

## **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id 685337

Component Diesel Engine

Fluid

### PETRO CANADA DURON SHP 10W30 (46 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

There is no indication of any contamination in the oil.

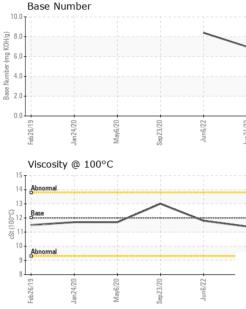
#### Fluid Condition

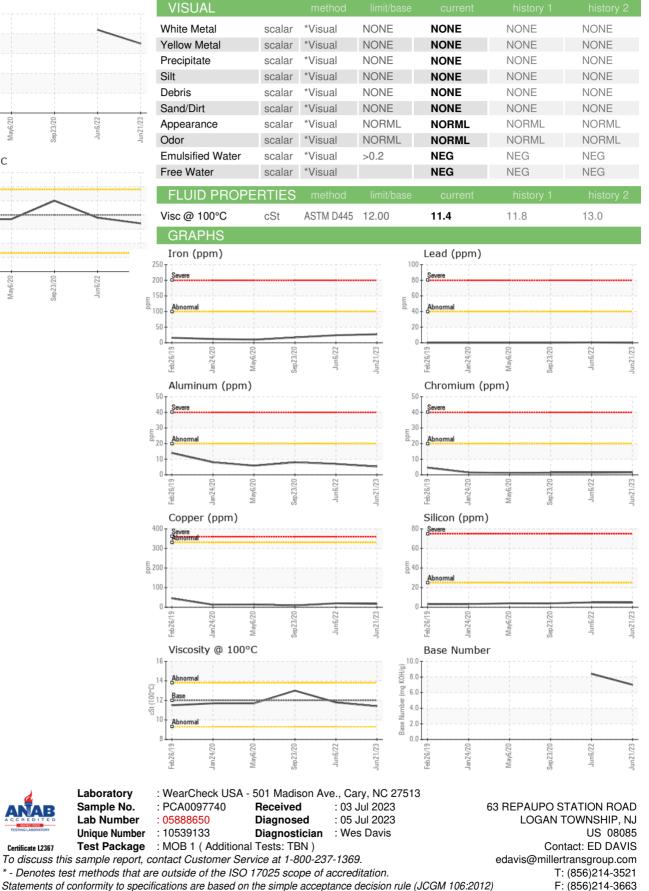
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number         Client Info         PCA0097740         PCA0068585         PCA0026940           Sample Date         Client Info         0         0         0         0           Machine Age         mils         Client Info         0         0         0         0           Oil Age         mils         Client Info         0         0         0         0           Oil Age         mils         Client Info         0         0         0         0           Sample Status         Imit Dase         current         history 1         history 2           Fuel         WC Method         >5         <1.0         <1.0         <1.0           Glycol         WC Method         >5         <1.0         <1.0         <1.0           Rikel         Ppm         ASTM D5185m         >100         27         24         17           Chromium         ppm         ASTM D5185m         >20         2         1         1         1           Nickel         ppm         ASTM D5185m         >3         0         <1         <1         <1         <1           Sittor         ppm         ASTM D5185m         >30         0         <1         <1	(15)		Feb2019	Jan2020 May2020	0 Sep2020 Jun2022	Jun2023	
Sample Date         Client Info         21 Jun 2023         06 Jun 2022         23 Sep 2020           Machine Age         mis         Client Info         0         0         0           Oil Age         mis         Client Info         0         0         0           Oil Changed         Client Info         Changed	SAMPLE INFORM	MATION	method	limit/base	current	history 1	history 2
Sample Date         Client Info         21 Jun 2023         06 Jun 2022         23 Sep 2020           Machine Age         mis         Client Info         0         0         0           Oil Age         mis         Client Info         0         0         0           Oil Changed         Client Info         Changed         Changed         Changed         Changed           Sample Status         Imitibase         current         history 1         history 2           Fuel         WC Method         >5         <1.0	Sample Number		Client Info		PCA0097740	PCA0068585	PCA0026940
Machine Age         mis         Client Info         O         O         O           Oil Age         mis         Client Info         O         O         O           Oil Changed         Client Info         Changed         NORMAL         NORMAL         NORMAL           Sample Status         Imit/base         current         History I         History I         History I           Fuel         WC Method         >5         <1.0			Client Info		21 Jun 2023	06 Jun 2022	23 Sep 2020
Oil Age     mis     Client Info     0     0     0       Oil Changed     Client Info     Changed     Changed     Changed     Changed       Sample Status     Imit Normal     NORMAL     NORMAL     NORMAL       CONTAMINATION     method     limit/base     current     history 1     history 2       Fuel     WC Method     >5     <1.0	-	mls	Client Info		0	0	
Oil Changed Sample Status     Client Info     Changed NORMAL     Changed NORMAL     Changed NORMAL     Changed NORMAL     Changed NORMAL     Changed NORMAL     Changed NORMAL     NORMAL     NORMAL <td>0</td> <td>mls</td> <td>Client Info</td> <td></td> <th>0</th> <td>0</td> <td>0</td>	0	mls	Client Info		0	0	0
Sample Status         NORMAL         NORMAL         NORMAL         NORMAL           CONTAMINATION         method         limit/base         current         history 1         history 2           Fuel         WC Method         >5         <1.0	•				Changed	Changed	Changed
Fuel         WC Method         >5         <1.0         <1.0         <1.0           Glycol         WC Method         NEG         NEG         NEG         NEG           WEAR METALS         method         imit/base         current         history 1         history 2           Iron         ppm         ASTM D5185m         >100         27         24         17           Chromium         ppm         ASTM D5185m         >20         2         1         1           Nickel         ppm         ASTM D5185m         >20         2         1         1           Silver         ppm         ASTM D5185m         >3         0         0         <1         1           Aluminum         ppm         ASTM D5185m         >20         5         7         8           Lead         ppm         ASTM D5185m         >30         0         <1         0           Copper         ppm         ASTM D5185m         >15         <1         <1         <1         <1           Attimony         ppm         ASTM D5185m         0         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         11	-				-	U	Ũ
Glycol         WC Method         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history 1         history 2           Iron         ppm         ASTM D5185m         >100         27         24         17           Chromium         ppm         ASTM D5185m         >20         2         1         1           Nickel         ppm         ASTM D5185m         >4         0         0         <1	CONTAMINAT	ION	method	limit/base	current	history 1	history 2
WEAR METALS         method         limit/base         current         history 1         history 2           Iron         ppm         ASTM D5185m         >20         2         1         1           Otromium         ppm         ASTM D5185m         >20         2         1         1           Nickel         ppm         ASTM D5185m         >4         0         0         <1	Fuel		WC Method	>5	<1.0	<1.0	<1.0
Iron         ppm         ASTM D5185m         >100         27         24         17           Chromium         ppm         ASTM D5185m         >20         2         1         1           Nickel         ppm         ASTM D5185m         >4         0         0         <1	Glycol		WC Method		NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >20         2         1         1           Nickel         ppm         ASTM D5185m         >4         0         0         <1	WEAR METAL	S	method	limit/base	current	history 1	history 2
Nickel         ppm         ASTM D5185m         >4         0         0         <1           Titanium         ppm         ASTM D5185m         >3         0         0         <1	Iron	ppm	ASTM D5185m	>100	27	24	17
Titanium         ppm         ASTM D5185m         <1         <1         <1         <1           Silver         ppm         ASTM D5185m         >3         0         0         <1	Chromium	ppm	ASTM D5185m	>20	2	1	1
Silver         ppm         ASTM D5185m         >3         0         0         <1           Aluminum         ppm         ASTM D5185m         >20         5         7         8           Lead         ppm         ASTM D5185m         >40         0         <1         0           Copper         ppm         ASTM D5185m         >330         17         20         9           Tin         ppm         ASTM D5185m         >15         <1         <1         <1         <1           Antimony         ppm         ASTM D5185m         >15         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	Nickel	ppm	ASTM D5185m	>4	0	0	<1
Aluminum         ppm         ASTM D5185m         >20         5         7         8           Lead         ppm         ASTM D5185m         >40         0         <1	Titanium	ppm	ASTM D5185m		<1	<1	<1
Lead         ppm         ASTM D5185m         >40         0         <1         0           Copper         ppm         ASTM D5185m         >330         17         20         9           Tin         ppm         ASTM D5185m         >15         <1	Silver	ppm	ASTM D5185m	>3	0	0	<1
Copper         ppm         ASTM D5185m         >330         17         20         9           Tin         ppm         ASTM D5185m         >15         <1	Aluminum	ppm	ASTM D5185m	>20	5	7	8
Tin         ppm         ASTM D5185m         >15         <1         <1         <1         <1           Antimony         ppm         ASTM D5185m         0         0         0         0           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history 1         history 2           Boron         ppm         ASTM D5185m         2         3         8         22           Barium         ppm         ASTM D5185m         0         11         0         0           Molybdenum         ppm         ASTM D5185m         50         70         62         43           Marganese         ppm         ASTM D5185m         50         70         62         43           Calcium         ppm         ASTM D5185m         950         946         930         515           Calcium         ppm         ASTM D5185m         1050         1122         1123         1556           Phosphorus         ppm         ASTM D5185m         2600	Lead	ppm	ASTM D5185m	>40	0	<1	0
Antimony         ppm         ASTM D5185m           0           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history 1         history 2           Boron         ppm         ASTM D5185m         2         3         8         22           Barium         ppm         ASTM D5185m         0         11         0         0           Molybdenum         ppm         ASTM D5185m         0         <1	Copper	ppm	ASTM D5185m	>330	17	20	9
Vanadium         ppm         ASTM D5185m         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history 1         history 2           Boron         ppm         ASTM D5185m         2         3         8         22           Barium         ppm         ASTM D5185m         2         3         8         22           Barium         ppm         ASTM D5185m         0         11         0         0           Manganese         ppm         ASTM D5185m         0         <1         <1         <1         <1           Magnesium         ppm         ASTM D5185m         950         946         930         515           Calcium         ppm         ASTM D5185m         950         946         1026         750           Zinc         ppm         ASTM D5185m         950         946         1026         750           Sulfur         ppm         ASTM D5185m         2600         3079         3032         2053           CONTAMINANTS         method         limit/base         current         <	Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history 1         history 2           Boron         ppm         ASTM D5185m         2         3         8         22           Barium         ppm         ASTM D5185m         0         11         0         0           Molybdenum         ppm         ASTM D5185m         0         70         62         43           Manganese         ppm         ASTM D5185m         0         <1	Antimony	ppm	ASTM D5185m				0
