

# **OIL ANALYSIS REPORT**

Sample Rating Trend



## Machine Id 934055

Component 1 Natural Gas Engine Fluid PETRO CANADA DURON GEO LD 15W40 (--- Gu

### 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

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.

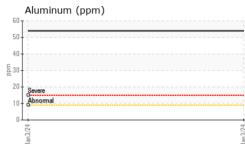
#### Fluid Condition

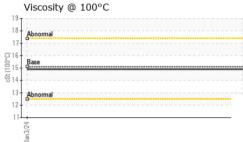
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

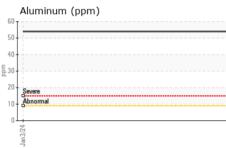
SAMPLE INFORMATION         method         imitibase         current         history1         history2           Sample Date         Client Info         03 Jan 2024             Machine Age         hrs         Client Info         1176             Oil Changed         Client Info         Changed              Sample Date         Client Info         Changed              Sample Status         Client Info         Changed              CONTAMINATION         method         imitibase         current         history1         history2           Water         WC Method         >0.1         NEG             WEAR METALS         method         imitibase         current         history1         history1           Kickel         ppm         ASTM 05185m         >20              Silver         ppm         ASTM 05185m         >30         <1             Qapper         ppm         ASTM 05185m         >30         <1	GAL)						
Sample Number         Client Info         GFL0103927             Sample Date         Client Info         03 Jan 2024             Machine Age         hrs         Client Info         1176             Oil Age         hrs         Client Info         Sample Status             Sample Status         Client Info         Changed              CONTAMINATION         method         Imit/base         current         history1         history2           Water         WC Method         >0.1         NEG             WEAR METALS         method         Imit/base         current         history1         history2           ron<         ppm         ASTM 05185m         >20              WEAR METALS         method         Imit/base         current         history1         history2           ron         ppm         ASTM 05185m         >20              WEAR METALS         ppm         ASTM 05185m         >30         -1             ron	SAMPLE INFOR	MATION	method			history1	history2
Sample Date         Client Info         03 Jan 2024             Machine Age         hrs         Client Info         1176             Dil Age         hrs         Client Info         586             Sample Status         Client Info         Changed             CONTAMINATION         method         imit/base         current         history1         history2           Water         WC Method         >0.1         NEG             WEAR METALS         method         imit/base         current         history1         history2           ron         ppm         ASTM D5185m         >50         24             WEAR METALS         method         imit/base         current         history1         history2           ron         ppm         ASTM D5185m         >20         0             Silver         ppm         ASTM D5185m         >30         0             Agan dum         ppm         ASTM D5185m         >30              Copper							
Machine Age         hrs         Client Info         1176             Di Age         hrs         Client Info         586             Sample Status         Client Info         Changed             CONTAMINATION         method         imit/base         current         history1         history2           Water         WC Method         >0.1         NEG             WEAR METALS         method         imit/base         current         history1         history2           Nater         WC Method         >0.1         NEG             WEAR METALS         method         imit/base         current         history1         history2           Nater         WC Method         >0.1               Silver         ppm         ASTM D5185m         >20         0              Numinum         ppm         ASTM D5185m         >30              Arandium         ppm         ASTM D5185m         >4 <tr< td=""><td></td><td></td><td>Client Info</td><td></td><td>03 Jan 2024</td><td></td><td></td></tr<>			Client Info		03 Jan 2024		
Dil Changed         Client Info         Changed             Sample Status         Image: Status	Aachine Age	hrs	Client Info		1176		
Dil Changed         Client Info         Changed             Sample Status         Image: Status	0	hrs	Client Info		586		
Sample Status         NORMAL             CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >0.1         NEG             WEAR METALS         method         limit/base         current         history1         history2           oron         ppm         ASTM D5185m         >50         24             Silver         ppm         ASTM D5185m         >2         0             Silver         ppm         ASTM D5185m         >3         0             Auminum         ppm         ASTM D5185m         >3         0             Augenetim         ppm         ASTM D5185m         >3         0             Wanicum         ppm         ASTM D5185m         >3         3             Augenetim         ppm         ASTM D5185m         >4         <1	-		Client Info		Changed		
