

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Component Natural Gas Engine

PETRO CANADA DURON SHP 15W40 (21 QTS)

### DIAGNOSIS

#### Recommendation

We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

#### 🔺 Wear

Metal levels are typical for a new component breaking in.

#### Contamination

Fuel content negligible. Elemental levels of silicon (Si) and aluminum (Al) indicate possible aluminasilicate (coarse dirt) ingress.

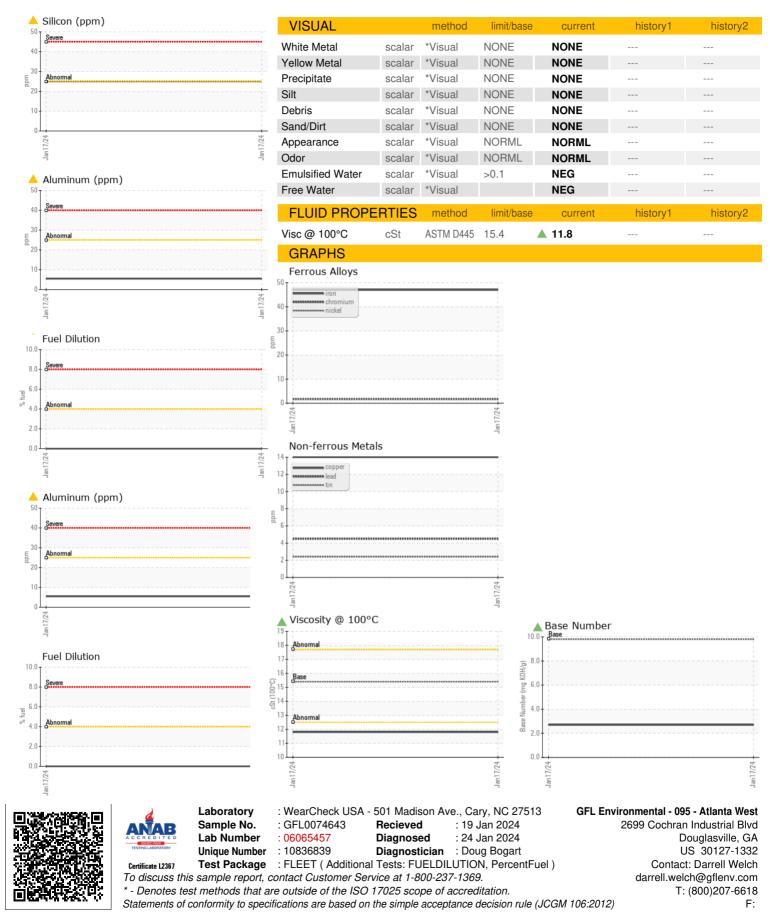
#### Fluid Condition

The oil viscosity is lower than normal. The BN level is low. Confirm oil type.