ADDITIVES         method         limit/base         current         history 1         history 2           Boron         ppm         ASTM D5185m         2         3         8         22           Barium         ppm         ASTM D5185m         0         11         0         0           Molybdenum         ppm         ASTM D5185m         50         70         62         43           Manganese         ppm         ASTM D5185m         0         <1	Vanadium	ppm	ASTM D5185m		0	0	0
Boron         ppm         ASTM D5185m         2         3         8         22           Barium         ppm         ASTM D5185m         0         11         0         0           Molybdenum         ppm         ASTM D5185m         50         70         62         43           Manganese         ppm         ASTM D5185m         0         <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         0         11         0         0           Molybdenum         ppm         ASTM D5185m         50         70         62         43           Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         950         946         930         515           Calcium         ppm         ASTM D5185m         1050         1122         1123         1556           Phosphorus         ppm         ASTM D5185m         1050         1122         1123         1556           Zinc         ppm         ASTM D5185m         1050         1231         1251         920           Sulfur         ppm         ASTM D5185m         2600         3079         3032         2053           CONTAMINANTS         method         limit/base         current         history 1         history 2           Silicon         ppm         ASTM D5185m         >20         8         3         10           INFRA-RED         method         limit/base         current         history 1         history 2           Soot %         %         *ASTM D7844	ADDITIVES		method	limit/base	current	history 1	history 2
Molybdenum         ppm         ASTM D5185m         50         70         62         43           Manganese         ppm         ASTM D5185m         0         <1	Boron	ppm	ASTM D5185m	2	3	8	22
Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         950         946         930         515           Calcium         ppm         ASTM D5185m         1050         1122         1123         1556           Phosphorus         ppm         ASTM D5185m         1050         1122         1123         1556           Zinc         ppm         ASTM D5185m         995         946         1026         750           Zinc         ppm         ASTM D5185m         995         946         1026         750           Sulfur         ppm         ASTM D5185m         995         946         1026         750           Sulfur         ppm         ASTM D5185m         2600         3079         3032         2053           CONTAMINANTS         method         limit/base         current         history 1         history 2           Silicon         ppm         ASTM D5185m         >20         8         3         10           INFRA-RED         method         limit/base         current         history 1         history 2           Soot %         %         *ASTM D7844	Barium	ppm	ASTM D5185m	0	11	0	0
Magnesium         ppm         ASTM D5185m         950         946         930         515           Calcium         ppm         ASTM D5185m         1050         1122         1123         1556           Phosphorus         ppm         ASTM D5185m         995         946         1026         750           Zinc         ppm         ASTM D5185m         1180         1231         1251         920           Sulfur         ppm         ASTM D5185m         2600         3079         3032         2053           CONTAMINANTS         method         limit/base         current         history 1         history 2           Silicon         ppm         ASTM D5185m         >25         5         5         4           Sodium         ppm         ASTM D5185m         >20         8         3         10           INFRA-RED         method         limit/base         current         history 1         history 2           Soot %         %         *ASTM D7844         >3         0.9         0.8         0.8           Nitration         Abs/cm         *ASTM D7624         >20         9.8         9.3         10           Sulfation         Abs/.1mm         *ASTM D741	Molybdenum	ppm	ASTM D5185m	50	70	62	43
