

## **OIL ANALYSIS REPORT**

Sample Rating Trend

NORMAL



Resample at the next service interval to monitor.

There is no indication of any contamination in the

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

oil is suitable for further service.

All component wear rates are normal.

DIAGNOSIS Recommendation

Contamination

Fluid Condition

Wear

oil.

Machine Id 727068-361321

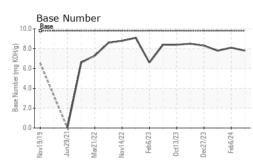
Component **Diesel Engine** Fluid

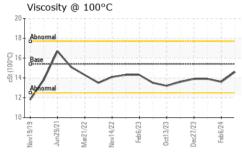
PETRO CANADA DUR

N SHP 15W40 ( GAL)     Instruct     Network     Network     Network     Network     Network       Sample Number     Client Info     GFL0109180     GFL0109202     GFL0098294       Sample Date     Client Info     19 Feb 2024     06 Feb 2024     24 Jan 2024       Machine Age     hrs     Client Info     19 Feb 2024     06 Feb 2024     24 Jan 2024       Ol Age     hrs     Client Info     700     600     600       Ol Age     hrs     Client Info     Not Changed     Changed     Changed       Sample Status     CONTAMINATION     method     imit/base     current     history1     history2       Fuel     WC Method     >0.2     NEG     NEG     NEG     NEG       Glycol     WC Method     >0.2     10     0     11     Notes     Notes       Gromium     ppm     ASTM 05155     ><<1     0     0     11       Kore     ppm     ASTM 05155     ><<1     0     0     11     1     1       Kore							
Sample Number     Client Info     GFL0199180     GFL0199202     GFL0098294       Sample Date     i     Client Info     19 Feb 2024     66 Feb 2024     24 Jan 2024       Machine Age     hrs     Client Info     4375     4226     12304       Oil Age     hrs     Client Info     700     600     600       Oil Changed     Client Info     Not Changed     Changed     Changed       Sample Status     Imit base     eurrent     history1     history2       Fuel     WC Method     >3.0     <1.0     <1.0     <1.0       Water     WC Method     >0.2     NEG     NEG     NEG       Water     WC Method     >0.2     25     0     33       Ornom     ppm     ASTM05185     <1     0     0       Nickel     ppm     ASTM05185     <1     0     1       Silver     ppm     ASTM05185     <1     0     1       Allead     ppm     ASTM05185     <1     0     1	N SHP 15W40 (	- GAL)	lov2019 Jun	2021 Mar2022 Nov2022	Feb2023 Oct2023 Dec2023	Feb2024	
Sample Date     Client Info     19 Feb 2024     06 Feb 2024     24 Jan 2024       Machine Age     hrs     Client Info     4375     4226     12304       Oil Age     hrs     Client Info     700     600     600       Oil Changed     Client Info     Not Changed     Changed     Changed     Changed       Sample Status     Imit Info     Nort Math     NORMAL     NORMAL     NORMAL       CONTAMINATION     method     Jan 2024     NEG     NEG     NEG     NEG       Fuel     WC Method     >3.0     <1.0	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Date     Client Info     19 Feb 2024     06 Feb 2024     24 Jan 2024       Machine Age     hrs     Client Info     4375     4226     12304       Oil Age     hrs     Client Info     700     600     600       Sample Status     Client Info     Not Changed     Changed     Changed     Changed       CONTAMINATION     method     Imit/base     current     history1     History2       Fuel     WC Method     >3.0     <1.0	Sample Number		Client Info		GFL0109180	GFL0109202	GFL0098294
Oil Age hrs Client Info 700 600 600   Oil Changed Client Info Not Changed NoRMAL	Sample Date		Client Info		19 Feb 2024	06 Feb 2024	24 Jan 2024
Oil Changed Sample Status     Client Info     Not Changd NORMAL     Changed NORMAL     Changed NORMAL     Changed NORMAL     Changed NORMAL       CONTAMINATION     method     limit/base     current     history1     history2       Fuel     WC Method     >3.0     <1.0	Machine Age	hrs	Client Info		4375	4226	12304
Sample Status     NORMAL     NORMAL     NORMAL     NORMAL       CONTAMINATION     method     imit/base     current     history1     history2       Fuel     WC Method     >3.0     <1.0	Oil Age	hrs	Client Info		700	600	600
CONTAMINATION     method     limit/base     current     history1     history2       Fuel     WC Method     >3.0     <1.0	Oil Changed		Client Info		Not Changd	Changed	Changed
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     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     Imil/base     current     history1     history2       Iron     ppm     ASTM D5185m     >120     25     0     33       Chromium     ppm     ASTM D5185m     >5     <1	CONTAMINATI	ON	method	limit/base	current	history1	history2
