

## **OIL ANALYSIS REPORT**

Sample Rating Trend

DIRT

### Area Walgreens - Tractor [Walgreens - Tractor] 136A624006

Diesel Engine

Fluid PETRO CANADA DURON SHP 10W30 (11 GAL)

#### DIAGNOSIS

#### Recommendation

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

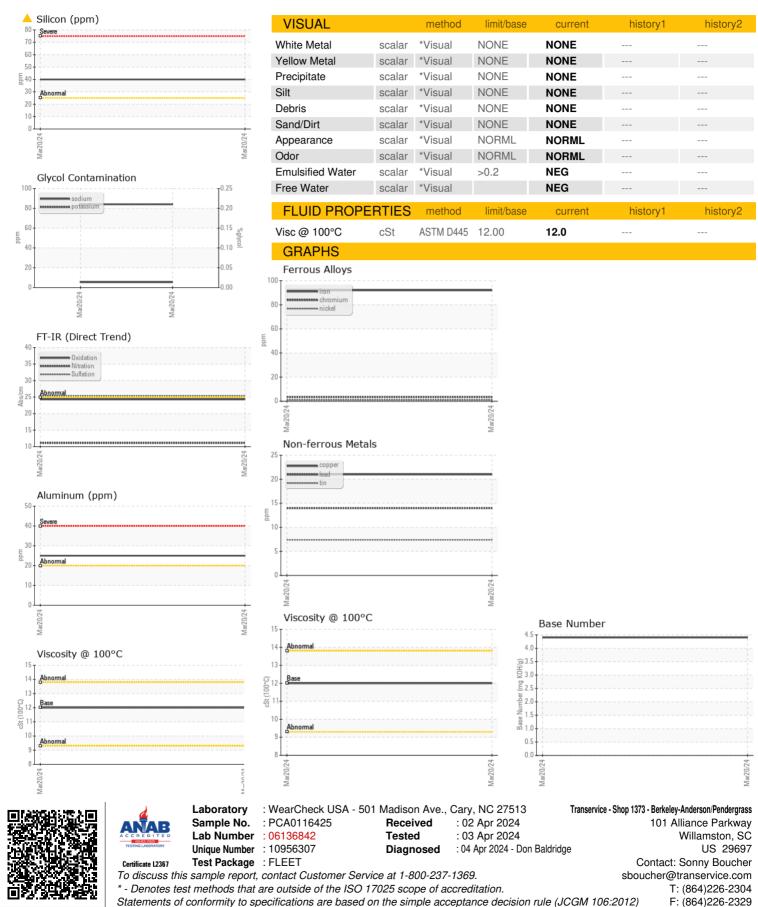
#### Contamination

Elemental level of silicon (Si) above normal indicating ingress of seal material. 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.

#### Fluid Condition

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

SAMPLE INFORMATION     method     limit/base     current     history1     history1       Sample Number     Client Info     20 Mar 2024         Machine Age     mls     Client Info     54329         Oil Age     mls     Client Info     Changed         Sample Status     Imit/base     Current     history1        CONTAMINATION     method     limit/base     current     history1        VCO Method     >2.0     <1.0          Water     WC Method     >2.0     <1.0         Wetar METALS     method     limit/base     current     history1     history1       Glycol     WC Method     >2.0     <1.0         Wetar     mpm     ASTM DSISEn     >100     92         Totarium     ppm     ASTM DSISEn     >20     25         Silver     ppm <td< th=""><th>GAL)</th><th></th><th>-</th><th></th><th></th><th></th><th></th></td<>	GAL)		-				
Sample Number     Client Info     PCA0116425         Sample Date     Client Info     20 Mar 2024         Machine Age     mls     Client Info     54329         Oil Age     mls     Client Info     Changed         Sample Status     Client Info     Changed          CONTAMINATION     method     limit/base     current     history1        Water     CW CMethod     >2.0     <1.0         Water     WC Method     S0.2     NEG         Chromium     ppm     ASTM 05185m     >100     92         Chromium     ppm     ASTM 05185m     >20     4         Nickel     ppm     ASTM 05185m     >20     25         Aluminum     ppm     ASTM 05185m     >20     25         Aluminum     ppm			method		Mar2024	history1	history2
Sample Date     Client Info     20 Mar 2024         Machine Age     mis     Client Info     54329         Oil Age     mis     Client Info     54329         Sample Status     Client Info     Changed          Sample Status     Client Info     Changed          CONTAMINATION     method     imit/base     current     history1        Water     WC Method     >2.0     <1.0						motory	
Machine Age     mis     Client Info     54329         Dil Age     mis     Client Info     54329         Sample Status     r     Client Info     ABNORMAL         Sample Status     method     limit/base     current     history1        CONTAMINATION     method     >-2     NEG         Vater     WC Method     >-2     NEG         WEAR METALS     method     limit/base     current     history1        Trainum     ppm     ASTM D5165m     >100     92         Trainum     ppm     ASTM D5165m     >20     4         Silver     ppm     ASTM D5165m     >33     <1	•						
Dil Age     mis     Client Info     54329         Dil Changed     Client Info     Changed          Sample Status     Imit Mode     Imit/base     current     history1     history1       CONTAMINATION     method     Imit/base     current     history1     history1       Vater     WC Method     >0.2     NEG         Silycol     WC Method     >0.2     NEG         Othore     ppm     ASTM D5185m     >100     92         Chromium     ppm     ASTM D5185m     >4     1         Vickel     ppm     ASTM D5185m     >3     <1		mlo					
Dil Changed     Client Info     Changed         Sample Status     Imit base     current     history1     history1       CONTAMINATION     method     limit/base     current     history1     history1       Fuel     WC Method     >2.0     <1.0	•						
Sample Status     Imit base     Current     history1     history1       CONTAMINATION     method     >2.0     <1.0	0	11115					
Fuel     WC Method     >2.0     <1.0         Water     WC Method     >0.2     NEG         Glycol     WC Method     >0.2     NEG         WEAR METALS     method     limit/base     current     history1     histor       Iron     ppm     ASTM D5185m     >100     92         Nickel     ppm     ASTM D5185m     >20     4         Aluminum     ppm     ASTM D5185m     >4     1         Aluminum     ppm     ASTM D5185m     >20     25         Lead     ppm     ASTM D5185m     >20     25         Adminum     ppm     ASTM D5185m     >20     25         Copper     ppm     ASTM D5185m     >20     25         Adminum     ppm     ASTM D5185m     0	-		Client Inio		-		
Water     WC Method     >0.2     NEG         Slycol     WC Method     NEG          WEAR METALS     method     limit/base     current     history1     histor       Tron     ppm     ASTM D5185m     >20     4         Chromium     ppm     ASTM D5185m     >20     4         Chromium     ppm     ASTM D5185m     >20     4         Silver     ppm     ASTM D5185m     >3     <1	CONTAMINA	TION	method	limit/base	current	history1	history2
Water     WC Method     >0.2     NEG         Slycol     WC Method     NEG          WEAR METALS     method     limit/base     current     history1     histor       Tron     ppm     ASTM D5185m     >100     92         Chromium     ppm     ASTM D5185m     >20     4         Silver     ppm     ASTM D5185m     >20     4         Silver     ppm     ASTM D5185m     >20     25         Aluminum     ppm     ASTM D5185m     >20     25         Copper     ppm     ASTM D5185m     >20     21         Cadmium     ppm     ASTM D5185m     >330     21         ADDITIVES     method     limit/base     current     history1     histor       AstM D5185m     0     5	Fuel		WC Method	>2.0	<1.0		
Calycol     WC Method     NEG         WEAR METALS     method     limit/base     current     history1     histor       ron     ppm     ASTM D5185m     >100     92         Dromium     ppm     ASTM D5185m     >20     4         Nickel     ppm     ASTM D5185m     >20     4         Silver     ppm     ASTM D5185m     >20     25         Aluminum     ppm     ASTM D5185m     >20     25         Copper     ppm     ASTM D5185m     >20     21         Copper     ppm     ASTM D5185m     >20     21         Cadmium     ppm     ASTM D5185m     >15     7         ADDITIVES     method     limit/base     current     history1     histor       Barium     ppm     ASTM D5185m     0     5      -							
WEAR METALS     method     limit/base     current     history1     history1       rron     ppm     ASTM D5185m     >100     92         Chromium     ppm     ASTM D5185m     >20     4         Nickel     ppm     ASTM D5185m     >4     1         Silver     ppm     ASTM D5185m     >3     <1				20.L			
ron     ppm     ASTM D5185m     >100     92         Chromium     ppm     ASTM D5185m     >20     4         Nickel     ppm     ASTM D5185m     >4     1         Silver     ppm     ASTM D5185m     >3     <1	•	IS	method	limit/base	current	history1	history2
Promium     Ppm     ASTM D5185m     >20     4         Nickel     ppm     ASTM D5185m     >4     1         Fitanium     ppm     ASTM D5185m     >3     <1							
Nickel   ppm   ASTM D5185m   >4   1       Fitanium   ppm   ASTM D5185m   >3   <1	-				-		
Titanium   ppm   ASTM D5185m   0       Silver   ppm   ASTM D5185m   >3   <1							
Silver     ppm     ASTM D5185m     >3     <1         Aluminum     ppm     ASTM D5185m     >20     25         Lead     ppm     ASTM D5185m     >40     14         Copper     ppm     ASTM D5185m     >330     21         Vanadium     ppm     ASTM D5185m     >15     7         Addmium     ppm     ASTM D5185m     >15     7         Addmium     ppm     ASTM D5185m     0          ADDITIVES     method     limit/base     current     history1     histor       Addmium     ppm     ASTM D5185m     0     5         Additybdenum     ppm     ASTM D5185m     0     7         Maganese     ppm     ASTM D5185m     950     4777				24			
Aluminum     ppm     ASTM D5185m     >20     25         ead     ppm     ASTM D5185m     >40     14         Copper     ppm     ASTM D5185m     >330     21         Vanadium     ppm     ASTM D5185m     >15     7         Vanadium     ppm     ASTM D5185m     >15     7         Cadmium     ppm     ASTM D5185m     0          ADDITIVES     method     limit/base     current     history1     histor       ASTM D5185m     0     5          ADDITIVES     method     limit/base     current     history1     histor       Boron     ppm     ASTM D5185m     0     5         Malganese     ppm     ASTM D5185m     0     7         Calcium     ppm     ASTM D5185m     950     477 </td <td></td> <td></td> <td></td> <td>~3</td> <td>-</td> <td></td> <td></td>				~3	-		
Lead     ppm     ASTM D5185m     >40     14         Copper     ppm     ASTM D5185m     >330     21         Vanadium     ppm     ASTM D5185m     >15     7         Vanadium     ppm     ASTM D5185m     >15     7         Cadmium     ppm     ASTM D5185m     0          ADDITIVES     method     limit/base     current     history1     histor       Barium     ppm     ASTM D5185m     0     5         Molybdenum     ppm     ASTM D5185m     0     5         Magnesium     ppm     ASTM D5185m     0     7         Calcium     ppm     ASTM D5185m     0     7         Calcium     ppm     ASTM D5185m     950     477         Sulfur     ppm     ASTM D5185m     950							
Copper     ppm     ASTM D5185m     >330     21         Fin     ppm     ASTM D5185m     >15     7         Vanadium     ppm     ASTM D5185m     >15     7         ADDITIVES     method     limit/base     current     history1     histo       ADDitives     method     limit/base     current     history1     histo       Barium     ppm     ASTM D5185m     0     5         Molybdenum     ppm     ASTM D5185m     0     5         Maganese     ppm     ASTM D5185m     0     7         Calcium     ppm     ASTM D5185m     0     7         Calcium     ppm     ASTM D5185m     1050     1909         Calcium     ppm     ASTM D5185m     1580     1306         Sulfur     ppm     ASTM D5185m     2600 <t< td=""><td></td><td></td><td></td><td></td><td>-</td><td></td><td></td></t<>					-		
Tin     ppm     ASTM D5185m     >15     7         Vanadium     ppm     ASTM D5185m     <1							
Vanadium     ppm     ASTM D5185m     <1         Cadmium     ppm     ASTM D5185m     0         ADDITIVES     method     limit/base     current     history1     histor       Boron     ppm     ASTM D5185m     2     26         Barium     ppm     ASTM D5185m     0     5         Molybdenum     ppm     ASTM D5185m     0     5         Magnese     ppm     ASTM D5185m     0     7         Magnesium     ppm     ASTM D5185m     950     477         Calcium     ppm     ASTM D5185m     950     1030         Phosphorus     ppm     ASTM D5185m     2600     3413         Sulfur     ppm     ASTM D5185m     >20     84         Solicon     ppm     ASTM D5185m     >20     84 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>							
Cadmium     ppm     ASTM D5185m     0         ADDITIVES     method     limit/base     current     history1     histor       Barium     ppm     ASTM D5185m     2     26         Barium     ppm     ASTM D5185m     0     5         Molybdenum     ppm     ASTM D5185m     0     65         Magnese     ppm     ASTM D5185m     0     7         Magnesium     ppm     ASTM D5185m     950     477         Calcium     ppm     ASTM D5185m     950     1030         Phosphorus     ppm     ASTM D5185m     995     1030         Sulfur     ppm     ASTM D5185m     2600     3413         CONTAMINANTS     method     limit/base     current     history1     histor       Solicon     ppm     ASTM D5185m     >20     84 </td <td></td> <td></td> <td></td> <td>&gt;15</td> <td></td> <td></td> <td></td>				>15			
ADDITIVESmethodlimit/basecurrenthistory1history3BariumppmASTM D5185m226BariumppmASTM D5185m05MolybdenumppmASTM D5185m5065ManganeseppmASTM D5185m07MagnesiumppmASTM D5185m9504777CalciumppmASTM D5185m10501909PhosphorusppmASTM D5185m9951030ZincppmASTM D5185m26003413SulfurppmASTM D5185m26003413SolfurppmASTM D5185m>2540SoliconppmASTM D5185m>2084INFRA-REDmethodlimit/basecurrenthistory1history1NitrationAbs/cm*ASTM D7624>2011.1SulfationAbs/cm*ASTM D7624>3025.4							
Boron     ppm     ASTM D5185m     2     26         Barium     ppm     ASTM D5185m     0     5         Molybdenum     ppm     ASTM D5185m     50     65         Manganese     ppm     ASTM D5185m     0     7         Magnesium     ppm     ASTM D5185m     950     477         Calcium     ppm     ASTM D5185m     950     477         Calcium     ppm     ASTM D5185m     1050     1909         Calcium     ppm     ASTM D5185m     995     1030         Calcium     ppm     ASTM D5185m     2600     3413         Sulfur     ppm     ASTM D5185m     >25     40         Solicon     ppm     ASTM D5185m     >20     84    Noftium     ppm     ASTM D5185m </td <td></td> <td>ppm</td> <td></td> <td>limit/baco</td> <td></td> <td></td> <td></td>		ppm		limit/baco			
Barium     ppm     ASTM D5185m     0     5         Molybdenum     ppm     ASTM D5185m     50     65         Manganese     ppm     ASTM D5185m     0     7         Magnesium     ppm     ASTM D5185m     950     477         Calcium     ppm     ASTM D5185m     1050     1909         Calcium     ppm     ASTM D5185m     1050     1909         Calcium     ppm     ASTM D5185m     995     1030         Phosphorus     ppm     ASTM D5185m     2600     3413         Sulfur     ppm     ASTM D5185m     2600     3413         Solicon     ppm     ASTM D5185m     >25     40         Sodium     ppm     ASTM D5185m     >20     84         INFRA-RED     method     limit/bas		000					
Molybdenum     ppm     ASTM D5185m     50     65         Manganese     ppm     ASTM D5185m     0     7         Magnesium     ppm     ASTM D5185m     950     477         Calcium     ppm     ASTM D5185m     950     477         Calcium     ppm     ASTM D5185m     1050     1909         Calcium     ppm     ASTM D5185m     995     1030         Phosphorus     ppm     ASTM D5185m     2600     3413         Sulfur     ppm     ASTM D5185m     2600     3413         CONTAMINANTS     method     limit/base     current     history1     histo       Silicon     ppm     ASTM D5185m     >20     84         Potassium     ppm     ASTM D5185m     >20     84         INFRA-RED     method					-		
Manganese     ppm     ASTM D5185m     0     7         Magnesium     ppm     ASTM D5185m     950     4777         Calcium     ppm     ASTM D5185m     1050     1909         Calcium     ppm     ASTM D5185m     1050     1909         Phosphorus     ppm     ASTM D5185m     995     1030         Zinc     ppm     ASTM D5185m     1180     1306         Sulfur     ppm     ASTM D5185m     2600     3413         CONTAMINANTS     method     limit/base     current     history1     histo       Silicon     ppm     ASTM D5185m     >25     400         Sodium     ppm     ASTM D5185m     >20     84         Potassium     ppm     ASTM D5185m     >20     84         INFRA-RED     method     limit/					-		
Magnesium   ppm   ASTM D5185m   950   477       Calcium   ppm   ASTM D5185m   1050   1909       Phosphorus   ppm   ASTM D5185m   1050   1909       Phosphorus   ppm   ASTM D5185m   995   1030       Zinc   ppm   ASTM D5185m   1180   1306       Sulfur   ppm   ASTM D5185m   2600   3413       CONTAMINANTS   method   limit/base   current   history1   histor     Solicon   ppm   ASTM D5185m   >25   400       Sodium   ppm   ASTM D5185m   >20   84       INFRA-RED   method   limit/base   current   history1   histor     Soot %   %   *ASTM D7844   >3   0.6       INFRA-RED   *ASTM D7624   >20   11.1       Soot %   %	,						
Calcium     ppm     ASTM D5185m     1050     1909         Phosphorus     ppm     ASTM D5185m     995     1030         Zinc     ppm     ASTM D5185m     995     1030         Sulfur     ppm     ASTM D5185m     1180     1306         CONTAMINANTS     method     limit/base     current     history1     histo       Silicon     ppm     ASTM D5185m     >25     40         Sodium     ppm     ASTM D5185m     >25     40         Sodium     ppm     ASTM D5185m     >25     40         Sodium     ppm     ASTM D5185m     >20     84         Potassium     ppm     ASTM D5185m     >20     84         INFRA-RED     method     limit/base     current     history1     histor       Soot %     %     *ASTM D7624     >2	•						