Calcium         ppm         ASTM D5185m         1050         1122         1123         1556           Phosphorus         ppm         ASTM D5185m         995         946         1026         750           Zinc         ppm         ASTM D5185m         1180         1231         1251         920           Sulfur         ppm         ASTM D5185m         2600 <b>3079</b> 3032         2053           CONTAMINANTS         method         limit/base         current         history 1         history 2           Silicon         ppm         ASTM D5185m         >25         5         5         4           Sodium         ppm         ASTM D5185m         >20         8         3         10           INFRA-RED         method         limit/base         current         history 1         history 2           Soot %         %         *ASTM D7844         >3         0.9         0.8         0.8           Nitration         Abs/cm         *ASTM D7624         >20         9.8         9.3         10           Sulfation         Abs/.tmm         *ASTM D7415         >30         22.2         20.5         22.3           FLUID DEGRADATION         method	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus         ppm         ASTM D5185m         995         946         1026         750           Zinc         ppm         ASTM D5185m         1180         1231         1251         920           Sulfur         ppm         ASTM D5185m         2600         3079         3032         2053           CONTAMINANTS         method         limit/base         current         history 1         history 2           Silicon         ppm         ASTM D5185m         >25         5         5         4           Sodium         ppm         ASTM D5185m         >20         8         3         10           INFRA-RED         method         limit/base         current         history 1         history 2           Soot %         %         *ASTM D7844         >3         0.9         0.8         0.8           Nitration         Abs/cm         *ASTM D7624         >20         9.8         9.3         10           Sulfation         Abs/.tmm         *ASTM D7415         >30         22.2         20.5         22.3           FLUID DEGRADATION         method         limit/base         current         history 1         history 2           Oxidation         Abs/.tmm <th< td=""><td>Magnesium</td><td>ppm</td><td>ASTM D5185m</td><td>950</td><th>946</th><td>930</td><td>515</td></th<>	Magnesium	ppm	ASTM D5185m	950	946	930	515
Zinc         ppm         ASTM D5185m         1180         1231         1251         920           Sulfur         ppm         ASTM D5185m         2600         3079         3032         2053           CONTAMINANTS         method         limit/base         current         history 1         history 2           Silicon         ppm         ASTM D5185m         >25         5         5         4           Sodium         ppm         ASTM D5185m         >20         8         3         10           INFRA-RED         method         limit/base         current         history 1         history 2           Soot %         %         *ASTM D7844         >3         0.9         0.8         0.8           Nitration         Abs/cm         *ASTM D7624         >20         9.8         9.3         10           Sulfation         Abs/.imm         *ASTM D7415         >30         22.2         20.5         22.3           FLUID DEGRADATION         method         limit/base         current         history 1         history 2           Oxidation         Abs/.imm         *ASTM D7414         >25         17.9         15.9         19.7 <td>Calcium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1050</td> <th>1122</th> <td>1123</td> <td>1556</td>	Calcium	ppm	ASTM D5185m	1050	1122	1123	1556
Sulfur         ppm         ASTM D5185m         2600         3079         3032         2053           CONTAMINANTS         method         limit/base         current         history 1         history 2           Silicon         ppm         ASTM D5185m         >25         5         5         4           Sodium         ppm         ASTM D5185m         >20         8         3         10           INFRA-RED         method         limit/base         current         history 1         history 2           Soot %         %         *ASTM D7844         >3         0.9         0.8         0.8           Nitration         Abs/cm         *ASTM D7624         >20         9.8         9.3         10           Sulfation         Abs/.timm         *ASTM D7415         >30         22.2         20.5         22.3           FLUID DEGRADATION         method	Phosphorus	ppm	ASTM D5185m	995	946	1026	750
CONTAMINANTS         method         limit/base         current         history 1         history 2           Silicon         ppm         ASTM D5185m<>25         5         5         4           Sodium         ppm         ASTM D5185m<>20         8         3         10           INFRA-RED         method         limit/base         current         history 1         history 2           Soot %         %         *ASTM D5185m         >20         8         3         10           INFRA-RED         method         limit/base         current         history 1         history 2           Soot %         %         *ASTM D7844<>3         0.9         0.8         0.8           Nitration         Abs/cm         *ASTM D7624<>20         9.8         9.3         10           Sulfation         Abs/.1mm         *ASTM D7415<>30         22.2         20.5         22.3           FLUID DEGRADATION         method         limit/base         current         history 1         history 2           Oxidation         Abs/.1mm         *ASTM D7414<>25         17.9         15.9         19.7	Zinc	ppm	ASTM D5185m	1180	1231	1251	920