Water         WC Method         >0.1         NEG             WEAR METALS         method         imil/base         current         history1         history2           ron         ppm         ASTM D5185m         >50         24             Dromium         ppm         ASTM D5185m         >2         0             Fitanium         ppm         ASTM D5185m         >2         0             Silver         ppm         ASTM D5185m         >3         0             e.ad         ppm         ASTM D5185m         >30              e.ad         ppm         ASTM D5185m         >35         3             e.ad         ppm         ASTM D5185m         >35         3             Copper         ppm         ASTM D5185m         >30              Zanadium         ppm         ASTM D5185m         50         4             Adanadium         ppm         ASTM D5185m         50         61	-				-		
WEAR METALS         method         limit/base         current         history1         history2           ron         ppm         ASTM D5185m         >50         24             Dhromium         ppm         ASTM D5185m         >2         0             Nickel         ppm         ASTM D5185m         2         0             Fitanium         ppm         ASTM D5185m         >3         0             Silver         ppm         ASTM D5185m         >3         0             ead         ppm         ASTM D5185m         >9         54             Copper         ppm         ASTM D5185m         >9         54             Copper         ppm         ASTM D5185m         >0         1             Cadmium         ppm         ASTM D5185m         0              Aganatium         ppm         ASTM D5185m         50         61             Aggnesium         ppm         ASTM D5185m         50         61	CONTAMINAT	ION	method	limit/base	current	history1	history2
Iron         ppm         ASTM D5185m         >50         24            Chromium         ppm         ASTM D5185m         >2         0            Nickel         ppm         ASTM D5185m         >2         0            Titanium         ppm         ASTM D5185m         >2         0            Silver         ppm         ASTM D5185m         >3         0            Aluminum         ppm         ASTM D5185m         >30         <11	Water		WC Method	>0.1	NEG		
Dromium         ppm         ASTM D5185m         >4         1             Nickel         ppm         ASTM D5185m         >2         0             Titanium         ppm         ASTM D5185m         >3         0             Silver         ppm         ASTM D5185m         >3         0             Aluminum         ppm         ASTM D5185m         >30         <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel         ppm         ASTM D5185m         >2         0             Titanium         ppm         ASTM D5185m         >3         0             Silver         ppm         ASTM D5185m         >3         0             Aluminum         ppm         ASTM D5185m         >30         <1	ron	ppm	ASTM D5185m	>50	24		
Titanium         ppm         ASTM D5185m         0             Silver         ppm         ASTM D5185m         >3         0             Aluminum         ppm         ASTM D5185m         >3         0             Auminum         ppm         ASTM D5185m         >30         <1	Chromium	ppm	ASTM D5185m	>4	1		
Silver         ppm         ASTM D5185m         >3         0             Aluminum         ppm         ASTM D5185m         >9         54             Lead         ppm         ASTM D5185m         >30         <1	Nickel	ppm	ASTM D5185m	>2	0		
Auminum         ppm         ASTM D5185m         >9         54             Lead         ppm         ASTM D5185m         >30         <1	Titanium	ppm	ASTM D5185m		0		
Lead         ppm         ASTM D5185m         >30         <1            Copper         ppm         ASTM D5185m         >35         3             Vanadium         ppm         ASTM D5185m         >4         <1	Silver	ppm	ASTM D5185m	>3	0		
Copper         ppm         ASTM D5185m         >35         3             Tin         ppm         ASTM D5185m         >4         <1	Aluminum	ppm	ASTM D5185m	>9	54		
Tin         ppm         ASTM D5185m         >4         <1            Vanadium         ppm         ASTM D5185m         0             Cadmium         ppm         ASTM D5185m         0             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         50         4             Molybdenum         ppm         ASTM D5185m         50         61             Magnese         ppm         ASTM D5185m         50         61             Magnesium         ppm         ASTM D5185m         560         669             Calcium         ppm         ASTM D5185m         780         756             Sulfur         ppm         ASTM D5185m         2040         2499             Sulfur         ppm         ASTM D5185m         >+100         8             Sodium         ppm         ASTM D5185m         >20         200	Lead	ppm	ASTM D5185m	>30	<1		
Tin         ppm         ASTM D5185m         >4         <1             Vanadium         ppm         ASTM D5185m         0              Cadmium         ppm         ASTM D5185m         0              ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         50         4             Barium         ppm         ASTM D5185m         50         61             Magnese         ppm         ASTM D5185m         560         669             Magnesium         ppm         ASTM D5185m         560         669             Calcium         ppm         ASTM D5185m         780         756             Sulfur         ppm         ASTM D5185m         2040         2499             Sulfur         ppm         ASTM D5185m         >+100         8             Sodium         ppm         ASTM D5185m         >20	Copper	ppm	ASTM D5185m	>35	3		
