

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL

Machine Id 10160

Component **Diesel Engine**

Fluid

PETRO CANADA DURON SHP 15W40 (32 QT

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

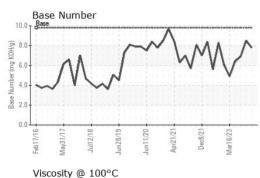
Fluid Condition

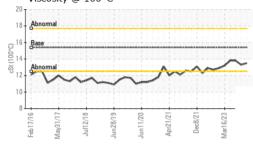
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Date Client Info 04 Dec 2023 19 Sep 2023 14 Sep 2023	QTS)		22016 May20	17 Jul2018 Jun2019	Jun2020 Apr2021 Dec2021 M	000000 Mar2023	
Sample Date Client Info 04 Dec 2023 19 Sep 2023 14 Sep 2023 Machine Age hrs Client Info 36243 35762 55680 Oil Age hrs Client Info 0 500 600 001 Sample Status Client Info 0 Korena NoRMAL NoRMAL NoRMAL NoRMAL CONTAMINATION method Imil/base current history1 +history2 Fuel WC Method >2.0 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG WEAR METALS method imil/base current history1 history2 Iron ppm ASTM D5165m >100 16 7 24 Chromlum ppm ASTM D5165m >30 0 0 0 Silver ppm ASTM D5165m >33 0 0 0 Silver ppm ASTM D5165m >33 0 0 </th <th>SAMPLE INFORM</th> <th>ATION</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	SAMPLE INFORM	ATION	method	limit/base	current	history1	history2
Machine Age Di Age Di Age Di Age 	Sample Number Sample Date						
Oli Changed Sample Status Client Info Changed NORMAL Not Changed NORMAL Changed NORMAL Changed NORMAL Changed NORMAL Changed NORMAL Changed NORMAL Changed NORMAL Changed NORMAL NoRMAL NEG NEG NEG	Machine Age	hrs	Client Info		36243		
Sample Status NORMAL NORMAL NORMAL NORMAL NORMAL CONTAMINATION method imit/base current history1 history2 Fuel WC Method >2.0 <1.0	Oil Age	hrs	Client Info		0	500	600
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >2.0 <1.0	Oil Changed		Client Info		Changed	Not Changd	Changed
Fuel WC Method >2.0 <1.0 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >20 <1	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG NEG Glycol WC Method Imit/base current history1 history2 Iron ppm ASTM D5185m >100 16 7 24 Chromium ppm ASTM D5185m >20 <1	CONTAMINATIO	NC	method	limit/base	current	history1	history2
Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 16 7 24 Chromium ppm ASTM D5185m >20 <1	Fuel		WC Method	>2.0	<1.0	<1.0	<1.0
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Iron ppm ASTM D5185m >100 16 7 24 Chromium ppm ASTM D5185m >20 <1	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1 <1 2 Nickel ppm ASTM D5185m >4 0 0 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >4 0 0 <1 Titanium ppm ASTM D5185m >3 0 0 <1	Iron	ppm		>100	-	7	
Titanium ppm ASTM D5185m 0 0 <1 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 1 <1	Chromium	ppm	ASTM D5185m	>20	<1	<1	2
Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 1 <1 2 Lead ppm ASTM D5185m >40 10 3 15 Copper ppm ASTM D5185m >330 2 <1 3 Tin ppm ASTM D5185m >15 0 <1 2 Vanadium ppm ASTM D5185m 0 0 0 0 0 ADDITIVES method imit/base current history1 history2 Boron ppm ASTM D5185m 0 <1 0 3 Barium ppm ASTM D5185m 0 <1 1 Magnesium ppm ASTM D5185m 0 <1 1 Magnesium ppm ASTM D5185m 0 0 <1 1 Magnesium ppm ASTM D5185m 1070 1147 1224 1119	Nickel	ppm		>4	-		<1
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Lead ppm ASTM D5185m >40 10 3 15 Copper ppm ASTM D5185m >330 2 <1	Silver	ppm		>3	0	0	0
Copper ppm ASTM D5185m >330 2 <1 3 Tin ppm ASTM D5185m >15 0 <1	Aluminum	ppm	ASTM D5185m	>20	1		2
