m    >20    51        Lead    ppm    ASTM D5185m    >20    51        Copper    ppm    ASTM D5185m    >30    13	Glycol		WC Method		NEG		
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Nickel    ppm    ASTM D5185m    >4    0        Titanium    ppm    ASTM D5185m    >3    0        Silver    ppm    ASTM D5185m    >3    0        Aluminum    ppm    ASTM D5185m    >20    51        Aluminum    ppm    ASTM D5185m    >20    51        Copper    ppm    ASTM D5185m    >300    13        Vanadium    ppm    ASTM D5185m    >300    13        Vanadium    ppm    ASTM D5185m    >30    0        Cadmium    ppm    ASTM D5185m    0    0        Boron    ppm    ASTM D5185m    0    0        Magneseum    ppm    ASTM D5185m    0    3        Magnesium    ppm    ASTM D5185m    950<	Iron	ppm	ASTM D5185m	>100	91		
Titanium    ppm    ASTM D5185m    <1        Silver    ppm    ASTM D5185m    >3    0        Aluminum    ppm    ASTM D5185m    >20    51        Lead    ppm    ASTM D5185m    >20    51        Copper    ppm    ASTM D5185m    >40    0        Vanadium    ppm    ASTM D5185m    >15    <1	Chromium	ppm	ASTM D5185m	>20	5		
Silver    ppm    ASTM D5185m    >3    0        Aluminum    ppm    ASTM D5185m    >20    51        Lead    ppm    ASTM D5185m    >330    13        Copper    ppm    ASTM D5185m    >330    13        Vanadium    ppm    ASTM D5185m    >15    <1	Nickel	ppm	ASTM D5185m	>4	0		
Aluminum    ppm    ASTM D5185m    >20    51        Lead    ppm    ASTM D5185m    >40    0        Copper    ppm    ASTM D5185m    >330    13        Tin    ppm    ASTM D5185m    >15    <1	Titanium	ppm	ASTM D5185m		<1		
Lead    ppm    ASTM D5185m    >40    0        Copper    ppm    ASTM D5185m    >330    13        Tin    ppm    ASTM D5185m    >15    <1	Silver	ppm	ASTM D5185m	>3	0		
Copper    ppm    ASTM D5185m    >330    13        Tin    ppm    ASTM D5185m    >15    <1	Aluminum	ppm	ASTM D5185m	>20	51		
Tin    ppm    ASTM D5185m    >15    <1       Vanadium    ppm    ASTM D5185m    0        Cadmium    ppm    ASTM D5185m    0        ADDITIVES    method    limit/base    current    history1    history      Boron    ppm    ASTM D5185m    2    9        Molybdenum    ppm    ASTM D5185m    0    0        Magnese    ppm    ASTM D5185m    0    3        Magnesium    ppm    ASTM D5185m    950    971        Calcium    ppm    ASTM D5185m    950    1145        Calcium    ppm    ASTM D5185m    950    1145        Sulfur    ppm    ASTM D5185m    960    3143        Sulfur    ppm    ASTM D5185m    2600    3143 <td>Lead</td> <td>ppm</td> <td>ASTM D5185m</td> <td>&gt;40</td> <td>0</td> <td></td> <td></td>	Lead	ppm	ASTM D5185m	>40	0		
Vanadium    ppm    ASTM D5185m    0        Cadmium    ppm    ASTM D5185m    0        ADDITIVES    method    limit/base    current    history1    history1      Boron    ppm    ASTM D5185m    2    9        Barium    ppm    ASTM D5185m    2    9        Magnesium    ppm    ASTM D5185m    0    0        Magnesium    ppm    ASTM D5185m    50    688        Calcium    ppm    ASTM D5185m    950    971        Galcium    ppm    ASTM D5185m    950    971        Collatium    ppm    ASTM D5185m    950    971        Sulfur    ppm    ASTM D5185m    950    1042        Sulfur    ppm    ASTM D5185m    2600    3143 <td>Copper</td> <td>ppm</td> <td>ASTM D5185m</td> <td>&gt;330</td> <td>13</td> <td></td> <td></td>	Copper	ppm	ASTM D5185m	>330	13		
Cadmium    ppm    ASTM D5185m    0        ADDITIVES    method    limit/base    current    history1    history      Boron    ppm    ASTM D5185m    2    9        Barium    ppm    ASTM D5185m    0    0        Molybdenum    ppm    ASTM D5185m    50    68        Magnesse    ppm    ASTM D5185m    0    3        Calcium    ppm    ASTM D5185m    950    971        Calcium    ppm    ASTM D5185m    950    971        Calcium    ppm    ASTM D5185m    955    1042        Sulfur    ppm    ASTM D5185m    2600    3143        Sulfur    ppm    ASTM D5185m    >20    129        Sodium    ppm    ASTM D5185m    20	Tin	ppm	ASTM D5185m	>15			
