

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id Component

## **Diesel Engine** Fluid PETRO CANADA DURON SHP 15W40 (9 GAL)

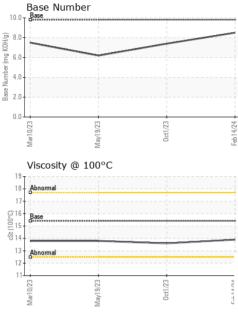
DIAGNOSIS	S
Recommendation	Sa
Resample at the next service interval to monitor.	Sa
Wear	Ma
All component wear rates are normal.	Oil
Contamination	Oil
There is no indication of any contamination in the	Sa
oil.	C
Fluid Condition	<b></b>
The DN we will be all a stars the state one for an itself.	Fu

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     14 Feb 2024     01 Oct 2023     19 May 2023       Machine Age     hrs     Client Info     11234     10155     9790       Oil Age     hrs     Client Info     400     400     518       Oil Changed     Client Info     Changed     Changed     Changed     Changed     Changed     Changed     NORMAL     NORMAL </th <th>ON SHP 15W40 (9</th> <th>9 GAL)</th> <th>Mar202</th> <th>3 May2023</th> <th>Oct2023 Fe</th> <th>b2024</th> <th></th>	ON SHP 15W40 (9	9 GAL)	Mar202	3 May2023	Oct2023 Fe	b2024	
Sample Date     Client Info     14 Feb 2024     01 Oct 2023     19 May 2023       Machine Age     hrs     Client Info     11234     10155     9790       Oil Age     hrs     Client Info     400     400     518       Oil Changed     Client Info     Changed     NORMAL     NORMAL     NORMAL       Sample Status     VIC Method     >3.0     <1.0     <1.0     <1.0       Fuel     VIC Method     >0.2     NEG     NEG     NEG       Wear     VIC Method     >0.2     NEG     NEG     NEG       WEAR METALS     method     Imilibase     current     history1     history2       fro     ppm     ASTM 05165m     >120     10     7     16       Chromium     ppm     ASTM 05165m     >2     0     0     11       Nickel     ppm     ASTM 05165m     >2     0     0     11       Silver     ppm     ASTM 05165m     >2     0     0     11       Copper     pp	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age     hrs     Client Info     11234     10155     9790       Oil Age     hrs     Client Info     400     400     518       Oil Changed     Client Info     400     400     518       Oil Ghanged     Client Info     MORMAL     NORMAL     NORMAL     NORMAL       Sample Status     Interbook     current     history1     History2       Fuel     WC Method     >3.0     <1.0     <1.0     <1.0       Water     WC Method     >0.2     NEG     NEG     NEG       Okycol     WC Method     >0.2     NEG     NEG     NEG       Okycol     WC Method     >0.2     NEG     NEG     NEG       Okycol     WC Method     >0.2     0     1     NEG       Okycol     WC Method     >0.2     <1     0     1       Chromium     ppm     ASTM 051555     >2     0     0     1       Silver     ppm     ASTM 051555     >15     0     0     1	Sample Number		Client Info		GFL0106684	GFL0087312	GFL0072908
Oil Age     Ins     Client Info     400     400     518       Oil Changed     Client Info     Changed     Changed<	Sample Date		Client Info		14 Feb 2024	01 Oct 2023	19 May 2023
Oil Changed Sample StatusClient InfoChanged NORMALChanged NORMALChanged NORMALChanged NORMALChanged NORMALChanged NORMALChanged NORMALChanged NORMALChanged NORMALChanged NORMALChanged NORMALNoRMALNORMALNORMALNORMALCONTAMINATIONmethodimit/basecurrenthistory1history2FuelWC Method>0.2NEGNEGNEGWearWC Method>0.2NEGNEGNEGWEAR METALSmethodimit/basecurrenthistory1history2IronppmASTM D5185m>12010716ChromiumppmASTM D5185m>20244LeadppmASTM D5185m>200<13SilverppmASTM D5185m>20244LeadppmASTM D5185m>200<13CadmiumppmASTM D5185m>100<13Astm D5185m>1000<134BariumppmASTM D5185m000<1Astm D5185m000<134BariumppmASTM D5185m00<116MagneseppmASTM D5185m000<1MagneseppmASTM D5185m10101015923902Cadiumppm </th <th>Machine Age</th> <th>hrs</th> <th>Client Info</th> <th></th> <th>11234</th> <th>10155</th> <th>9790</th>	Machine Age	hrs	Client Info		11234	10155	9790
Sample Status     NORMAL     NORMAL     NORMAL     NORMAL     NORMAL       CONTAMINATION     method     imit/base     current     history1     history2       Fuel     WC Method     >3.0     <1.0     <1.0     <1.0       Water     WC Method     >0.2     NEG     NEG     NEG       Glycol     WC Method     >0.2     NEG     NEG     NEG       WEAR METALS     method     imit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >20     0     <1     1       Nickel     ppm     ASTM D5185m     >22     0     0     <1       Auminum     ppm     ASTM D5185m     >20     0     <1     1       Auminum     ppm     ASTM D5185m     >20     0     <1     3       Auminum     ppm     ASTM D5185m     >20     0     <1     3       Lead     ppm     ASTM D5185m     >30     0     <1     3       Lea	Oil Age	hrs	Client Info		400	400	518
CONTAMINATION     method     imit/base     current     history1     history2       Fuel     WC Method     >3.0     <1.0     <1.0     <1.0       Water     WC Method     >0.2     NEG     NEG     NEG       Glycol     WC Method     NEG     NEG     NEG     NEG       WEAR METALS     method     imit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >20     <1     0     1       Nickel     ppm     ASTM D5185m     >20     0     <1     1       Silver     ppm     ASTM D5185m     >20     0     <1     3       Tin     ppm     ASTM D5185m     >20     0     <1     3       Copper     ppm     ASTM D5185m     >15     0     0     <1       Copper     ppm     ASTM D5185m     0     0     <1     3       Copper     ppm     ASTM D5185m     0     0     <1     3       Astm D5185	Oil Changed		Client Info		Changed	Changed	Changed
Fuel     WC Method     >3.0     <1.0	Sample Status				NORMAL	NORMAL	NORMAL
Water     WC Method     >0.2     NEG     NEG     NEG       Glycol     WC Method     Imit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >120     10     7     16       Chromium     ppm     ASTM D5185m     >20     <1     0     1       Nickel     ppm     ASTM D5185m     >2     0     0     <1       Silver     ppm     ASTM D5185m     >2     0     0     <1       Aluminum     ppm     ASTM D5185m     >20     2     4     4       Lead     ppm     ASTM D5185m     >20     0     <1     1       Copper     ppm     ASTM D5185m     >30.0     <1     1     0     <1       Vanadium     ppm     ASTM D5185m     >15     0     0     <1     1     Netory1     history2       Barium     ppm     ASTM D5185m     0     <1     3     4     1     10     1     1 <t< th=""><th>CONTAMINAT</th><th>ION</th><th>method</th><th>limit/base</th><th>current</th><th>history1</th><th>history2</th></t<>	CONTAMINAT	ION	method	limit/base	current	history1	history2
Glycol     WC Method     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >20     <1     0     1       Nickel     ppm     ASTM D5185m     >20     <1     0     1       Nickel     ppm     ASTM D5185m     >2     0     0     <1       Aluminum     ppm     ASTM D5185m     >2     0     0     <1       Aluminum     ppm     ASTM D5185m     >20     2     4     4       Lead     ppm     ASTM D5185m     >20     2     4     4       Lead     ppm     ASTM D5185m     >20     0     <1     3       Vanadium     ppm     ASTM D5185m     15     0     <1     3     4       Adminum     ppm     ASTM D5185m     0     <1     3     4       Barium     ppm     ASTM D5185m     0     0     0     <1	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >120     10     7     16       Chromium     ppm     ASTM D5185m     >20     <1	Water		WC Method	>0.2	NEG	NEG	NEG
Iron     ppm     ASTM D5185m     >120     10     7     16       Chromium     ppm     ASTM D5185m     >20     <1     0     1       Nickel     ppm     ASTM D5185m     >20     <1     0     <1       Nickel     ppm     ASTM D5185m     >2     0     0     <1       Silver     ppm     ASTM D5185m     >20     2     4     4       Lead     ppm     ASTM D5185m     >20     2     4     4       Lead     ppm     ASTM D5185m     >20     0     <1     3       Copper     ppm     ASTM D5185m     >330     0     <1     3       Cadmium     ppm     ASTM D5185m     0     <1     3     4       Barium     ppm     ASTM D5185m     0     <1     3     4       Barium     ppm     ASTM D5185m     0     <1     3     4       Barium     ppm     ASTM D5185m     0     <10     0     0	Glycol		WC Method		NEG	NEG	NEG
Chromium     ppm     ASTM D5185m     >20     <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel     ppm     ASTM D5185m     >5     0     0     <1       Titanium     ppm     ASTM D5185m     >2     0     0     <1	Iron	ppm	ASTM D5185m	>120	10	7	16
Titanium     ppm     ASTM D5185m     >2     0     0     <1	Chromium	ppm	ASTM D5185m	>20	<1	0	1
Silver     ppm     ASTM D5185m     >2     0     0     <1	Nickel	ppm	ASTM D5185m	>5	0	0	<1
Aluminum     ppm     ASTM D5185m     >20     2     4     4       Lead     ppm     ASTM D5185m     >40     0     0     1       Copper     ppm     ASTM D5185m     >330     0     <1     3       Tin     ppm     ASTM D5185m     >15     0     0     <1       Vanadium     ppm     ASTM D5185m      1     0     <1       Cadmium     ppm     ASTM D5185m     0     <1     0     <1       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     <1     3     4       Barium     ppm     ASTM D5185m     0     0     0     0       Maganese     ppm     ASTM D5185m     0     0     0     <1       Phosphorus     ppm     ASTM D5185m     1010     1015     923     902       Calcium     ppm     ASTM D5185m     1100     1047     1074	Titanium	ppm	ASTM D5185m	>2	0	0	<1
Lead     ppm     ASTM D5185m     >40     0     0     1       Copper     ppm     ASTM D5185m     >330     0     <1	Silver	ppm	ASTM D5185m	>2	0	0	<1
Copper     ppm     ASTM D5185m     >330     0     <1     3       Tin     ppm     ASTM D5185m     >15     0     0     <1	Aluminum	ppm	ASTM D5185m	>20	2	4	4
Tin     ppm     ASTM D5185m     >15     0     0     <1       Vanadium     ppm     ASTM D5185m     <<1	Lead	ppm	ASTM D5185m	>40	0	0	1
Vanadium     ppm     ASTM D5185m     <1     0     <1       Cadmium     ppm     ASTM D5185m     0     0     <1       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     <1     3     4       Barium     ppm     ASTM D5185m     0     <1     3     4       Barium     ppm     ASTM D5185m     0     0     0     0     0       Molybdenum     ppm     ASTM D5185m     0     0     0     0     0     <1       Magnesium     ppm     ASTM D5185m     010     1015     923     902       Calcium     ppm     ASTM D5185m     1010     1015     923     963       Zinc     ppm     ASTM D5185m     1070     1027     1047     1074       Phosphorus     ppm     ASTM D5185m     2060     3259     2982     2754       CONTAMINANTS     method     limit/base	Copper	ppm	ASTM D5185m	>330	0	<1	3
Cadmium     ppm     ASTM D5185m     0     0     <1       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     <1     3     4       Barium     ppm     ASTM D5185m     0     <1     3     4       Barium     ppm     ASTM D5185m     0     0     0     0     0     0       Magnesium     ppm     ASTM D5185m     0     0     0     0     <1       Magnesium     ppm     ASTM D5185m     0     0     0     0     <1       Magnesium     ppm     ASTM D5185m     0     0     0     0     <1       Magnesium     ppm     ASTM D5185m     1010     1015     923     902       Calcium     ppm     ASTM D5185m     1070     1027     1047     1074       Phosphorus     ppm     ASTM D5185m     1270     1316     1205     1168       Sulfur     p	Tin	ppm	ASTM D5185m	>15	0	0	<1
ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     <1	Vanadium	ppm	ASTM D5185m		<1	0	<1
Boron     ppm     ASTM D5185m     0     <1	Cadmium	ppm	ASTM D5185m		0	0	<1
Barium     ppm     ASTM D5185m     0     0     0     0     0       Molybdenum     ppm     ASTM D5185m     60 <b>59</b> 57     58       Manganese     ppm     ASTM D5185m     0     0     0     <1       Magnesium     ppm     ASTM D5185m     1010     1015     923     902       Calcium     ppm     ASTM D5185m     1070     1027     1047     1074       Phosphorus     ppm     ASTM D5185m     1070     1027     1047     1074       Phosphorus     ppm     ASTM D5185m     1150     1102     959     963       Zinc     ppm     ASTM D5185m     1270     1316     1205     1168       Sulfur     ppm     ASTM D5185m     2060 <b>3259</b> 2982     2754       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >20     <1     0     2       INFRA-RED     method	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum     ppm     ASTM D5185m     60 <b>59</b> 57     58       Manganese     ppm     ASTM D5185m     0     0     0     <1       Magnesium     ppm     ASTM D5185m     1010     1015     923     902       Calcium     ppm     ASTM D5185m     1010     1027     1047     1074       Phosphorus     ppm     ASTM D5185m     1070     1027     1047     1074       Phosphorus     ppm     ASTM D5185m     1270     1316     1205     1168       Sulfur     ppm     ASTM D5185m     2060     3259     2982     2754       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     3     2     6       Sodium     ppm     ASTM D5185m     >20     <1     0     2       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7624	Boron	ppm	ASTM D5185m	0	<1	3	4
Maganese     ppm     ASTM D5185m     0     0     0     <1	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium     ppm     ASTM D5185m     1010     1015     923     902       Calcium     ppm     ASTM D5185m     1070     1027     1047     1074       Phosphorus     ppm     ASTM D5185m     1150     1102     959     963       Zinc     ppm     ASTM D5185m     1270     1316     1205     1168       Sulfur     ppm     ASTM D5185m     2060     3259     2982     2754       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     3     2     6       Sodium     ppm     ASTM D5185m     >20     <1     6     2       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >4     0.1     0.2     0.4       Nitration     Abs/.1mm     *ASTM D744     >20     5.3     6.3     8.8       Sulfation     Abs/.1mm     *ASTM D7	Molybdenum	ppm	ASTM D5185m	60	59	57	58
Calcium     ppm     ASTM D5185m     1070     1027     1047     1074       Phosphorus     ppm     ASTM D5185m     1150     1102     959     963       Zinc     ppm     ASTM D5185m     1270     1316     1205     1168       Sulfur     ppm     ASTM D5185m     2060     3259     2982     2754       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     3     2     6       Sodium     ppm     ASTM D5185m     >20     <1     0     2       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >4     0.1     0.2     0.4       Nitration     Abs/cm     *ASTM D7624     >20     5.3     6.3     8.8       Sulfation     Abs/.1mm     *ASTM D7414     >30     17.9     18.1     21.1       FLUID DEGRADATION     method     <	Manganese	ppm	ASTM D5185m	0	0		
Phosphorus     ppm     ASTM D5185m     1150     1102     959     963       Zinc     ppm     ASTM D5185m     1270     1316     1205     1168       Sulfur     ppm     ASTM D5185m     2060     3259     2982     2754       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     3     2     6       Sodium     ppm     ASTM D5185m     >25     3     2     6       Sodium     ppm     ASTM D5185m     >20     <1	Magnesium	ppm	ASTM D5185m	1010		923	
Zinc     ppm     ASTM D5185m     1270     1316     1205     1168       Sulfur     ppm     ASTM D5185m     2060     3259     2982     2754       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     3     2     6       Sodium     ppm     ASTM D5185m     >25     3     2     6       Sodium     ppm     ASTM D5185m     >20     <1     6     6       Potassium     ppm     ASTM D5185m     >20     <1     0     2       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >4     0.1     0.2     0.4       Nitration     Abs/cm     *ASTM D7624     >20     5.3     6.3     8.8       Sulfation     Abs/.1mm     *ASTM D7415     >30     17.9     18.1     21.1       FLUID DEGRADATION     method     limit/base	Calcium	ppm	ASTM D5185m	1070	1027	1047	
SulfurppmASTM D5185m2060325929822754CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>25326SodiumppmASTM D5185m>2016PotassiumppmASTM D5185m>20<102INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>40.10.20.4NitrationAbs/cm*ASTM D7624>205.36.38.8SulfationAbs/lim*ASTM D7415>3017.918.121.1FLUID DEGRADATION methodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2513.714.316.9	Phosphorus	ppm					963
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m<>25326SodiumppmASTM D5185m216PotassiumppmASTM D5185m20<1		ppm		1270	1316		
Silicon     ppm     ASTM D5185m     >25     3     2     6       Sodium     ppm     ASTM D5185m     >20     2     1     6       Potassium     ppm     ASTM D5185m     >20     <1     0     2       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >4     0.1     0.2     0.4       Nitration     Abs/cm     *ASTM D7624     >20     5.3     6.3     8.8       Sulfation     Abs/.1mm     *ASTM D7615     >30     17.9     18.1     21.1       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     13.7     14.3     16.9	Sulfur	ppm	ASTM D5185m	2060	3259	2982	2754
Sodium     ppm     ASTM D5185m     2     1     6       Potassium     ppm     ASTM D5185m     >20     <1     0     2       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >4     0.1     0.2     0.4       Nitration     Abs/cm     *ASTM D7624     >20     5.3     6.3     8.8       Sulfation     Abs/.1mm     *ASTM D7415     >30     17.9     18.1     21.1       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     13.7     14.3     16.9	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium     ppm     ASTM D5185m     >20     <1				>25	3		
INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >4     0.1     0.2     0.4       Nitration     Abs/cm     *ASTM D7624     >20     5.3     6.3     8.8       Sulfation     Abs/.1mm     *ASTM D7415     >30     17.9     18.1     21.1       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     13.7     14.3     16.9		ppm			2		
Soot %     %     *ASTM D7844     >4     0.1     0.2     0.4       Nitration     Abs/cm     *ASTM D7624     >20     5.3     6.3     8.8       Sulfation     Abs/.1mm     *ASTM D7415     >30     17.9     18.1     21.1       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     13.7     14.3     16.9	Potassium	ppm	ASTM D5185m	>20	<1	0	2
Nitration     Abs/cm     *ASTM D7624     >20     5.3     6.3     8.8       Sulfation     Abs/.1mm     *ASTM D7615     >30     17.9     18.1     21.1       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     13.7     14.3     16.9	INFRA-RED		method	limit/base	current	history1	history2
Sulfation     Abs/.1mm     *ASTM D7415     >30     17.9     18.1     21.1       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     13.7     14.3     16.9				>4			
FLUID DEGRADATION method limit/base current history1 history2   Oxidation Abs/.1mm *ASTM D7414 >25 13.7 14.3 16.9			*ASTM D7624	>20	5.3		
Oxidation Abs/.1mm *ASTM D7414 >25 <b>13.7</b> 14.3 16.9	Sulfation	Abs/.1mm	*ASTM D7415	>30	17.9	18.1	21.1
	FLUID DEGRAD	DATION	method	limit/base	current	history1	history2
Base Number (BN)     mg KOH/g     ASTM D2896     9.8     8.5     7.4     6.2	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.7	14.3	16.9
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.5	7.4	6.2



## **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	13.9	13.6	13.8
GRAPHS						