Silicon         ppm         ASTM D5185m         >25         5         5         4           Sodium         ppm         ASTM D5185m         >20         3         2         2         2           Potassium         ppm         ASTM D5185m         >20         8         3         10           INFRA-RED         method         limit/base         current         history 1         history 2           Soot %         %         *ASTM D7844         >3         0.9         0.8         0.8           Nitration         Abs/cm         *ASTM D7624         >20         9.8         9.3         10           Sulfation         Abs/.1mm         *ASTM D7624         >20         9.8         9.3         10           Sulfation         Abs/.1mm         *ASTM D7415         >30         22.2         20.5         22.3           FLUID DEGRADATION         method         limit/base         current         history 1         history 2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.9         15.9         19.7	Sulfur	ppm	ASTM D5185m	2600	3079	3032	2053
Sodium         ppm         ASTM D5185m         3         2         2           Potassium         ppm         ASTM D5185m         >20         8         3         10           INFRA-RED         method         limit/base         current         history 1         history 2           Soot %         %         *ASTM D7844         >3         0.9         0.8         0.8           Nitration         Abs/cm         *ASTM D7624         >20         9.8         9.3         10           Sulfation         Abs/.1mm         *ASTM D7415         >30         22.2         20.5         22.3           FLUID DEGRADATION         method         limit/base         current         history 1         history 2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.9         15.9         19.7	CONTAMINAN	TS	method	limit/base	current	history 1	history 2
Potassium         ppm         ASTM D5185m         >20         8         3         10           INFRA-RED         method         limit/base         current         history 1         history 2           Soot %         %         *ASTM D7844         >3         0.9         0.8         0.8           Nitration         Abs/cm         *ASTM D7624         >20         9.8         9.3         10           Sulfation         Abs/.1mm         *ASTM D7415         >30         22.2         20.5         22.3           FLUID DEGRADATION         method         limit/base         current         history 1         history 2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.9         15.9         19.7	Silicon	ppm	ASTM D5185m	>25	5		
INFRA-RED         method         limit/base         current         history 1         history 2           Soot %         %         *ASTM D7844         >3         0.9         0.8         0.8           Nitration         Abs/cm         *ASTM D7624         >20         9.8         9.3         10           Sulfation         Abs/.1mm         *ASTM D7415         >30         22.2         20.5         22.3           FLUID DEGRADATION         method         limit/base         current         history 1         history 2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.9         15.9         19.7	Sodium	ppm	ASTM D5185m		3	2	2
Soot %         %         *ASTM D7844         >3         0.9         0.8         0.8           Nitration         Abs/cm         *ASTM D7624         >20         9.8         9.3         10           Sulfation         Abs/.1mm         *ASTM D7615         >30         22.2         20.5         22.3           FLUID DEGRADATION         method         limit/base         current         history 1         history 2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.9         15.9         19.7	Potassium	ppm	ASTM D5185m	>20	8	3	10
Nitration         Abs/cm         *ASTM D7624         >20         9.8         9.3         10           Sulfation         Abs/.1mm         *ASTM D7415         >30         22.2         20.5         22.3           FLUID DEGRADATION         method         limit/base         current         history 1         history 2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.9         15.9         19.7	INFRA-RED		method	limit/base	current	history 1	history 2
Sulfation         Abs/.1mm         *ASTM D7415         >30         22.2         20.5         22.3           FLUID DEGRADATION         method         limit/base         current         history 1         history 2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.9         15.9         19.7	Soot %	%	*ASTM D7844	>3	0.9	0.8	0.8
FLUID DEGRADATION       method       limit/base       current       history 1       history 2         Oxidation       Abs/.1mm       *ASTM D7414       >25       17.9       15.9       19.7	Nitration	Abs/cm	*ASTM D7624	>20	9.8	9.3	10
Oxidation Abs/.1mm *ASTM D7414 >25 17.9 15.9 19.7	Sulfation	Abs/.1mm	*ASTM D7415	>30	22.2	20.5	22.3
	FLUID DEGRAD	DATION	method	limit/base	current	history 1	history 2
Base Number (BN) mg KOH/g ASTM D2896 7.0 8.4	Oxidation	Abs/.1mm	*ASTM D7414	>25	17.9	15.9	19.7
	Base Number (BN)	mg KOH/g	ASTM D2896		7.0	8.4	



# **OIL ANALYSIS REPORT**





Certificate L2367

Laboratory

Sample No.

Contact/Location: ED DAVIS - MILLOG