Sample Number  Client Info  IT  Jan 202      Sample Date  Client Info  IT  Jan 202      Machine Age  hr  Client Info  IT21      Oil Age  hrs  Client Info  Changed      Oil Changed  '  Client Info  MBNORMA      Sample Status  '  Method  Not  ABNORMA      CONTAMINATION  method  initibase  current  history  history    Water  WC Method  >0.1  NEG      Chromium  ppm  ASTM 05185  >50  47      Nickel  ppm  ASTM 05185  >54  2      Nickel  ppm  ASTM 05185  >40       Nickel  ppm  ASTM 05185  >40       Auminum  ppm  ASTM 05185  >40       Nickel  ppm  ASTM 05185  >40       Auminum  pm  ASTM 05185	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age      hrs      Client Info      1121          Oil Age      hrs      Client Info      Changed          Oil Changed      Client Info      Changed           Sample Status      Client Info      MENORIMAL           CONTAMINATION      method      limit/base      current      history1      history2        Water      WC Method      >0.1      NEG          WEAR METALS      method      limit/base      current      history1         Nickel      ppm      ASTM D5185m      >55      47          Silver      ppm      ASTM D5185m      >55      0          Aluminum      ppm      ASTM D5185m      >55      0          Aluminum      ppm      ASTM D5185m      >40      4          Copper      ppm      ASTM D5185m      >40      1	Sample Number		Client Info		GFL0074643		
Oil Age      hrs      Client Info      1121          Oil Changed      Client Info      Changed          Sample Status      I      Imil/base      current      History1      History2        Water      WC Method      >0.1      NEG          WEAR METALS      method      limil/base      current      History1      history2        Iron      ppm      ASTM D5185m      >50      47          Chromium      ppm      ASTM D5185m      >51      2          Nickel      ppm      ASTM D5185m      >52      0          Auminum      ppm      ASTM D5185m      >24      2          Auminum      ppm      ASTM D5185m      >25      6          Auminum      ppm      ASTM D5185m      >44      2          Auminum      ppm      ASTM D5185m      >450      14     <	Sample Date		Client Info		17 Jan 2024		
Oli Changed      Client Info      Changed          Sample Status      Image      Image      Current      history1      history2        Water      WC Method      >0.1      NEG          WEAR METALS      method      Imit/base      current      history1      history2        Iron      ppm      ASTM D5185m      >50      47          Nickel      ppm      ASTM D5185m      >44      2          Nickel      ppm      ASTM D5185m      >40           Silver      ppm      ASTM D5185m      >40           Copper      ppm      ASTM D5185m      >40           Vanadium      ppm      ASTM D5185m      >40           Cadmium      ppm      ASTM D5185m      >41           Cadmium      ppm      ASTM D5185m      0      11	Machine Age	hrs	Client Info		1121		
Sample Status      Imit loss      Current      history1      history2        Water      WC Method      >0.1      NEG         WEAR METALS      method      limit/base      current      history1      history2        Wear      wC Method      >0.1      NEG          WEAR METALS      method      limit/base      current      history1         Nickel      ppm      ASTM D5185m      >5      2          Silver      ppm      ASTM D5185m      >5      0          Aluminum      ppm      ASTM D5185m      >25      6      6          Copper      ppm      ASTM D5185m      >40      4          Cadmium      ppm      ASTM D5185m      >40      4          ADDITIVES      method      limit/base      current      history1         Magnesium      ppm      ASTM D5185m      >4      2	Oil Age	hrs	Client Info		1121		
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Lead      ppm      ASTM D5185m      >40      4          Copper      ppm      ASTM D5185m      >150      14          Tin      ppm      ASTM D5185m      >4      2          Vanadium      ppm      ASTM D5185m           Cadmium      ppm      ASTM D5185m      0           ADDITIVES      method      limit/base      current      history1      history2        Boron      ppm      ASTM D5185m      0      1          Molybdenum      ppm      ASTM D5185m      0      111          Maganesium      ppm      ASTM D5185m      1010      805          Calcium      ppm      ASTM D5185m      1070      1116          Maganesium      ppm      ASTM D5185m      1270      955          Sulfur      ppm      ASTM D5185m      2060	Silver	ppm	ASTM D5185m	>3	0		
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Cadmium      ppm      ASTM D5185m      0          ADDITIVES      method      limit/base      current      history1      history2        Boron      ppm      ASTM D5185m      0      1          Barium      ppm      ASTM D5185m      0      3          Marganese      ppm      ASTM D5185m      0      11          Marganese      ppm      ASTM D5185m      0      11          Marganese      ppm      ASTM D5185m      0      11          Marganesum      ppm      ASTM D5185m      1010      805          Marganesum      ppm      ASTM D5185m      1070      1116           Calcium      ppm      ASTM D5185m      1070      1116           Sulfur      ppm      ASTM D5185m      1270      955           Sulfur      ppm <td>Tin</td> <td>ppm</td> <td>ASTM D5185m</td> <td>&gt;4</td> <th>2</th> <td></td> <td></td>	Tin	ppm	ASTM D5185m	>4	2		
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Magnesium      ppm      ASTM D5185m      1010      805          Calcium      ppm      ASTM D5185m      1070      1116          Phosphorus      ppm      ASTM D5185m      1150      744          Zinc      ppm      ASTM D5185m      1270      955          Sulfur      ppm      ASTM D5185m      2060      2099          CONTAMINANTS      method      limit/base      current      history1      history2        Silicon      ppm      ASTM D5185m      >25      4          Sodium      ppm      ASTM D5185m      >20      8          Potassium      ppm      ASTM D5185m      >20      8          Fuel      %      ASTM D7524      >4.0      0.0          INFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7624 <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td>60</td> <th>54</th> <td></td> <td></td>	Molybdenum	ppm	ASTM D5185m	60	54		