Vanadium         ppm         ASTM D5185m         0             Cadmium         ppm         ASTM D5185m         0             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         50         4             Barium         ppm         ASTM D5185m         50         61             Molybdenum         ppm         ASTM D5185m         50         611             Maganese         ppm         ASTM D5185m         50         611             Magnesium         ppm         ASTM D5185m         560         669             Calcium         ppm         ASTM D5185m         780         756             Sulfur         ppm         ASTM D5185m         2040         2499             Solicon         ppm         ASTM D5185m         >+100         8             Solicon         ppm         ASTM D5185m         >20			ASTM D5185m	>4	<1		
Cadmium         ppm         ASTM D5185m         0             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         50         4             Barium         ppm         ASTM D5185m         50         61             Molybdenum         ppm         ASTM D5185m         50         61             Maganese         ppm         ASTM D5185m         50         61             Magnesium         ppm         ASTM D5185m         560         669             Calcium         ppm         ASTM D5185m         560         669             Calcium         ppm         ASTM D5185m         560         669             Solitur         ppm         ASTM D5185m         780         756             Sulfur         ppm         ASTM D5185m         2040         2499             Solitur         ppm         ASTM D5185m         >+100 <t< td=""><td>/anadium</td><td></td><td>ASTM D5185m</td><td></td><td>0</td><td></td><td></td></t<>	/anadium		ASTM D5185m		0		
Boron         ppm         ASTM D5185m         50         4             Barium         ppm         ASTM D5185m         5         0	Cadmium		ASTM D5185m		0		
Barium         ppm         ASTM D5185m         5         0             Molybdenum         ppm         ASTM D5185m         50         61             Manganese         ppm         ASTM D5185m         0         1             Magnesium         ppm         ASTM D5185m         560         669             Calcium         ppm         ASTM D5185m         1510         1639             Calcium         ppm         ASTM D5185m         780         756             Phosphorus         ppm         ASTM D5185m         870         1064             Sulfur         ppm         ASTM D5185m         2040         2499             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         8             Sodium         ppm         ASTM D5185m         >20         200        Potassium         ppm         ASTM	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         50         61             Manganese         ppm         ASTM D5185m         0         1             Magnesium         ppm         ASTM D5185m         560         669             Calcium         ppm         ASTM D5185m         1510         1639             Calcium         ppm         ASTM D5185m         780         756             Zinc         ppm         ASTM D5185m         870         1064             Sulfur         ppm         ASTM D5185m         2040         2499             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         8             Sodium         ppm         ASTM D5185m         >20         200             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM	Boron	ppm	ASTM D5185m	50	4		
Manganese         ppm         ASTM D5185m         0         1             Magnesium         ppm         ASTM D5185m         560         669             Calcium         ppm         ASTM D5185m         1510         1639             Phosphorus         ppm         ASTM D5185m         780         756             Zinc         ppm         ASTM D5185m         870         1064             Sulfur         ppm         ASTM D5185m         2040         2499             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         8             Sodium         ppm         ASTM D5185m         >20         200             Potassium         ppm         ASTM D5185m         >20         200             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *A	Barium	ppm	ASTM D5185m	5	0		
Magnesium         ppm         ASTM D5185m         560         669             Calcium         ppm         ASTM D5185m         1510         1639             Phosphorus         ppm         ASTM D5185m         780         756             Zinc         ppm         ASTM D5185m         870         1064             Sulfur         ppm         ASTM D5185m         2040         2499             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         8             Sodium         ppm         ASTM D5185m         >+100         8             Potassium         ppm         ASTM D5185m         >20         200             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         11.4             Sulfation         Abs/cm         *ASTM D7415<	Nolybdenum	ppm	ASTM D5185m	50	61		
Calcium         ppm         ASTM D5185m         1510         1639             Phosphorus         ppm         ASTM D5185m         780         756             Zinc         ppm         ASTM D5185m         870         1064             Sulfur         ppm         ASTM D5185m         2040         2499             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         8             Sodium         ppm         ASTM D5185m         >+100         8             Potassium         ppm         ASTM D5185m         >20         200             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0             Sulfation         Abs/.1mm         *ASTM D7415         >30         23.1             FLUID DEGRADATION         method         limi	Vanganese	ppm	ASTM D5185m	0	1		
Phosphorus         ppm         ASTM D5185m         780         756             Zinc         ppm         ASTM D5185m         870         1064             Sulfur         ppm         ASTM D5185m         2040         2499             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         8             Sodium         ppm         ASTM D5185m         >+100         8             Sodium         ppm         ASTM D5185m         >20         200             Potassium         ppm         ASTM D5185m         >20         200             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         11.4             Sulfation         Abs/(nm         *ASTM D7415         >30         23.1             FLUID DEGRADATION         method         li	Vagnesium	ppm	ASTM D5185m	560	669		
Zinc         ppm         ASTM D5185m         870         1064             Sulfur         ppm         ASTM D5185m         2040         2499             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         8             Sodium         ppm         ASTM D5185m         >+100         8             Sodium         ppm         ASTM D5185m         >+100         8             Potassium         ppm         ASTM D5185m         >20         200             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         11.4             Sulfation         Abs/cm         *ASTM D7624         >20         11.4             FLUID DEGRADATION         method         limit/base         current         history1         history2      Dxidation         Abs/.1mm	Calcium	ppm	ASTM D5185m	1510	1639		
Zinc         ppm         ASTM D5185m         870         1064             Sulfur         ppm         ASTM D5185m         2040         2499             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         8             Sodium         ppm         ASTM D5185m         >+100         8             Sodium         ppm         ASTM D5185m         >+100         8             Potassium         ppm         ASTM D5185m         >20         200             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         11.4             Sulfation         Abs/cm         *ASTM D7624         >20         11.4             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *AST	Phosphorus	ppm	ASTM D5185m	780	756		
SulfurppmASTM D5185m20402499CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>+1008SodiumppmASTM D5185m>+1008PotassiumppmASTM D5185m>20200INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D78440NitrationAbs/cm*ASTM D7624>2011.4SulfationAbs/Imm*ASTM D7415>3023.1FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2519.7		ppm	ASTM D5185m	870	1064		
Silicon         ppm         ASTM D5185m         >+100         8             Sodium         ppm         ASTM D5185m         7              Potassium         ppm         ASTM D5185m         >20         200             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0             Nitration         Abs/cm         *ASTM D7624         >20         11.4             Sulfation         Abs/.1mm         *ASTM D7615         >30         23.1             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         19.7	Sulfur		ASTM D5185m	2040	2499		
Sodium         ppm         ASTM D5185m         7             Potassium         ppm         ASTM D5185m         >20         200             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0             Nitration         Abs/cm         *ASTM D7624         >20         11.4             Sulfation         Abs/.1mm         *ASTM D7415         >30         23.1             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         19.7	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Sodium         ppm         ASTM D5185m         7             Potassium         ppm         ASTM D5185m         >20         200             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0             Nitration         Abs/cm         *ASTM D7624         >20         11.4             Sulfation         Abs/.1mm         *ASTM D7415         >30         23.1             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         19.7	Silicon	ppm	ASTM D5185m	>+100	8		
Potassium         ppm         ASTM D5185m         >20         200             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0             Nitration         Abs/cm         *ASTM D7624         >20         11.4             Sulfation         Abs/.1mm         *ASTM D7415         >30         23.1             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         19.7	Sodium		ASTM D5185m		7		
Soot %         %         *ASTM D7844         0             Nitration         Abs/cm         *ASTM D7624         >20         11.4             Sulfation         Abs/.1mm         *ASTM D7615         >30         23.1             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         19.7	Potassium	ppm	ASTM D5185m	>20	200		
Nitration         Abs/cm         *ASTM D7624         >20         11.4             Sulfation         Abs/.1mm         *ASTM D7415         >30         23.1             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         19.7	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         23.1             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         19.7	Soot %	%	*ASTM D7844		0		
FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         19.7	Nitration	Abs/cm	*ASTM D7624	>20	11.4		
Oxidation Abs/.1mm *ASTM D7414 >25 <b>19.7</b>	Sulfation	Abs/.1mm	*ASTM D7415	>30	23.1		
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN)         mg KOH/g         ASTM D2896         10.2         3.8	Oxidation	Abs/.1mm	*ASTM D7414	>25	19.7		
	Base Number (BN)	mg KOH/g	ASTM D2896	10.2	3.8		