ADDITIVESmethodlimit/basecurrenthistory1history1BoronppmASTM D5185m29BariumppmASTM D5185m00MolybdenumppmASTM D5185m5068ManganeseppmASTM D5185m03MagnesiumppmASTM D5185m950971CalciumppmASTM D5185m10501145CalciumppmASTM D5185m9951042ZincppmASTM D5185m26003143SulfurppmASTM D5185m26003143SulfurppmASTM D5185m>2513SoliconppmASTM D5185m>20129INFRA-REDmethodlimit/basecurrenthistory1historySoot %%*ASTM D7844>31NitrationAbs/cm<*ASTM D7624	Vanadium	ppm	ASTM D5185m		0		
Boron    ppm    ASTM D5185m    2    9        Barium    ppm    ASTM D5185m    0    0	Cadmium	ppm	ASTM D5185m		0		
Barium    ppm    ASTM D5185m    0    0        Molybdenum    ppm    ASTM D5185m    50    68        Manganese    ppm    ASTM D5185m    0    3        Magnesium    ppm    ASTM D5185m    950    971        Calcium    ppm    ASTM D5185m    950    971        Calcium    ppm    ASTM D5185m    1050    1145        Calcium    ppm    ASTM D5185m    995    1042        Zinc    ppm    ASTM D5185m    995    1042        Sulfur    ppm    ASTM D5185m    2600    3143        SUlfur    ppm    ASTM D5185m    >25    13        Sodium    ppm    ASTM D5185m    >20    129        INFRA-RED    method    limit/base	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum    ppm    ASTM D5185m    50    68        Manganese    ppm    ASTM D5185m    0    3        Magnesium    ppm    ASTM D5185m    950    971        Calcium    ppm    ASTM D5185m    950    971        Calcium    ppm    ASTM D5185m    950    971        Calcium    ppm    ASTM D5185m    1050    1145        Phosphorus    ppm    ASTM D5185m    995    1042        Zinc    ppm    ASTM D5185m    995    1042        Sulfur    ppm    ASTM D5185m    2600    3143        Solicon    ppm    ASTM D5185m    >25    13        Sodium    ppm    ASTM D5185m    >20    129        INFRA-RED    method	Boron	ppm	ASTM D5185m	2	9		
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Magnesium    ppm    ASTM D5185m    950    971        Calcium    ppm    ASTM D5185m    1050    1145        Phosphorus    ppm    ASTM D5185m    1050    1145        Zinc    ppm    ASTM D5185m    180    1295        Sulfur    ppm    ASTM D5185m    2600    3143        CONTAMINANTS    method    limit/base    current    history1    history      Silicon    ppm    ASTM D5185m    >25    13        Sodium    ppm    ASTM D5185m    >20    129        INFRA-RED    method    limit/base    current    history1    history      Soot %    %    *ASTM D7624    >3    1        INFRA-RED    method    limit/base    current    history1    history      Soot %    %    *ASTM D7624 <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <td>68</td> <td></td> <td></td>	Molybdenum	ppm	ASTM D5185m		68		
Calcium    ppm    ASTM D5185m    1050    1145        Phosphorus    ppm    ASTM D5185m    995    1042        Zinc    ppm    ASTM D5185m    1180    1295        Sulfur    ppm    ASTM D5185m    2600    3143        CONTAMINANTS    method    limit/base    current    history1    history      Silicon    ppm    ASTM D5185m    >25    13        Sodium    ppm    ASTM D5185m    >25    13        Sodium    ppm    ASTM D5185m    >20    129        INFRA-RED    method    limit/base    current    history1    history1      Soot %    %    *ASTM D7844    >3    1        Sulfation    Abs/(mm<*ASTM D7624	Manganese	ppm	ASTM D5185m		3		
Phosphorus    ppm    ASTM D5185m    995    1042        Zinc    ppm    ASTM D5185m    1180    1295        Sulfur    ppm    ASTM D5185m    2600    3143        CONTAMINANTS    method    limit/base    current    history1    history      Silicon    ppm    ASTM D5185m    >25    13        Sodium    ppm    ASTM D5185m    >25    13        Sodium    ppm    ASTM D5185m    >20    129        INFRA-RED    method    limit/base    current    history1    history      Soot %    %    *ASTM D7844    >3    1        Sulfation    Abs/cm    *ASTM D7624    >20    11.4        Sulfation    Abs/.1mm    *ASTM D7615    >30    24.3        FLUID DEGRADATION    method <thimit< td=""><td>•</td><td>ppm</td><td></td><td></td><td>-</td><td></td><td></td></thimit<>	•	ppm			-		