Calcium      ppm      ASTM D5185m      1070      1116          Phosphorus      ppm      ASTM D5185m      1150      744          Zinc      ppm      ASTM D5185m      1270      955          Sulfur      ppm      ASTM D5185m      2060      2099          CONTAMINANTS      method      limit/base      current      history1      history2        Silicon      ppm      ASTM D5185m      >25      25          Sodium      ppm      ASTM D5185m      >20      8          Potassium      ppm      ASTM D5185m      >20      8          INFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7844      0          Nitration      Abs/.1mm      *ASTM D7414      >20      12.1          Sulfation      Abs/.1mm      *ASTM D7415 <td>Manganese</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th>11</th> <td></td> <td></td>	Manganese	ppm	ASTM D5185m	0	11		
Phosphorus      ppm      ASTM D5185m      1150      744          Zinc      ppm      ASTM D5185m      1270      955           Sulfur      ppm      ASTM D5185m      2060      2099           CONTAMINANTS      method      limit/base      current      history1      history2        Silicon      ppm      ASTM D5185m      >25      25          Sodium      ppm      ASTM D5185m      >25      4          Potassium      ppm      ASTM D5185m      >20      8          Fuel      %      ASTM D5185m      >20      8          INFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7844      0          Nitration      Abs/.1mm      *ASTM D7624      >20      12.1     Sulfation      Abs/.1mm      *ASTM	Magnesium	ppm	ASTM D5185m	1010	805		
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Silicon    ppm    ASTM D5185m    >25    ▲ 25        Sodium    ppm    ASTM D5185m    >20    4        Potassium    ppm    ASTM D5185m    >20    8        Fuel    %    ASTM D3524    >4.0    0.0        INFRA-RED    method    limit/base    current    history1    history2      Soot %    %    *ASTM D7844    0        Nitration    Abs/cm    *ASTM D7624    >20    12.1        Sulfation    Abs/.1mm    *ASTM D7624    >30    25.0        FLUID DEGRADATION    method    limit/base    current    history1    history2      Oxidation    Abs/.1mm    *ASTM D7414    >25    22.1	Sulfur	ppm	ASTM D5185m	2060	2099		
Sodium      ppm      ASTM D5185m      4          Potassium      ppm      ASTM D5185m      >20      8          Fuel      %      ASTM D5185m      >20      8          INFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7844      0          INFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7624      >20      12.1          Nitration      Abs/cm      *ASTM D7624      >20      25.0          FLUID DEGRADATION      method      limit/base      current      history1      history2        Oxidation      Abs/.1mm      *ASTM D7414      >25      22.1	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium      ppm      ASTM D5185m      >20      8          Fuel      %      ASTM D3524      >4.0      0.0          INFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7844      0          Nitration      Abs/cm      *ASTM D7624      >20      12.1          Sulfation      Abs/.1mm      *ASTM D7415      >30      25.0          FLUID DEGRADATION      method      limit/base      current      history1      history2        Oxidation      Abs/.1mm      *ASTM D7414      >25      22.1	Silicon	ppm	ASTM D5185m	>25	<u> </u>		
Fuel      %      ASTM D3524      >4.0      0.0          INFRA-RED      method      limit/base      current      history1      history2        Soot %      %      *ASTM D7844      0          Nitration      Abs/cm      *ASTM D7624      >20      12.1          Sulfation      Abs/.1mm      *ASTM D7415      >30      25.0          FLUID DEGRADATION      method      limit/base      current      history1      history2        Oxidation      Abs/.1mm      *ASTM D7414      >25      22.1	Sodium	ppm	ASTM D5185m		4		
INFRA-RED    method    limit/base    current    history1    history2      Soot %    %    *ASTM D7844    0        Nitration    Abs/cm    *ASTM D7624    >20    12.1        Sulfation    Abs/.1mm    *ASTM D7615    >30    25.0        FLUID DEGRADATION    method    limit/base    current    history1    history2      Oxidation    Abs/.1mm    *ASTM D7414    >25    22.1	Potassium	ppm		>20	8		
Soot %      %      *ASTM D7844      0          Nitration      Abs/cm      *ASTM D7624      >20      12.1          Sulfation      Abs/.1mm      *ASTM D7415      >30      25.0          FLUID DEGRADATION      method      limit/base      current      history1      history2        Oxidation      Abs/.1mm      *ASTM D7414      >25      22.1	Fuel	%	ASTM D3524	>4.0	0.0		
Nitration      Abs/cm      *ASTM D7624      >20      12.1          Sulfation      Abs/.1mm      *ASTM D7415      >30      25.0          FLUID DEGRADATION      method      limit/base      current      history1      history2        Oxidation      Abs/.1mm      *ASTM D7414      >25      22.1	INFRA-RED		method	limit/base	current	history1	history2
Sulfation      Abs/.1mm      *ASTM D7415      >30      25.0          FLUID DEGRADATION      method      limit/base      current      history1      history2        Oxidation      Abs/.1mm      *ASTM D7414      >25      22.1	Soot %	%	*ASTM D7844		0		
FLUID DEGRADATION      method      limit/base      current      history1      history2        Oxidation      Abs/.1mm      *ASTM D7414      >25      22.1	Nitration	Abs/cm	*ASTM D7624	>20	12.1		
Oxidation Abs/.1mm *ASTM D7414 >25 22.1	Sulfation	Abs/.1mm	*ASTM D7415	>30	25.0		
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 🔺 2.7	Oxidation	Abs/.1mm	*ASTM D7414	>25	22.1		
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	<b>2</b> .7		



# **OIL ANALYSIS REPORT**



Submitted By: Darrell Welch

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