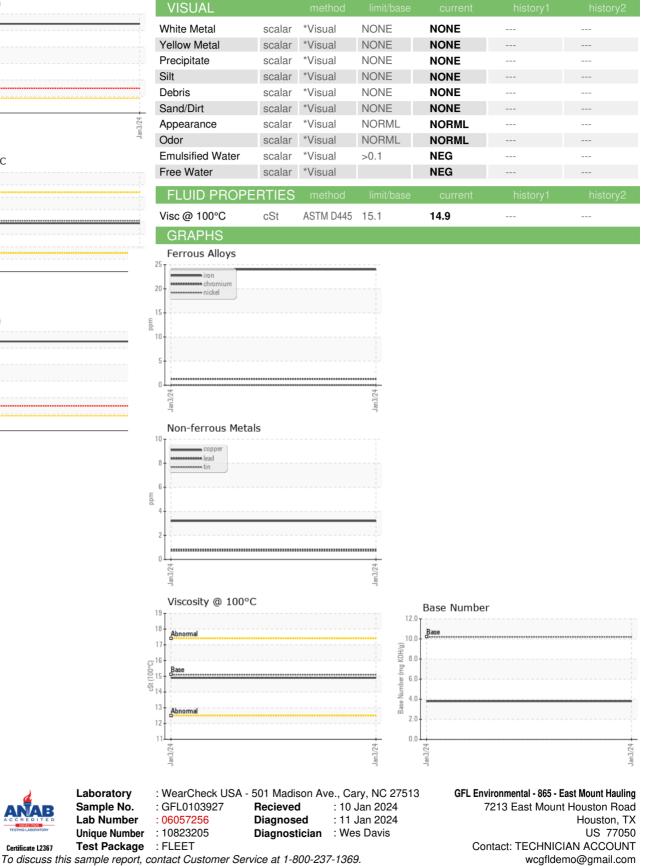


# **OIL ANALYSIS REPORT**









\* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

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

Certificate L2367

T:

F: