

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Component Diesel Engine

## PETRO CANADA DURON SHP 10W30 (10 GAL)

### DIAGNOSIS Recommendation

Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

#### 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

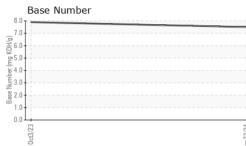
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

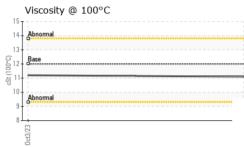
Sample Number     Client Info     PCA0114056     PCA0103133        Sample Date     Client Info     23 Jan 2024     03 Oct 2023        Machine Age     mls     Client Info     17239     152655        Oil Age     mls     Client Info     17239     152655        Oil Changed     Client Info     Changed     Changed      NORMAL        Sample Status     Imitiobase     current     NORMAL     NORMAL        Vexter     WC Method     So.0     <1.0          Water     WC Method     So.0     <1.0          Vater     WC Method     So.0     <1.0          Near     ppm     ASTM 05165m     >120     13     7         Vexter     ppm     ASTM 05165m     >20     -1     0         Silver     ppm     ASTM 05165m     >20     0 <th>N SHP 10W30 (10</th> <th>) GAL)</th> <th></th> <th>0ct2023</th> <th>Jan2024</th> <th></th> <th></th>	N SHP 10W30 (10	) GAL)		0ct2023	Jan2024		
Sample Date     Client Info     23 Jan 2024     03 Oct 2023        Machine Age     mls     Client Info     206894     189655        Oil Age     mls     Client Info     17239     152655        Sample Status     Client Info     Changed     Changed      Changed        Sample Status     Client Info     Changed     NORMAL     NORMAL        Fuel     WC Method     >3.0     <1.0     <1.0        Water     WC Method     >0.2     NEG     NEG        WeAR METALS     method     imit/base     current     history1     history1       Iron     ppm     ASTM D585m<>20     <1     0        Nickel     ppm     ASTM D585m<>20     17     4        Aluminum     ppm     ASTM D585m     >20     0        Silver     ppm     ASTM D585m     >20     1        ASTM D585m     >20     17	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Date     Client Info     23 Jan 2024     03 Oct 2023        Machine Age     mis     Client Info     206894     189655        Oil Age     mis     Client Info     17239     152655        Sample Status     Client Info     Changed     NORMAL        CONTAMINATION     method     imit/base     current     history1     history1       Fuel     WC Method     >3.0     <1.0	Sample Number		Client Info		PCA0114056	PCA0103133	
Machine Age     mls     Client Info     206894     189655        Oil Age     mis     Client Info     17239     152655        Oil Changed     Client Info     Changed     Changed         Sample Status     Imit/base     current     NoRMAL     NORMAL        Year     WC Method     >3.0     <1.0			Client Info		23 Jan 2024	03 Oct 2023	
Oil Age     mis     Client Info     17239     152655        Oil Changed     Client Info     Changed     Changed         Sample Status     Imit/base     current     NoRMAL         CONTAMINATION     method     Jimit/base     current     history1        Water     WC Method     >3.0     <1.0		mls	Client Info		206894	189655	
Oil Changed     Client Info     Changed     Changed     Changed        Sample Status     Image     Image     RURRAL     NORMAL        CONTAMINATION     method     Image     current     history1        Water     WC Method     >3.0     <1.0	•	mls	Client Info		17239	152655	
Sample Status     NORMAL     NORMAL     NORMAL        CONTAMINATION     method     limit/base     current     history1     history1       Fuel     WC Method     >3.0     <1.0	-		Client Info		Changed	Changed	
Fuel     WC Method     >3.0     <1.0     <1.0        Water     WC Method     >0.2     NEG     NEG        Glycol     WC Method     NEG     NEG      Init/base        WEAR METALS     method     Imit/base     current     history     history       Iron     ppm     ASTM D5185m     >20     <1	•				•	U	
Water     WC Method     >0.2     NEG     NEG        Glycol     WC Method     NEG     NEG        WEAR METALS     method     limit/base     current     history1     history1       Iron     ppm     ASTM D5185m     >120     13     7        Chromium     ppm     ASTM D5185m     >20     <1	CONTAMINATI	ON	method	limit/base	current	history1	history2
