

**OIL ANALYSIS REPORT** 

(JB5218) 11327

Diesel Engine

# PETRO CANADA DURON SHP 15W40 (25 QTS)

# Sample Rating Trend



# DIAGNOSIS

# Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

# Contamination

There is no indication of any contamination in the

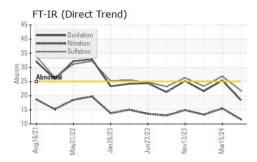
# **Fluid Condition**

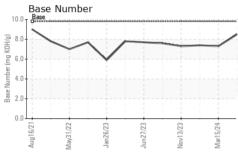
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

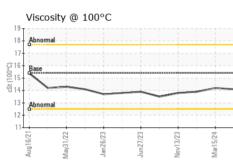
Sample Number   Client Info   PCA01124231   PCA0113463   PCA0101775   Sample Date   Client Info   12 Jul 2024   15 Mar 2024   28 Feb 202   Machine Age   mls   Client Info   4606   2474   9018   Oli Changed   Client Info   4606   2474   9018   Oli Changed   Changed   Changed   Changed   Changed   Changed   NORMAL							
Sample Date   Client Info   12 Jul 2024   15 Mar 2024   28 Feb 202   Machine Age   mls   Client Info   202540   197934   195460   197934   195460   197934   195460   197934   195460   197934   195460   197934   195460   197934   195460   197934   195460   197934   195460   197934   195460   197934   195460   197934   195460   197934   195460   197934   195460   197934   195460   197934   195460   197934   195460   197934   195460   197934   197934   195460   197934   195460   197934   195460   197934   197934   195460   197934	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age   mls   Client Info   4606   2474   9018     Oil Ola Oge   mls   Client Info   4606   2474   9018     Oil Changed   Client Info   Changed   Changed   Changed   Changed     Sample Status   NORMAL   NORMAL   NORMAL   NORMAL   NORMAL     CONTAMINATION   method   limit/base   current   history1   history1     Fuel   WC Method   >5   <1.0	Sample Number		Client Info		PCA0124231	PCA0113463	PCA0101755
Oil Age   mls   Client Info   4606   2474   9018     Oil Changed   Changea   Changea   Changea   Changea </td <td>Sample Date</td> <td></td> <td>Client Info</td> <td></td> <th>12 Jul 2024</th> <td>15 Mar 2024</td> <td>28 Feb 2024</td>	Sample Date		Client Info		12 Jul 2024	15 Mar 2024	28 Feb 2024
Oil Changed Sample Status   Client Info   Changed NORMAL	Machine Age	mls	Client Info		202540	197934	195460
Sample Status	Oil Age	mls	Client Info		4606	2474	9018
Fuel	Oil Changed		Client Info		Changed	Changed	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water   WC Method   >0.2   NEG   NEG   NEG     Glycol   WC Method   NEG   NEG   NEG     WEAR METALS   method   limit/base   current   history1   history1     Iron   ppm   ASTM D5185m   >100   12   23   17     Chromium   ppm   ASTM D5185m   >20   <1   <1   1     Nickel   ppm   ASTM D5185m   >4   0   0   <1     Silver   ppm   ASTM D5185m   >4   0   0   <1     Aluminum   ppm   ASTM D5185m   >20   3   5   4     Lead   ppm   ASTM D5185m   >40   2   5   4     Copper   ppm   ASTM D5185m   >40   2   5   4     Vanadium   ppm   ASTM D5185m   >15   <1   0   <1     Vanadium   ppm   ASTM D5185m   0   0   0   <1     <	CONTAMINATI	ON	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS   method   limit/base   current   history1   history2     Iron   ppm   ASTM D5185m   >100   12   23   17     Chromium   ppm   ASTM D5185m   >20   <1	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium   ppm   ASTM D5185m   >20   <1	WEAR METALS	S	method	limit/base	current	history1	history2
Nickel   ppm   ASTM D5185m   >4   0   0   <1     Titanium   ppm   ASTM D5185m   <1	Iron	ppm	ASTM D5185m	>100		23	17
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	<1	1
Silver	Nickel	ppm	ASTM D5185m	>4	0	0	<1
Aluminum   ppm   ASTM D5185m   >20   3   5   4     Lead   ppm   ASTM D5185m   >40   2   5   4     Copper   ppm   ASTM D5185m   >330   2   6   4     Tin   ppm   ASTM D5185m   >15   <1	Titanium	ppm	ASTM D5185m		<1	0	<1
Lead   ppm   ASTM D5185m   >40   2   5   4     Copper   ppm   ASTM D5185m   >330   2   6   4     Tin   ppm   ASTM D5185m   >15   <1   0   <1     Vanadium   ppm   ASTM D5185m   <1   0   0   <1     Cadmium   ppm   ASTM D5185m   0   0   0   <1   0   0     ADDITIVES   method   limit/base   current   history1   history1     Boron   ppm   ASTM D5185m   0   9   8   9     Barium   ppm   ASTM D5185m   0   <1   0   0     Molybdenum   ppm   ASTM D5185m   0   <1   89   76     Manganese   ppm   ASTM D5185m   0   0   0   <1   489   76     Manganesium   ppm   ASTM D5185m   1070   1522   1549   1345     Phosphorus   ppm	Silver	ppm	ASTM D5185m	>3	<1	0	0
Copper   ppm   ASTM D5185m   >330   2   6   4     Tin   ppm   ASTM D5185m   >15   <1	Aluminum	ppm	ASTM D5185m	>20	3	5	4
Tin   ppm   ASTM D5185m   >15   <1   0   <1     Vanadium   ppm   ASTM D5185m   <1   0   0     Cadmium   ppm   ASTM D5185m   0   0   0   <1     ADDITIVES   method   limit/base   current   history1   history2     Boron   ppm   ASTM D5185m   0   9   8   9     Barium   ppm   ASTM D5185m   0   <1   0   0     Molybdenum   ppm   ASTM D5185m   0   <1   0   0     Manganese   ppm   ASTM D5185m   0   0   0   <1   0     Magnesium   ppm   ASTM D5185m   1010   757   966   881     Calcium   ppm   ASTM D5185m   1070   1522   1549   1345     Phosphorus   ppm   ASTM D5185m   1270   1266   1424   1347     Sulfur   ppm   ASTM D5185m   2060   2904 </td <td>Lead</td> <td>ppm</td> <td>ASTM D5185m</td> <td>&gt;40</td> <th>2</th> <td>5</td> <td>4</td>	Lead	ppm	ASTM D5185m	>40	2	5	4
Vanadium   ppm   ASTM D5185m   <1   0   0     Cadmium   ppm   ASTM D5185m   0   0   <1     ADDITIVES   method   limit/base   current   history1   history2     Boron   ppm   ASTM D5185m   0   9   8   9     Barium   ppm   ASTM D5185m   0   <1   0   0     Molybdenum   ppm   ASTM D5185m   0   <1   0   0     Manganese   ppm   ASTM D5185m   0   0   0   <1   89   76     Manganesium   ppm   ASTM D5185m   0   0   0   <1   4     Magnesium   ppm   ASTM D5185m   1010   757   966   881     Calcium   ppm   ASTM D5185m   1070   1522   1549   1345     Phosphorus   ppm   ASTM D5185m   1270   1266   1424   1347     Sulfur   ppm   ASTM D5185m   20	Copper	ppm	ASTM D5185m	>330	2	6	4
Cadmium   ppm   ASTM D5185m   0   0   <1     ADDITIVES   method   limit/base   current   history1   history2     Boron   ppm   ASTM D5185m   0   9   8   9     Barium   ppm   ASTM D5185m   0   <1	Tin	ppm	ASTM D5185m	>15	<1	0	<1
ADDITIVES   method   limit/base   current   history1   history2     Boron   ppm   ASTM D5185m   0   9   8   9     Barium   ppm   ASTM D5185m   0   <1	Vanadium	ppm	ASTM D5185m		<1	0	0
Boron   ppm   ASTM D5185m   0   9   8   9     Barium   ppm   ASTM D5185m   0   <1	Cadmium	ppm	ASTM D5185m		0	0	<1
Barium   ppm   ASTM D5185m   0   <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum   ppm   ASTM D5185m   60   71   89   76     Manganese   ppm   ASTM D5185m   0   0   0   <1     Magnesium   ppm   ASTM D5185m   1010   757   966   881     Calcium   ppm   ASTM D5185m   1070   1522   1549   1345     Phosphorus   ppm   ASTM D5185m   1150   979   1231   1041     Zinc   ppm   ASTM D5185m   1270   1266   1424   1347     Sulfur   ppm   ASTM D5185m   2060   2904   3346   3285     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >25   5   8   6     Sodium   ppm   ASTM D5185m   >20   4   4   2     INFRA-RED   method   limit/base   current   history1   history2     Soot %   %   *ASTM D7844 <t< td=""><td>Boron</td><td>ppm</td><td>ASTM D5185m</td><td>0</td><th>9</th><td>8</td><td>9</td></t<>	Boron	ppm	ASTM D5185m	0	9	8	9
Manganese   ppm   ASTM D5185m   0   0   0   <1     Magnesium   ppm   ASTM D5185m   1010   757   966   881     Calcium   ppm   ASTM D5185m   1070   1522   1549   1345     Phosphorus   ppm   ASTM D5185m   1150   979   1231   1041     Zinc   ppm   ASTM D5185m   1270   1266   1424   1347     Sulfur   ppm   ASTM D5185m   2060   2904   3346   3285     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >25   5   8   6     Sodium   ppm   ASTM D5185m   >20   4   4   2     INFRA-RED   method   limit/base   current   history1   history2     Soot %   %   *ASTM D7624   >20   11.6   15.5   13.3     Sulfation   Abs/.1mm   *ASTM D77415 <td>Barium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th>&lt;1</th> <td>0</td> <td>0</td>	Barium	ppm	ASTM D5185m	0	<1	0	0
Magnesium   ppm   ASTM D5185m   1010   757   966   881     Calcium   ppm   ASTM D5185m   1070   1522   1549   1345     Phosphorus   ppm   ASTM D5185m   1150   979   1231   1041     Zinc   ppm   ASTM D5185m   1270   1266   1424   1347     Sulfur   ppm   ASTM D5185m   2060   2904   3346   3285     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >25   5   8   6     Sodium   ppm   ASTM D5185m   >20   4   4   2     INFRA-RED   method   limit/base   current   history1   history2     Soot %   %   *ASTM D7624   >20   11.6   15.5   13.3     Sulfation   Abs/:nm   *ASTM D7415   >30   21.8   26.8   23.3	Molybdenum	ppm	ASTM D5185m	60	71	89	76
Calcium   ppm   ASTM D5185m   1070   1522   1549   1345     Phosphorus   ppm   ASTM D5185m   1150   979   1231   1041     Zinc   ppm   ASTM D5185m   1270   1266   1424   1347     Sulfur   ppm   ASTM D5185m   2060   2904   3346   3285     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >25   5   8   6     Sodium   ppm   ASTM D5185m   >20   4   4   2     Potassium   ppm   ASTM D5185m   >20   4   4   2     INFRA-RED   method   limit/base   current   history1   history2     Soot %   %   *ASTM D7844   >3   1.1   1.6   1.2     Nitration   Abs/cm   *ASTM D7415   >30   21.8   26.8   23.3     FLUID DEGRADATION   limit/ba	Manganese	ppm	ASTM D5185m	0	0	0	<1
Phosphorus   ppm   ASTM D5185m   1150   979   1231   1041     Zinc   ppm   ASTM D5185m   1270   1266   1424   1347     Sulfur   ppm   ASTM D5185m   2060   2904   3346   3285     CONTAMINANTS   method   limit/base   current   history1   history1     Silicon   ppm   ASTM D5185m   >25   5   8   6     Sodium   ppm   ASTM D5185m   9   2   4     Potassium   ppm   ASTM D5185m   >20   4   4   2     INFRA-RED   method   limit/base   current   history1   history2     Soot %   %   *ASTM D7844   >3   1.1   1.6   1.2     Nitration   Abs/cm   *ASTM D7624   >20   11.6   15.5   13.3     Sulfation   Abs/.1mm   *ASTM D7415   >30   21.8   26.8   23.3	Magnesium	ppm	ASTM D5185m	1010	757	966	881
Zinc   ppm   ASTM D5185m   1270   1266   1424   1347     Sulfur   ppm   ASTM D5185m   2060   2904   3346   3285     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >25   5   8   6     Sodium   ppm   ASTM D5185m   9   2   4     Potassium   ppm   ASTM D5185m   >20   4   4   2     INFRA-RED   method   limit/base   current   history1   history2     Soot %   %   *ASTM D7844   >3   1.1   1.6   1.2     Nitration   Abs/cm   *ASTM D7624   >20   11.6   15.5   13.3     Sulfation   Abs/.1mm   *ASTM D7415   >30   21.8   26.8   23.3     FLUID DEGRADATION   method   limit/base   current   history1   history2	Calcium	ppm	ASTM D5185m	1070	1522	1549	1345
Sulfur   ppm   ASTM D5185m   2060   2904   3346   3285     CONTAMINANTS   method   limit/base   current   history1   history3     Silicon   ppm   ASTM D5185m   >25   5   8   6     Sodium   ppm   ASTM D5185m   9   2   4     Potassium   ppm   ASTM D5185m   >20   4   4   2     INFRA-RED   method   limit/base   current   history1   history2     Soot %   %   *ASTM D7844   >3   1.1   1.6   1.2     Nitration   Abs/cm   *ASTM D7624   >20   11.6   15.5   13.3     Sulfation   Abs/.1mm   *ASTM D7415   >30   21.8   26.8   23.3     FLUID DEGRADATION   method   limit/base   current   history1   history2	Phosphorus	ppm	ASTM D5185m	1150	979	1231	1041
CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >25   5   8   6     Sodium   ppm   ASTM D5185m   9   2   4     Potassium   ppm   ASTM D5185m   >20   4   4   2     INFRA-RED   method   limit/base   current   history1   history2     Soot %   %   *ASTM D7844   >3   1.1   1.6   1.2     Nitration   Abs/cm   *ASTM D7624   >20   11.6   15.5   13.3     Sulfation   Abs/.1mm   *ASTM D7415   >30   21.8   26.8   23.3     FLUID DEGRADATION   method   limit/base   current   history1   history2	Zinc	ppm	ASTM D5185m	1270	1266	1424	1347
Silicon   ppm   ASTM D5185m   >25   5   8   6     Sodium   ppm   ASTM D5185m   9   2   4     Potassium   ppm   ASTM D5185m   >20   4   4   2     INFRA-RED   method   limit/base   current   history1   history1     Soot %   %   *ASTM D7844   >3   1.1   1.6   1.2     Nitration   Abs/cm   *ASTM D7624   >20   11.6   15.5   13.3     Sulfation   Abs/.1mm   *ASTM D7415   >30   21.8   26.8   23.3     FLUID DEGRADATION   method   limit/base   current   history1   history2	Sulfur	ppm	ASTM D5185m	2060	2904	3346	3285
Sodium   ppm   ASTM D5185m   9   2   4     Potassium   ppm   ASTM D5185m   >20   4   4   2     INFRA-RED   method   limit/base   current   history1   history2     Soot %   %   *ASTM D7844   >3   1.1   1.6   1.2     Nitration   Abs/cm   *ASTM D7624   >20   11.6   15.5   13.3     Sulfation   Abs/.1mm   *ASTM D7415   >30   21.8   26.8   23.3     FLUID DEGRADATION   method   limit/base   current   history1   history2	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium   ppm   ASTM D5185m   >20   4   4   2     INFRA-RED   method   limit/base   current   history1   history2     Soot %   %   *ASTM D7844   >3   1.1   1.6   1.2     Nitration   Abs/cm   *ASTM D7624   >20   11.6   15.5   13.3     Sulfation   Abs/.1mm   *ASTM D7415   >30   21.8   26.8   23.3     FLUID DEGRADATION   method   limit/base   current   history1   history2	Silicon	ppm	ASTM D5185m	>25	5	8	6
INFRA-RED   method   limit/base   current   history1   history2     Soot %   %   *ASTM D7844   >3   1.1   1.6   1.2     Nitration   Abs/cm   *ASTM D7624   >20   11.6   15.5   13.3     Sulfation   Abs/.1mm   *ASTM D7415   >30   21.8   26.8   23.3     FLUID DEGRADATION   method   limit/base   current   history1   history2	Sodium	ppm	ASTM D5185m		9	2	4
Soot %   %   *ASTM D7844   >3   1.1   1.6   1.2     Nitration   Abs/cm   *ASTM D7624   >20   11.6   15.5   13.3     Sulfation   Abs/.1mm   *ASTM D7415   >30   21.8   26.8   23.3     FLUID DEGRADATION   method   limit/base   current   history1   history2	Potassium	ppm	ASTM D5185m	>20	4	4	2
Nitration   Abs/cm   *ASTM D7624   >20   11.6   15.5   13.3     Sulfation   Abs/.1mm   *ASTM D7415   >30   21.8   26.8   23.3     FLUID DEGRADATION   method   limit/base   current   history1   history2	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 21.8 26.8 23.3   FLUID DEGRADATION method limit/base current history1 history2	Soot %	%	*ASTM D7844	>3	1.1	1.6	1.2
FLUID DEGRADATION method limit/base current history1 history2	Nitration	Abs/cm	*ASTM D7624	>20	11.6	15.5	13.3
	Sulfation	Abs/.1mm	*ASTM D7415	>30	21.8	26.8	23.3
	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2
Oxidation	Oxidation	Abs/.1mm	*ASTM D7414	>25	18.4	25.4	21.6
Base Number (BN) mg KOH/g   ASTM D2896   9.8   8.5   7.3   7.4	Base Number (BN)	mg KOH/g		9.8	8.5	7.3	7.4



# **OIL ANALYSIS REPORT**



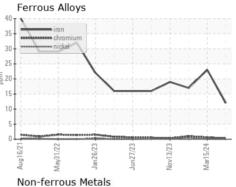


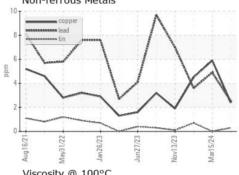


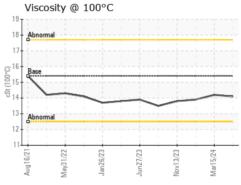
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

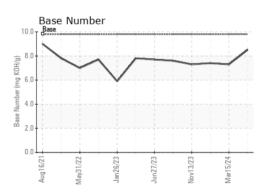
FLUID PROPERTIES		method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.1	14.2	13.9

# **GRAPHS**













Certificate 12367

Laboratory Sample No.

Test Package : FLEET

: PCA0124231 Lab Number : 06235541 Unique Number : 11124375

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received

: 15 Jul 2024 **Tested** : 15 Jul 2024 Diagnosed : 15 Jul 2024 - Wes Davis

GFL Environmental - 002 - Vance-Granville 241 Vanco Mill Rd Henderson, NC

US 27537 Contact: Cameron King cameron.king@gflenv.com T: (252)438-5333

To discuss this sample report, contact Customer Service at 1-800-237-1369. \* - 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)

F: (252)431-1635