Tin ppm ASTM D5185m >15 0 <1 2 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1 0 3 Barium ppm ASTM D5185m 0 <1 0 3 Barium ppm ASTM D5185m 0 2 0 44 Molybelnum ppm ASTM D5185m 0 0 <1 1 Magnesium ppm ASTM D5185m 010 985 1070 944 Calcium ppm ASTM D5185m 1010 985 1070 1224 1119 Phosphorus ppm ASTM D5185m 1200 3381 3815 3296 CONTAMINAITS method limit/base cur	_ead	ppm	ASTM D5185m	>40	10	3	15
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ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1	Vanadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 0 <1 0 3 Barium ppm ASTM D5185m 0 2 0 44 Molybdenum ppm ASTM D5185m 60 65 63 63 Manganese ppm ASTM D5185m 0 0 <1	Cadmium	ppm	ASTM D5185m		0	0	<1
Barium ppm ASTM D5185m 0 2 0 44 Molybdenum ppm ASTM D5185m 60 65 63 63 Manganese ppm ASTM D5185m 0 0 <1	ADDITIVES		method	limit/base	current	history1	history2
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Manganese ppm ASTM D5185m 0 0 <1 1 Magnesium ppm ASTM D5185m 1010 985 1070 944 Calcium ppm ASTM D5185m 1070 1147 1224 1119 Phosphorus ppm ASTM D5185m 1070 1147 1224 1119 Phosphorus ppm ASTM D5185m 1070 1147 1224 1119 Phosphorus ppm ASTM D5185m 1070 1279 1354 1268 Sulfur ppm ASTM D5185m 2060 3381 3815 3296 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 2 3 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.2 0.3 Nitration Abs/cm	Barium	ppm	ASTM D5185m	0	2	0	44
Magnesium ppm ASTM D5185m 1010 985 1070 944 Calcium ppm ASTM D5185m 1070 1147 1224 1119 Phosphorus ppm ASTM D5185m 1150 1014 1101 1011 Zinc ppm ASTM D5185m 1270 1279 1354 1268 Sulfur ppm ASTM D5185m 2060 3381 3815 3296 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 2 4 Sodium ppm ASTM D5185m >20 2 3 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.2 0.3 Nitration Abs/.mm *ASTM D7624 >20 10.1 7.4 11.5 Sulfation Abs/.lmm *ASTM	Molybdenum	ppm			65	63	63
Calcium ppm ASTM D5185m 1070 1147 1224 1119 Phosphorus ppm ASTM D5185m 1150 1014 1101 1011 Zinc ppm ASTM D5185m 1270 1279 1354 1268 Sulfur ppm ASTM D5185m 2060 3381 3815 3296 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 2 4 Sodium ppm ASTM D5185m >20 2 3 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.2 0.3 Nitration Abs/cm *ASTM D7624 >20 10.1 7.4 11.5 Sulfation Abs/.1mm *ASTM D7415 >30 22.7 19.6 24.3 FLUID DEGRADATION method	Manganese	ppm	ASTM D5185m	0	0	<1	1
Phosphorus ppm ASTM D5185m 1150 1014 1101 1011 Zinc ppm ASTM D5185m 1270 1279 1354 1268 Sulfur ppm ASTM D5185m 2060 3381 3815 3296 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 2 4 Sodium ppm ASTM D5185m >25 4 2 4 Sodium ppm ASTM D5185m >25 4 2 4 Sodium ppm ASTM D5185m >20 2 3 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.2 0.3 Nitration Abs/cm *ASTM D7624 >20 10.1 7.4 11.5 Sulfation Abs/.1mm *ASTM D7415 <th< td=""><td>Magnesium</td><td>ppm</td><td>ASTM D5185m</td><td>1010</td><th>985</th><td>1070</td><td>944</td></th<>	Magnesium	ppm	ASTM D5185m	1010	985	1070	944
Zinc ppm ASTM D5185m 1270 1279 1354 1268 Sulfur ppm ASTM D5185m 2060 3381 3815 3296 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 2 4 Sodium ppm ASTM D5185m >25 4 2 4 Sodium ppm ASTM D5185m >20 2 3 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.2 0.3 Nitration Abs/cm *ASTM D7624 >20 10.1 7.4 11.5 Sulfation Abs/.1mm *ASTM D7415 >30 22.7 19.6 24.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 </td <td>Calcium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1070</td> <th>1147</th> <td>1224</td> <td>1119</td>	Calcium	ppm	ASTM D5185m	1070	1147	1224	1119