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SulfurppmASTM D5185m26003143CONTAMINANTSmethodlimit/basecurrenthistory1historySiliconppmASTM D5185m>2513SodiumppmASTM D5185m>20129PotassiumppmASTM D5185m>20129INFRA-REDmethodlimit/basecurrenthistory1historySoot %%*ASTM D7844>31NitrationAbs/cm*ASTM D7624>2011.4SulfationAbs/1mm*ASTM D7415>3024.3FLUID DEGRADATIONmethodlimit/basecurrenthistory1historyOxidationAbs/.1mm*ASTM D7414>2523.9		ppm			-		
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Silicon    ppm    ASTM D5185m    >25    13        Sodium    ppm    ASTM D5185m    >20    129        INFRA-RED    method    limit/base    current    history1    history      Soot %    %    *ASTM D7844    >3    1        INFRA-RED    method    limit/base    current    history1    history      Soot %    %    *ASTM D7844    >3    1        Sulfation    Abs/cm    *ASTM D7624    >20    11.4        FLUID DEGRADATION    method    limit/base    current    history1    history      Oxidation    Abs/.1mm    *ASTM D7414    >25    23.9							
Sodium    ppm    ASTM D5185m    4        Potassium    ppm    ASTM D5185m    >20    129        INFRA-RED    method    limit/base    current    history1    history      Soot %    %    *ASTM D7844    >3    1        Nitration    Abs/cm    *ASTM D7624    >20    11.4        Sulfation    Abs/.1mm    *ASTM D7415    >30    24.3        FLUID DEGRADATION    method    limit/base    current    history1    history      Oxidation    Abs/.1mm    *ASTM D7414    >25    23.9							
Potassium    ppm    ASTM D5185m    >20    129        INFRA-RED    method    limit/base    current    history1    history      Soot %    %    *ASTM D7844    >3    1        Nitration    Abs/cm    *ASTM D7844    >20    11.4        Sulfation    Abs/.1mm    *ASTM D7415    >30    24.3        FLUID DEGRADATION    method    limit/base    current    history1    history      Oxidation    Abs/.1mm    *ASTM D7414    >25    23.9				>25			
INFRA-RED    method    limit/base    current    history1    history      Soot %    %    *ASTM D7844    >3    1        Nitration    Abs/cm    *ASTM D7624    >20    11.4        Sulfation    Abs/.1mm    *ASTM D7415    >30    24.3        FLUID DEGRADATION    method    limit/base    current    history1    history      Oxidation    Abs/.1mm    *ASTM D7414    >25    23.9				. 20			
Soot %    %    *ASTM D7844    >3    1        Nitration    Abs/cm    *ASTM D7624    >20    11.4        Sulfation    Abs/.1mm    *ASTM D7415    >30    24.3        FLUID DEGRADATION    method    limit/base    current    history1    history      Oxidation    Abs/.1mm    *ASTM D7414    >25    23.9		ррш			-		
Nitration    Abs/cm    *ASTM D7624    >20    11.4        Sulfation    Abs/.1mm    *ASTM D7415    >30    24.3        FLUID DEGRADATION    method    limit/base    current    history1    history      Oxidation    Abs/.1mm    *ASTM D7414    >25    23.9							
Sulfation  Abs/.1mm  *ASTM D7415  >30  24.3      FLUID DEGRADATION  method  limit/base  current  history1  history    Oxidation  Abs/.1mm  *ASTM D7414  >25  23.9							
FLUID DEGRADATION    method    limit/base    current    history1    history      Oxidation    Abs/.1mm    *ASTM D7414    >25    23.9							
Oxidation Abs/.1mm *ASTM D7414 >25 23.9							
				>20			
		ing KOn/g	AO TWI D2030		5.4		



# **OIL ANALYSIS REPORT**





\* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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Report Id: MILLEEPA [WUSCAR] 06216627 (Generated: 06/24/2024 09:54:23) Rev: 1

Certificate 12367

Laboratory

Sample No.

Contact/Location: JAMEY RITZ - MILLEEPA

T:

F: