

Sample Rating Trend

## NORMAL

## Area **Dixon** Transport-Tractor [Dixon Transport-Tractor] 325A325526

Diesel Engine

PETRO CANADA DURON SHP 10W30 (11 GAL

### DIAGNOSIS

#### Recommendation

No corrective action is recommended at this time. 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. No other contaminants were detected 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      Imit/base      current      history1      history2        Sample Number      Client Info      19 Apr 2024          Machine Age      mis      Client Info      17200          Oil Age      mis      Client Info      17200          Oil Changed      Client Info      Not Changd          Sample Status      Imit/base      current      history1      history2        Fuel      WC Method      >5      <1.0          Water      WC Method      >0.2      NEG          Water      WC Method      >5.2           Machinum      ppm      ASTM 05155m      >2           Machinum      ppm      ASTM 05155m      >2           Katel      ppm      ASTM 05155m      >3      16          Aluminum      ppm      ASTM 05155m      >	GAL)				Apr2024		
Sample Number      Client Info      PCA0121216          Sample Date      Client Info      19 Apr 2024          Machine Age      mis      Client Info      17200          Oil Age      mis      Client Info      No Changd          Oil Changed      Client Info      No Changd           Sample Status      Imit Mode      Current      History!          CONTAMINATION      method      5.0      <1.0          Water      WC Method      >.0      NEG          Water      WC Method      >.0      NEG          Water      WC Method      >.0      NEG          Nickel      ppm      ASTM 05155      >.2      2          Nickel      ppm      ASTM 05155      >.30      1          Silver      ppm      ASTM 05155      >.30      1			method	limit/base	current	history1	history2
Sample Date      Client Info      19 Apr 2024          Machine Age      mis      Client Info      17200          Oil Age      Client Info      17200          Oil Changed      Client Info      17200          Sample Status      Client Info      NORMAL          CONTAMINATION      method      Imit/base      current      Nistory1      history2        Fuel      WC Method      >5.2      +1.0          Water      WC Method      >0.2      NEG          Wear      WC Method      >0.2      NEG          Wear      MC Method      >2.2      <1          Ifon      ppm      ASTM 05155n      >30      1          Nickel      ppm      ASTM 05155n      >30      1          Silver      ppm      ASTM 05155n      >30      1				mmbasc		, in the second s	matoryz
Machine Age      mis      Client Info      17200          Oil Age      mis      Client Info      Not Changed         Sample Status      I      Immit/base      current      History1         CONTAMINATION      method      Solar           Water      VC Method      >5      <1.0							
Oil Age      mis      Client Info      Not Changd          Sample Status      I      Image      Second Info      Not Changd          CONTAMINATION      method      Imit/base      current      history1         Fuel      WC Method      >5      <1.0	•	mla			•		
Oil Changed      Client Info      Not Changd          Sample Status      Image Status </td <td>-</td> <td></td> <td></td> <td></td> <th></th> <td></td> <td></td>	-						
Sample Status      NORMAL          CONTAMINATION      method      imil/base      current      history1      history2        Fuel      WC Method      >5      <1.0          Water      WC Method      >5      <1          Weter      MBD 10585      Sate           Weter      ppm      ASTM 05185      >5      2          Nickel      ppm      ASTM 05185      >3      1          Silver      ppm      ASTM 05185      >3      16          Lead      ppm      ASTM 05185      >15      153          Copper      ppm      ASTM 05185      15      0	-	mis					
CONTAMINATION      method      limit/base      current      history1      history2        Fuel      WC Method      >5      <1.0          Glycol      WC Method      >0.2      NEG          WEAR METALS      method      limit/base      current      history1      history2        Iron      ppm      ASTM D5185m      >80      54          Nickel      ppm      ASTM D5185m      >2      <1          Nickel      ppm      ASTM D5185m      >2      <1          Silver      ppm      ASTM D5185m      >2      <1          Aluminum      ppm      ASTM D5185m      >30      16          Lead      ppm      ASTM D5185m      >30      16          Copper      ppm      ASTM D5185m      >5      8          Adminum      pm      ASTM D5185m      50      43	-		Client Inio		-		