SulfurppmASTM D5185m2060338138153296CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>25424SodiumppmASTM D5185m>20235PotassiumppmASTM D5185m>20235INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.20.20.3NitrationAbs/cm*ASTM D7624>2010.17.411.5SulfationAbs/.1mm*ASTM D7415>3022.719.624.3FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2521.715.922.9	Phosphorus	ppm	ASTM D5185m	1150	1014	1101	1011
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>25424SodiumppmASTM D5185m>206512PotassiumppmASTM D5185m>20235INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.20.20.3NitrationAbs/cm*ASTM D7624>2010.17.411.5SulfationAbs/.1mm*ASTM D7415>3022.719.624.3FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2521.715.922.9		ppm	ASTM D5185m	1270	1279	1354	1268
Silicon ppm ASTM D5185m >25 4 2 4 Sodium ppm ASTM D5185m >20 6 5 12 Potassium ppm ASTM D5185m >20 2 3 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.2 0.3 Nitration Abs/cm *ASTM D7624 >20 10.1 7.4 11.5 Sulfation Abs/.1mm *ASTM D7415 >30 22.7 19.6 24.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.7 15.9 22.9			ASTM D5185m	2060	3381	3815	3296
Sodium ppm ASTM D5185m 6 5 12 Potassium ppm ASTM D5185m >20 2 3 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.2 0.3 Nitration Abs/cm *ASTM D7624 >20 10.1 7.4 11.5 Sulfation Abs/.1mm *ASTM D7415 >30 22.7 19.6 24.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.7 15.9 22.9	CONTAMINANT	S	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 2 3 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.2 0.3 Nitration Abs/cm *ASTM D7624 >20 10.1 7.4 11.5 Sulfation Abs/.1mm *ASTM D7415 >30 22.7 19.6 24.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.7 15.9 22.9		ppm	ASTM D5185m	>25	4		4
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.2 0.3 Nitration Abs/cm *ASTM D7624 >20 10.1 7.4 11.5 Sulfation Abs/.1mm *ASTM D7415 >30 22.7 19.6 24.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.7 15.9 22.9	Sodium	ppm	ASTM D5185m		6	5	12
Soot % % *ASTM D7844 >3 0.2 0.2 0.3 Nitration Abs/cm *ASTM D7624 >20 10.1 7.4 11.5 Sulfation Abs/.1mm *ASTM D7415 >30 22.7 19.6 24.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.7 15.9 22.9	Potassium	ppm	ASTM D5185m	>20	2	3	5
Nitration Abs/cm *ASTM D7624 >20 10.1 7.4 11.5 Sulfation Abs/.1mm *ASTM D7615 >30 22.7 19.6 24.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.7 15.9 22.9	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 22.7 19.6 24.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.7 15.9 22.9			*ASTM D7844	>3	0.2	0.2	0.3
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.7 15.9 22.9	Nitration	Abs/cm	*ASTM D7624	>20	10.1	7.4	11.5
Oxidation Abs/.1mm *ASTM D7414 >25 21.7 15.9 22.9	Sulfation	Abs/.1mm	*ASTM D7415	>30	22.7	19.6	24.3
	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 7.8 8.5 6.9	Oxidation	Abs/.1mm	*ASTM D7414	>25	21.7	15.9	22.9
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	7.8	8.5	6.9

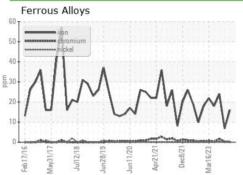


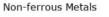
OIL ANALYSIS REPORT





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
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.5	13.3	13.8
GRAPHS						





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18 17

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Unique Number : 10776056

Laboratory

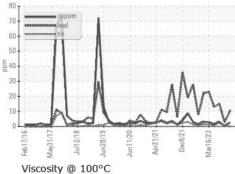
Sample No.

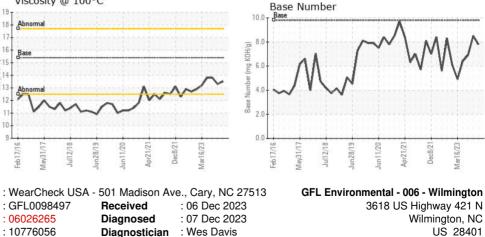
Lab Number

Feb17/16

: 06026265

May31/17







Test Package : FLEET Certificate L2367 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)