Glycol     WC Method     NEG     NEG        WEAR METALS     method     limit/base     current     history1     history1       Iron     ppm     ASTM D5185m     >120     13     7        Chromium     ppm     ASTM D5185m     >20     <1	Fuel		WC Method	>3.0	<1.0	<1.0	
WEAR METALS     method     limit/base     current     history1     history1       iron     ppm     ASTM D5185m     >120     13     7        Chromium     ppm     ASTM D5185m     >20     <1	Water		WC Method	>0.2	NEG	NEG	
Iron     ppm     ASTM D5185m     >120     13     7        Chromium     ppm     ASTM D5185m     >20     <1	Glycol		WC Method		NEG	NEG	
Chromium     ppm     ASTM D5185m     >20     <1     0        Nickel     ppm     ASTM D5185m     >5     <1	WEAR METALS	S	method	limit/base	current	history1	history2
Nickel     ppm     ASTM D5185m     >5     <1     0        Titanium     ppm     ASTM D5185m     >2     <1	Iron	ppm	ASTM D5185m	>120	13	7	
Titanium     ppm     ASTM D5185m     >2     <1     0        Silver     ppm     ASTM D5185m     >2     0     0        Aluminum     ppm     ASTM D5185m     >20     17     4        Lead     ppm     ASTM D5185m     >40     <1	Chromium	ppm	ASTM D5185m	>20	<1	0	
Titanium     ppm     ASTM D5185m     >2     <1     0        Silver     ppm     ASTM D5185m     >2     0     0        Aluminum     ppm     ASTM D5185m     >20     17     4        Lead     ppm     ASTM D5185m     >30     2     1        Copper     ppm     ASTM D5185m     >330     2     1        Vanadium     ppm     ASTM D5185m     >330     2     1        Vanadium     ppm     ASTM D5185m     >15     <1	Nickel				<1		
Silver     ppm     ASTM D5185m     >2     0     0        Aluminum     ppm     ASTM D5185m     >20     17     4        Lead     ppm     ASTM D5185m     >40     <1     <1        Copper     ppm     ASTM D5185m     >330     2     1        Vanadium     ppm     ASTM D5185m     >15     <1     <1        Vanadium     ppm     ASTM D5185m     >15     <1     0        Vanadium     ppm     ASTM D5185m     0     <1     0        ADDITIVES     method     limit/base     current     history1     history1       Boron     ppm     ASTM D5185m     0     0     0	Titanium		ASTM D5185m	>2	<1	0	
Aluminum     ppm     ASTM D5185m     >20     17     4        Lead     ppm     ASTM D5185m     >40     <1	Silver				0	0	
Lead     ppm     ASTM D5185m     >40     <1     <1        Copper     ppm     ASTM D5185m     >330     2     1        Tin     ppm     ASTM D5185m     >15     <1	Aluminum		ASTM D5185m	>20		4	
Copper     ppm     ASTM D5185m     >330     2     1        Tin     ppm     ASTM D5185m     >15     <1	Lead				<1	<1	
Tin     ppm     ASTM D5185m     >15     <1     <1        Vanadium     ppm     ASTM D5185m     0     0        Cadmium     ppm     ASTM D5185m     0     0        ADDITIVES     method     limit/base     current     history1     history       Boron     ppm     ASTM D5185m     2     0     0        Barium     ppm     ASTM D5185m     0     0     0        Magnaese     ppm     ASTM D5185m     50     55     61				>330			
Vanadium     ppm     ASTM D5185m     <1     0        Cadmium     ppm     ASTM D5185m     0     0        ADDITIVES     method     limit/base     current     history1     history1       Boron     ppm     ASTM D5185m     2     0     0        Barium     ppm     ASTM D5185m     2     0     0        Marganese     ppm     ASTM D5185m     0     55     61        Marganese     ppm     ASTM D5185m     0     <-1					- <1	<1	
Cadmium     ppm     ASTM D5185m     0     0        ADDITIVES     method     limit/base     current     history1     history1       Boron     ppm     ASTM D5185m     2     0     0        Barium     ppm     ASTM D5185m     0     0     0        Marganese     ppm     ASTM D5185m     50     55     61        Marganese     ppm     ASTM D5185m     0     <1							
Boron     ppm     ASTM D5185m     2     0     0        Barium     ppm     ASTM D5185m     0     0     0     0        Molybdenum     ppm     ASTM D5185m     50     55     61        Manganese     ppm     ASTM D5185m     0     <1							
Barium     ppm     ASTM D5185m     0     0     0	ADDITIVES		method	limit/base	current	history1	history2
Barium     ppm     ASTM D5185m     0     0     0        Molybdenum     ppm     ASTM D5185m     50     55     61        Manganese     ppm     ASTM D5185m     0     <1	Boron	ppm	ASTM D5185m	2	0	0	
Molybdenum     ppm     ASTM D5185m     50     55     61        Manganese     ppm     ASTM D5185m     0     <1	Barium		ASTM D5185m	0	0	0	
Maganese     ppm     ASTM D5185m     0     <1     0        Magnesium     ppm     ASTM D5185m     950     968     994        Calcium     ppm     ASTM D5185m     1050     1040     1096        Phosphorus     ppm     ASTM D5185m     1950     1004     1006        Zinc     ppm     ASTM D5185m     995     1004     1006        Sulfur     ppm     ASTM D5185m     2600     2809     3077        CONTAMINANTS     method     limit/base     current     history1     history       Silicon     ppm     ASTM D5185m     >25     8     3        Sodium     ppm     ASTM D5185m     >20     44     2        INFRA-RED     method     limit/base     current     history1     history1       Soot %     %     *ASTM D7844     >4     0.4     0.3        Sulfation     Abs/.1mm     *ASTM D7415	Molvbdenum		ASTM D5185m	50	55	61	
Magnesium     ppm     ASTM D5185m     950     968     994        Calcium     ppm     ASTM D5185m     1050     1040     1096        Phosphorus     ppm     ASTM D5185m     995     1004     1006        Zinc     ppm     ASTM D5185m     1180     1181     1262        Sulfur     ppm     ASTM D5185m     2600     2809     3077        CONTAMINANTS     method     limit/base     current     history1     history       Silicon     ppm     ASTM D5185m     >25     8     3        Sodium     ppm     ASTM D5185m     >20     44     2        INFRA-RED     method     limit/base     current     history1     history       Soot %     %     *ASTM D7624     >20     7.7     6.8        Sulfation     Abs/cm     *ASTM D7624     >20     7.7     6.8        Sulfation     Abs/.1mm     *A			ASTM D5185m	0	<1	0	
Calcium     ppm     ASTM D5185m     1050     1040     1096        Phosphorus     ppm     ASTM D5185m     995     1004     1006        Zinc     ppm     ASTM D5185m     1180     1181     1262        Sulfur     ppm     ASTM D5185m     2600     2809     3077        CONTAMINANTS     method     limit/base     current     history1     history       Silicon     ppm     ASTM D5185m     >25     8     3        Sodium     ppm     ASTM D5185m     >25     8     3        Potassium     ppm     ASTM D5185m     >20     44     2        INFRA-RED     method     limit/base     current     history1     history1       Soot %     %     *ASTM D7844     >4     0.4     0.3        Sulfation     Abs/cm     *ASTM D7624     >20     7.7     6.8        FLUID DEGRADATION     method     limit/bas	Magnesium		ASTM D5185m	950		994	
Phosphorus     ppm     ASTM D5185m     995     1004     1006        Zinc     ppm     ASTM D5185m     1180     1181     1262        Sulfur     ppm     ASTM D5185m     2600     2809     3077        CONTAMINANTS     method     limit/base     current     history1     history       Silicon     ppm     ASTM D5185m     >25     8     3        Sodium     ppm     ASTM D5185m     >25     8     3        Sodium     ppm     ASTM D5185m     >20     44     2        INFRA-RED     method     limit/base     current     history1     history1       Soot %     %     *ASTM D7844     >4     0.4     0.3        Sulfation     Abs/cm     *ASTM D7624     >20     7.7     6.8        FLUID DEGRADATION     method     limit/base     current     history1     history1       Oxidation     Abs/.1mm     *ASTM D7	Calcium		ASTM D5185m	1050	1040	1096	
Zinc     ppm     ASTM D5185m     1180     1181     1262        Sulfur     ppm     ASTM D5185m     2600     2809     3077        CONTAMINANTS     method     limit/base     current     history1     history       Silicon     ppm     ASTM D5185m     >25     8     3        Sodium     ppm     ASTM D5185m     >25     8     3        Sodium     ppm     ASTM D5185m     >20     44     2        INFRA-RED     method     limit/base     current     history1     history       Soot %     %     *ASTM D7844     >4     0.4     0.3        Soot %     %     *ASTM D7624     >20     7.7     6.8        Sulfation     Abs/cm     *ASTM D7624     >30     19.1     18.2        FLUID DEGRADATION     method     limit/base     current     history1     history1       Oxidation     Abs/.1mm     *ASTM D7414	Phosphorus		ASTM D5185m	995	1004	1006	
SulfurppmASTM D5185m260028093077CONTAMINANTSmethodlimit/basecurrenthistory1historySiliconppmASTM D5185m>2583SodiumppmASTM D5185m>20442PotassiumppmASTM D5185m>20442INFRA-REDmethodlimit/basecurrenthistory1historySoot %%*ASTM D7844>40.40.3NitrationAbs/cm*ASTM D7624>207.76.8SulfationAbs/lmm*ASTM D7615>3019.118.2FLUID DEGRADATIONmethodlimit/basecurrenthistory1history1OxidationAbs/.1mm*ASTM D7414>2514.914.0			ASTM D5185m	1180	1181	1262	
Silicon     ppm     ASTM D5185m     >25     8     3        Sodium     ppm     ASTM D5185m     5     4        Potassium     ppm     ASTM D5185m     >20     44     2        INFRA-RED     method     limit/base     current     history1     history       Soot %     %     *ASTM D7844     >4     0.4     0.3        INFRA-RED     method     limit/base     current     history1     history       Soot %     %     *ASTM D7624     >20     7.7     6.8        Sulfation     Abs/cm     *ASTM D7624     >20     7.7     6.8        FLUID DEGRADATION     method     limit/base     current     history1     history1       Oxidation     Abs/.1mm     *ASTM D7414     >25     14.9     14.0	Sulfur		ASTM D5185m	2600	2809	3077	
Sodium     ppm     ASTM D5185m     5     4        Potassium     ppm     ASTM D5185m     >20     44     2        INFRA-RED     method     limit/base     current     history1     history       Soot %     %     *ASTM D7844     >4     0.4     0.3        Nitration     Abs/cm     *ASTM D7624     >20     7.7     6.8        Sulfation     Abs/.1mm     *ASTM D7415     >30     19.1     18.2        FLUID DEGRADATION     method     limit/base     current     history1     history1       Oxidation     Abs/.1mm     *ASTM D7414     >25     14.9     14.0	CONTAMINAN	TS	method	limit/base	current	history1	history2
Sodium     ppm     ASTM D5185m     5     4        Potassium     ppm     ASTM D5185m     >20     44     2        INFRA-RED     method     limit/base     current     history1     history       Soot %     %     *ASTM D7844     >4     0.4     0.3        Nitration     Abs/cm     *ASTM D7624     >20     7.7     6.8        Sulfation     Abs/.1mm     *ASTM D7415     >30     19.1     18.2        FLUID DEGRADATION     method     limit/base     current     history1     history1       Oxidation     Abs/.1mm     *ASTM D7414     >25     14.9     14.0	Silicon	ppm	ASTM D5185m	>25	8	3	
Potassium     ppm     ASTM D5185m     >20     44     2        INFRA-RED     method     limit/base     current     history1     history       Soot %     %     *ASTM D7844     >4     0.4     0.3        Nitration     Abs/cm     *ASTM D7624     >20     7.7     6.8        Sulfation     Abs/.1mm     *ASTM D7415     >30     19.1     18.2        FLUID DEGRADATION     method     limit/base     current     history1     history1       Oxidation     Abs/.1mm     *ASTM D7414     >25     14.9     14.0	Sodium		ASTM D5185m		5	4	
Soot %     %     *ASTM D7844     >4     0.4     0.3        Nitration     Abs/cm     *ASTM D7624     >20     7.7     6.8        Sulfation     Abs/.1mm     *ASTM D7415     >30     19.1     18.2        FLUID DEGRADATION     method     limit/base     current     history1     history       Oxidation     Abs/.1mm     *ASTM D7414     >25     14.9     14.0	Potassium	ppm	ASTM D5185m	>20	44	2	
Nitration     Abs/cm     *ASTM D7624     >20     7.7     6.8        Sulfation     Abs/.1mm     *ASTM D7615     >30     19.1     18.2        FLUID DEGRADATION     method     limit/base     current     history1     history       Oxidation     Abs/.1mm     *ASTM D7414     >25     14.9     14.0	INFRA-RED		method	limit/base	current	history1	history2
Nitration     Abs/cm     *ASTM D7624     >20     7.7     6.8        Sulfation     Abs/.1mm     *ASTM D7615     >30     19.1     18.2        FLUID DEGRADATION     method     limit/base     current     history1     history       Oxidation     Abs/.1mm     *ASTM D7414     >25     14.9     14.0	Soot %	%	*ASTM D7844	>4	0.4	0.3	
Sulfation   Abs/.1mm   *ASTM D7415   >30   19.1   18.2      FLUID DEGRADATION   method   limit/base   current   history1   history1     Oxidation   Abs/.1mm   *ASTM D7414   >25   14.9   14.0							
Oxidation Abs/.1mm *ASTM D7414 >25 14.9 14.0							
	FLUID DEGRAD	)ATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.9	14.0	
	Base Number (BN)	mg KOH/g	ASTM D2896	-	7.5	7.9	

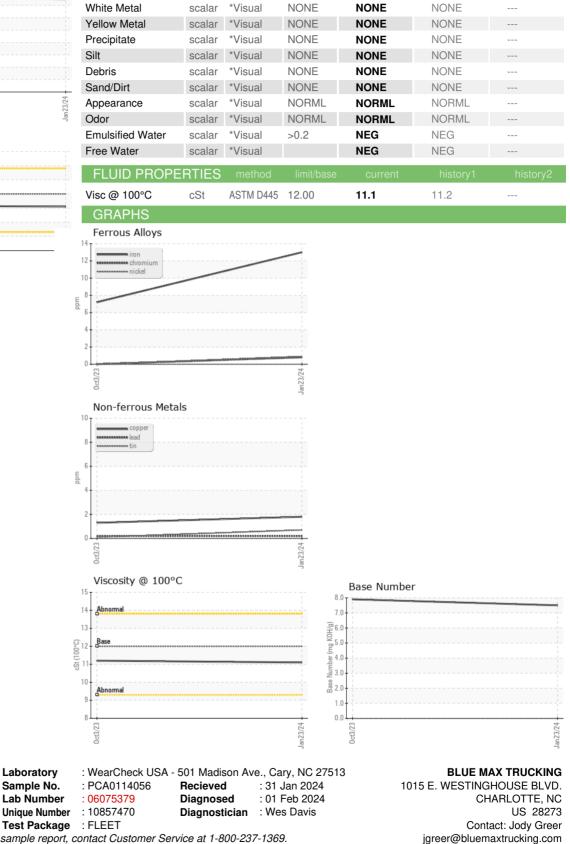


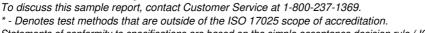
# **OIL ANALYSIS REPORT**

VISUAL









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

Certificate L2367

绐

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