Fuel      WC Method      >5      <1.0							
Water      WC Method      >0.2      NEG          Glycol      WC Method      NEG          WEAR METALS      method      limit/base      current      history1      history2        Iron      ppm      ASTM D5185m      >80      54          Chromium      ppm      ASTM D5185m      >5      2          Nickel      ppm      ASTM D5185m      >3      <1          Aluminum      ppm      ASTM D5185m      >30      16          Lead      ppm      ASTM D5185m      >30      1          Copper      ppm      ASTM D5185m      >50      153          Cadmium      ppm      ASTM D5185m      >50      153          ADDITIVES      method      imit/base      current      history1      history2        Boron      ppm      ASTM D5185m      50      43	CONTAMINATI	ION	method	limit/base	current	history1	history2
Glycol      WC Method      NEG          WEAR METALS      method      limit/base      current      history1      history2        Iron      ppm      ASTM D5185m      >50      2          Nickel      ppm      ASTM D5185m      >5      2          Nickel      ppm      ASTM D5185m      >2           Silver      ppm      ASTM D5185m      >2           Auminum      ppm      ASTM D5185m      >30      16          Lead      ppm      ASTM D5185m      >30      1          Vanadium      ppm      ASTM D5185m      0           Xanadium      ppm      ASTM D5185m      0           Vanadium      ppm      ASTM D5185m      0      43          Vanadium      ppm      ASTM D5185m      50      520							
WEAR METALS      method      limit/base      current      history1      history2        Iron      ppm      ASTM D5185m      >80      54          Chromium      ppm      ASTM D5185m      >5      2          Nickel      ppm      ASTM D5185m      >2      <1				>0.2			
Iron      ppm      ASTM D5185m      >80      54          Chromium      ppm      ASTM D5185m      >5      2          Nickel      ppm      ASTM D5185m      >2      <1          Titanium      ppm      ASTM D5185m      >3      <1          Silver      ppm      ASTM D5185m      >30      16          Lead      ppm      ASTM D5185m      >30      16          Copper      ppm      ASTM D5185m      >30      16          Cadmium      ppm      ASTM D5185m      >150      153          Cadmium      ppm      ASTM D5185m      >5      8          Cadmium      ppm      ASTM D5185m      0           ADDTIVES      method      imit/base      current      history1      history2        Boron      ppm      ASTM D5185m	Glycol		WC Method		NEG		
Chromium      ppm      ASTM D5185m      >5      2          Nickel      ppm      ASTM D5185m      >2      <1          Titanium      ppm      ASTM D5185m      >3      <1          Silver      ppm      ASTM D5185m      >3      <1          Lead      ppm      ASTM D5185m      >30      1          Copper      ppm      ASTM D5185m      >5      8          Cadmium      ppm      ASTM D5185m      >5      8          Cadmium      ppm      ASTM D5185m      >5      8          ADDITIVES      method      limit/base      current      history1      history2        Boron      ppm      ASTM D5185m      0      <1          Magnesium      ppm      ASTM D5185m      0      3          Magnesium      ppm      ASTM D5185m      0      520	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel      ppm      ASTM D5185m      >2      <1          Titanium      ppm      ASTM D5185m      >3      <1	Iron	ppm	ASTM D5185m	>80	54		
Titanium      ppm      ASTM D5185m      <1          Silver      ppm      ASTM D5185m      >30      16          Aluminum      ppm      ASTM D5185m      >30      16          Lead      ppm      ASTM D5185m      >30      1          Copper      ppm      ASTM D5185m      >5      8          Yanadium      ppm      ASTM D5185m      >5      8          Cadmium      ppm      ASTM D5185m      >5      8          Mandalum      ppm      ASTM D5185m      0           Cadmium      ppm      ASTM D5185m      0           Magnenium      ppm      ASTM D5185m      0      <1	Chromium	ppm	ASTM D5185m	>5	2		
Silver      ppm      ASTM D5185m      >3      <1          Aluminum      ppm      ASTM D5185m      >30      16          Lead      ppm      ASTM D5185m      >30      1          Copper      ppm      ASTM D5185m      >150      153          Vanadium      ppm      ASTM D5185m      >5      8          Cadmium      ppm      ASTM D5185m      >5      8          Cadmium      ppm      ASTM D5185m      0           ADDITIVES      method      limit/base      current      history1      history2        Boron      ppm      ASTM D5185m      5      43          Magnesium      ppm      ASTM D5185m      950      520          Calcium      ppm      ASTM D5185m      955      778          Sulfur      ppm      ASTM D5185m <td>Nickel</td> <td>ppm</td> <td>ASTM D5185m</td> <td>&gt;2</td> <th>&lt;1</th> <td></td> <td></td>	Nickel	ppm	ASTM D5185m	>2	<1		
Aluminum      ppm      ASTM D5185m      >30      16          Lead      ppm      ASTM D5185m      >30      1          Copper      ppm      ASTM D5185m      >150      153          Tin      ppm      ASTM D5185m      >5      8          Cadmium      ppm      ASTM D5185m      0           Cadmium      ppm      ASTM D5185m      0           ADDITIVES      method      limit/base      current      history1      history2        Boron      ppm      ASTM D5185m      2      47          Molybdenum      ppm      ASTM D5185m      0      43          Magnaese      ppm      ASTM D5185m      950      520          Magnaesium      ppm      ASTM D5185m      950      778          Sulfur      ppm      ASTM D5185m		ppm	ASTM D5185m				
Lead      ppm      ASTM D5185m      >30      1          Copper      ppm      ASTM D5185m      >150      153          Tin      ppm      ASTM D5185m      >5      8          Vanadium      ppm      ASTM D5185m      0          Cadmium      ppm      ASTM D5185m      0          ADDITIVES      method      limit/base      current      history1      history2        Boron      ppm      ASTM D5185m      2      47          Molybdenum      ppm      ASTM D5185m      0      -1          Magnesium      ppm      ASTM D5185m      50      43          Calcium      ppm      ASTM D5185m      950      520          Calcium      ppm      ASTM D5185m      950      778          Sulfur      ppm      ASTM D5185m      2600      2544 <t< td=""><td>Silver</td><td>ppm</td><td>ASTM D5185m</td><td>&gt;3</td><th></th><td></td><td></td></t<>	Silver	ppm	ASTM D5185m	>3			
Copper      ppm      ASTM D5185m      >150      153          Tin      ppm      ASTM D5185m      >5      8          Vanadium      ppm      ASTM D5185m      0          Cadmium      ppm      ASTM D5185m      0          ADDITIVES      method      limit/base      current      history1      history2        Boron      ppm      ASTM D5185m      2      47          Barium      ppm      ASTM D5185m      0      <1	Aluminum	ppm	ASTM D5185m	>30	16		
Tin      ppm      ASTM D5185m      >5      8         Vanadium      ppm      ASTM D5185m      0          Cadmium      ppm      ASTM D5185m      0          ADDITIVES      method      limit/base      current      history1      history2        Boron      ppm      ASTM D5185m      2      47          Magname      ppm      ASTM D5185m      0      <1	Lead	ppm	ASTM D5185m	>30	1		
Vanadium      ppm      ASTM D5185m      0          Cadmium      ppm      ASTM D5185m      0          ADDITIVES      method      limit/base      current      history1      history2        Boron      ppm      ASTM D5185m      2      47          Barium      ppm      ASTM D5185m      0      <1          Molybdenum      ppm      ASTM D5185m      0      <1          Manganese      ppm      ASTM D5185m      0.0      3          Magnesium      ppm      ASTM D5185m      0.0      3          Magnesium      ppm      ASTM D5185m      0.0      3          Calcium      ppm      ASTM D5185m      0.0      3          Sulfur      ppm      ASTM D5185m      950      778          Sulfur      ppm      ASTM D5185m      260      254	Copper	ppm	ASTM D5185m	>150	153		
Cadmium      ppm      ASTM D5185m      0          ADDITIVES      method      limit/base      current      history1      history2        Boron      ppm      ASTM D5185m      2      47          Barium      ppm      ASTM D5185m      0      <1	Tin	ppm	ASTM D5185m	>5	-		
ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185m247BariumppmASTM D5185m0<1	Vanadium	ppm	ASTM D5185m		0		