Phosphorus     ppm     ASTM D5185m     995     1030         Zinc     ppm     ASTM D5185m     1180     1306         Sulfur     ppm     ASTM D5185m     2600     3413         CONTAMINANTS     method     limit/base     current     history1     histor       Silicon     ppm     ASTM D5185m     >25     40         Sodium     ppm     ASTM D5185m     >25     40         Sodium     ppm     ASTM D5185m     >25     40         Sodium     ppm     ASTM D5185m     >20     84         INFRA-RED     method     limit/base     current     history1     histor       Soot %     %     *ASTM D7844     >3     0.6         Nitration     Abs/.1mm     *ASTM D7415     >30     25.4	U						
Zinc     ppm     ASTM D5185m     1180     1306         Sulfur     ppm     ASTM D5185m     2600     3413         CONTAMINANTS     method     limit/base     current     history1     histor       Silicon     ppm     ASTM D5185m     >25     40         Sodium     ppm     ASTM D5185m     >25     40         Sodium     ppm     ASTM D5185m     >25     40         Sodium     ppm     ASTM D5185m     >20     84         INFRA-RED     method     limit/base     current     history1     histor       Soot %     %     *ASTM D7844     >3     0.6         Nitration     Abs/cm     *ASTM D7624     >20     11.1         Sulfation     Abs/.1mm     *ASTM D7415     >30     25.4							
SulfurppmASTM D5185m26003413CONTAMINANTSmethodlimit/basecurrenthistory1historSiliconppmASTM D5185m>2540SodiumppmASTM D5185m>2084PotassiumppmASTM D5185m>2084INFRA-REDmethodlimit/basecurrenthistory1historSoot %%*ASTM D7844>30.6NitrationAbs/cm*ASTM D7415>3025.4	•						
CONTAMINANTS   method   limit/base   current   history1   history1     Silicon   ppm   ASTM D5185m   >25   ▲ 40       Sodium   ppm   ASTM D5185m   >25   ▲ 40       Sodium   ppm   ASTM D5185m   >20   84       INFRA-RED   method   limit/base   current   history1   histor     Soot %   %   *ASTM D7844   >3   0.6       Nitration   Abs/cm   *ASTM D7624   >20   11.1       Sulfation   Abs/.1mm   *ASTM D7415   >30   25.4							
Silicon     ppm     ASTM D5185m     >25     40         Sodium     ppm     ASTM D5185m     5          Potassium     ppm     ASTM D5185m     >20     84         INFRA-RED     method     limit/base     current     history1     history1       Soot %     %     *ASTM D7844     >3     0.6         Nitration     Abs/cm     *ASTM D7624     >20     11.1         Sulfation     Abs/.1mm     *ASTM D7415     >30     25.4	CONTAMINA					historv1	history2
Sodium     ppm     ASTM D5185m     5         Potassium     ppm     ASTM D5185m     >20     84         INFRA-RED     method     limit/base     current     history1     histor       Soot %     %     *ASTM D7844     >3     0.6         Nitration     Abs/cm     *ASTM D7624     >20     11.1         Sulfation     Abs/.1mm     *ASTM D7415     >30     25.4							
Potassium     ppm     ASTM D5185m     >20     84         INFRA-RED     method     limit/base     current     history1     histor       Soot %     %     *ASTM D7844     >3     0.6         Nitration     Abs/cm     *ASTM D7624     >20     11.1         Sulfation     Abs/.1mm     *ASTM D7415     >30     25.4				20			
Soot %     %     *ASTM D7844     >3     0.6         Nitration     Abs/cm     *ASTM D7624     >20     11.1         Sulfation     Abs/.1mm     *ASTM D7415     >30     25.4				>20			
Nitration     Abs/cm     *ASTM D7624     >20     11.1         Sulfation     Abs/.1mm     *ASTM D7415     >30     25.4	INFRA-RED		method	limit/base	current	history1	history2
Nitration     Abs/cm     *ASTM D7624     >20     11.1         Sulfation     Abs/.1mm     *ASTM D7415     >30     25.4	Soot %	%	*ASTM D7844	>3	0.6		
Sulfation Abs/.1mm *ASTM D7415 >30 25.4							
FLUID DEGRADATION method limit/base current history1 histor							
	FLUID DEGRA		method	limit/base	current	history1	history2
Oxidation Abs/.1mm *ASTM D7414 >25 24.3	Oxidation	Abs/.1mm	*ASTM D7414	>25	24.3		
Base Number (BN)     mg KOH/g     ASTM D2896     4.4	Base Number (BN)	mg KOH/g			4.4		



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

OIL

DIAGNOSTICS

Submitted By: Sonny Boucher Page 2 of 2

# **OIL ANALYSIS REPORT**