Boron      ppm      ASTM D5185m      2      47          Barium      ppm      ASTM D5185m      0      <1          Molybdenum      ppm      ASTM D5185m      50      43          Manganese      ppm      ASTM D5185m      0      3          Magnesium      ppm      ASTM D5185m      950      520          Calcium      ppm      ASTM D5185m      1050      1788          Phosphorus      ppm      ASTM D5185m      1050      1788          Zinc      ppm      ASTM D5185m      1180      926          Sulfur      ppm      ASTM D5185m      2600      2544          Solicon      ppm      ASTM D5185m      >20      7          Solicon      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      <	Cadmium	ppm	ASTM D5185m		0		
Barium      ppm      ASTM D5185m      0      <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum      ppm      ASTM D5185m      50      43          Manganese      ppm      ASTM D5185m      0      3          Magnesium      ppm      ASTM D5185m      950      520          Calcium      ppm      ASTM D5185m      1050      1788          Phosphorus      ppm      ASTM D5185m      1050      1788          Zinc      ppm      ASTM D5185m      1180      926          Sulfur      ppm      ASTM D5185m      2600      2544          Sulfur      ppm      ASTM D5185m      2600      2544          Sulfur      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      >20      50     NtrRPA-RED      method	Boron	ppm	ASTM D5185m	2	47		
Maganese      ppm      ASTM D5185m      0      3          Magnesium      ppm      ASTM D5185m      950      520          Calcium      ppm      ASTM D5185m      1050      1788          Phosphorus      ppm      ASTM D5185m      995      778          Zinc      ppm      ASTM D5185m      995      778          Sulfur      ppm      ASTM D5185m      995      778          Sulfur      ppm      ASTM D5185m      2600      2544          Sulfur      ppm      ASTM D5185m      2600      2544          Solicon      ppm      ASTM D5185m      >20      7          Solium      ppm      ASTM D5185m      >20      50          Notassium      ppm      ASTM D5185m      >20      50          INFRA-RED      method      limit/base	Barium	ppm	ASTM D5185m	0	<1		
Magnesium      ppm      ASTM D5185m      950      520          Calcium      ppm      ASTM D5185m      1050      1788          Phosphorus      ppm      ASTM D5185m      995      778          Zinc      ppm      ASTM D5185m      995      778          Sulfur      ppm      ASTM D5185m      1180      926          Sulfur      ppm      ASTM D5185m      2600      2544          CONTAMINANTS      method      limit/base      current      history1      history2        Silicon      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      >20      50          NFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7844      >3      0.3          Nitration      Abs/.tmm      *ASTM D7415	Molybdenum	ppm	ASTM D5185m	50	43		
Calcium      ppm      ASTM D5185m      1050      1788          Phosphorus      ppm      ASTM D5185m      995      778          Zinc      ppm      ASTM D5185m      995      778          Sulfur      ppm      ASTM D5185m      1180      926          Sulfur      ppm      ASTM D5185m      2600      2544          CONTAMINANTS      method      limit/base      current      history1      history2        Silicon      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      >20      50          INFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7844      >3      0.3          Nitration      Abs/m      *ASTM D7415      <	Manganese	ppm	ASTM D5185m	0	3		
Phosphorus      ppm      ASTM D5185m      995      778          Zinc      ppm      ASTM D5185m      1180      926          Sulfur      ppm      ASTM D5185m      2600      2544          CONTAMINANTS      method      limit/base      current      history1      history2        Silicon      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      >20      7          Potassium      ppm      ASTM D5185m      >20      50          INFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7624      >3      0.3          Nitration      Abs/cm      *ASTM D7624      >20      7.9          Sulfation      Abs/.1mm      *ASTM D7745	Magnesium	ppm	ASTM D5185m	950	520		
Zinc      ppm      ASTM D5185m      1180      926          Sulfur      ppm      ASTM D5185m      2600      2544          CONTAMINANTS      method      limit/base      current      history1      history2        Silicon      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      >20      50          Potassium      ppm      ASTM D5185m      >20      50          INFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7624      >3      0.3          Nitration      Abs/cm      *ASTM D7624      >20      7.9          Sulfation      Abs/.1mm      *ASTM D7624      >30      23.2          FLUID DEGRADATION      method      limit/b	Calcium	ppm	ASTM D5185m	1050	1788		
SulfurppmASTM D5185m26002544CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>207SodiumppmASTM D5185m>206PotassiumppmASTM D5185m>2050INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.3NitrationAbs/cm*ASTM D7624>207.9SulfationAbs/lmm*ASTM D7415>3023.2FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs./1mm*ASTM D7414>2521.5	Phosphorus	ppm	ASTM D5185m	995	778		
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>207SodiumppmASTM D5185m6PotassiumppmASTM D5185m>2050INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.3NitrationAbs/cm*ASTM D7624>207.9SulfationAbs/lmm*ASTM D7415>3023.2FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/lmm*ASTM D7414>2521.5	Zinc	ppm	ASTM D5185m	1180	926		
Silicon      ppm      ASTM D5185m      >20      7          Sodium      ppm      ASTM D5185m      6           Potassium      ppm      ASTM D5185m      >20      50          INFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7844      >3      0.3          Nitration      Abs/cm      *ASTM D7624      >20      7.9          Sulfation      Abs/.1mm      *ASTM D7615      >30      23.2          FLUID DEGRADATION      method      limit/base      current      history1      history2        Oxidation      Abs/.1mm      *ASTM D7614      >25      21.5	Sulfur	ppm	ASTM D5185m	2600	2544		
Sodium      ppm      ASTM D5185m      6          Potassium      ppm      ASTM D5185m      >20      50          INFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7844      >3      0.3          Nitration      Abs/cm      *ASTM D7624      >20      7.9          Sulfation      Abs/.1mm      *ASTM D7415      >30      23.2          FLUID DEGRADATION      method      limit/base      current      history1      history2        Oxidation      Abs/.1mm      *ASTM D7414      >25      21.5	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium      ppm      ASTM D5185m      >20      50          INFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7844      >3      0.3          Nitration      Abs/cm      *ASTM D7624      >20      7.9          Sulfation      Abs/.1mm      *ASTM D7415      >30      23.2          FLUID DEGRADATION      method      limit/base      current      history1      history2        Oxidation      Abs/.1mm      *ASTM D7414      >25      21.5	Silicon	ppm	ASTM D5185m	>20			
INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.3NitrationAbs/cm*ASTM D7624>207.9SulfationAbs/.1mm*ASTM D7415>3023.2FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2521.5	Sodium	ppm	ASTM D5185m		6		
Soot %      %      *ASTM D7844      >3      0.3          Nitration      Abs/cm      *ASTM D7624      >20      7.9          Sulfation      Abs/.1mm      *ASTM D7615      >30      23.2          FLUID DEGRADATION      method      limit/base      current      history1      history2        Oxidation      Abs/.1mm      *ASTM D7414      >25      21.5	Potassium	ppm	ASTM D5185m	>20	50		
Nitration      Abs/cm      *ASTM D7624      >20      7.9          Sulfation      Abs/.1mm      *ASTM D7415      >30      23.2          FLUID DEGRADATION      method      limit/base      current      history1      history2        Oxidation      Abs/.1mm      *ASTM D7414      >25      21.5	INFRA-RED		method	limit/base	current	history1	history2
Sulfation      Abs/.1mm      *ASTM D7415      >30      23.2          FLUID DEGRADATION      method      limit/base      current      history1      history2        Oxidation      Abs/.1mm      *ASTM D7414      >25      21.5	Soot %	%	*ASTM D7844	>3	0.3		
FLUID DEGRADATION  method  limit/base  current  history1  history2    Oxidation  Abs/.1mm  *ASTM D7414  >25  21.5	Nitration	Abs/cm	*ASTM D7624	>20	7.9		
Oxidation Abs/.1mm *ASTM D7414 >25 21.5	Sulfation	Abs/.1mm	*ASTM D7415	>30	23.2		
	FLUID DEGRAD	DATION	method	limit/base	current	history1	history2
Base Number (BN)      mg KOH/g      ASTM D2896      8.9	Oxidation	Abs/.1mm	*ASTM D7414	>25	21.5		
	Base Number (BN)	mg KOH/g	ASTM D2896		8.9		



# **OIL ANALYSIS REPORT**



Report Id: TSV3250 [WUSCAR] 06161165 (Generated: 04/29/2024 13:26:50) Rev: 1

Submitted By: Mike Shoemaker