Glycol     WC Method     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >120     25     0     33       Chromium     ppm     ASTM D5185m     >20     <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     25     0     33       Chromium     ppm     ASTM D5185m     >20     <1	Water		WC Method	>0.2	NEG	NEG	NEG
Iron     ppm     ASTM D5185m     >120     25     0     33       Chromium     ppm     ASTM D5185m     >20     <1	Glycol		WC Method		NEG	NEG	NEG
Chromium     ppm     ASTM D5185m     >20     <1     0     1       Nickel     ppm     ASTM D5185m     >5     <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel     ppm     ASTM D5185m     >5     <1     0     0       Titanium     ppm     ASTM D5185m     >2     <1	Iron	ppm	ASTM D5185m	>120	25	0	33
Titanium     ppm     ASTM D5185m     >2     <1     0     <1       Silver     ppm     ASTM D5185m     >2     0     0     0       Aluminum     ppm     ASTM D5185m     >20     2     1     1       Lead     ppm     ASTM D5185m     >330     2     <1	Chromium	ppm	ASTM D5185m	>20	<1	0	1
Silver     ppm     ASTM D5185m     >2     0     0     0       Aluminum     ppm     ASTM D5185m     >20     2     1     1       Lead     ppm     ASTM D5185m     >40     <1	Nickel	ppm	ASTM D5185m	>5	<1	0	0
Aluminum     ppm     ASTM D5185m     >20     2     1     1       Lead     ppm     ASTM D5185m     >40     <1	Titanium	ppm	ASTM D5185m	>2	<1	0	<1
Lead     ppm     ASTM D5185m     >40     <1     2     1       Copper     ppm     ASTM D5185m     >330     2     <1	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper     ppm     ASTM D5185m     >330     2     <1     1       Tin     ppm     ASTM D5185m     >15     <1	Aluminum	ppm	ASTM D5185m	>20	2	1	1
Tin     ppm     ASTM D5185m     >15     <1     <1     <1       Vanadium     ppm     ASTM D5185m     >15     <1	Lead	ppm	ASTM D5185m	>40	<1	2	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     0       Barium     ppm     ASTM D5185m     0     0     0     0     0     0       Barium     ppm     ASTM D5185m     0     0     0     0     0     0     0       Magnesium     ppm     ASTM D5185m     0     <1     <1     <1     <1       Calcium     ppm     ASTM D5185m     0     <1     <1     <1<     <1<       Magnesium     ppm     ASTM D5185m     1010     912     829     941       Calcium     ppm     ASTM D5185m     1070     986     896     953       Phosphorus     ppm     ASTM D5185m     1270     1212     1109     1162       Sulfur	Copper	ppm	ASTM D5185m	>330	2	<1	1
Cadmium     ppm     ASTM D5185m     0     0     <1       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     1     3     0       Barium     ppm     ASTM D5185m     0     0     0     0     0       Magnesium     ppm     ASTM D5185m     0     <1	Tin	ppm	ASTM D5185m	>15	<1	<1	<1
ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     1     3     0       Barium     ppm     ASTM D5185m     0     0     0     0       Molybdenum     ppm     ASTM D5185m     60     59     52     52       Manganese     ppm     ASTM D5185m     0     <1	Vanadium	ppm	ASTM D5185m		<1	0	<1
Boron     ppm     ASTM D5185m     0     1     3     0       Barium     ppm     ASTM D5185m     0     0     0     0     0       Molybdenum     ppm     ASTM D5185m     60 <b>59</b> 52     52       Manganese     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> 52     52       Manganese     ppm     ASTM D5185m     0     <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum     ppm     ASTM D5185m     60     59     52     52       Manganese     ppm     ASTM D5185m     0     <1	Boron	ppm	ASTM D5185m	0	1	3	0
Manganese     ppm     ASTM D5185m     0     <1     <1     <1       Magnesium     ppm     ASTM D5185m     1010     912     829     941       Calcium     ppm     ASTM D5185m     1070     986     896     953       Phosphorus     ppm     ASTM D5185m     1070     986     896     953       Phosphorus     ppm     ASTM D5185m     1070     986     896     953       Phosphorus     ppm     ASTM D5185m     1070     1020     902     976       Zinc     ppm     ASTM D5185m     1270     1212     1109     1162       Sulfur     ppm     ASTM D5185m     2060     3064     2699     2819       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >20     2     2     1       Potassium     ppm     ASTM D5185m     >20     2.6     0.2     2.6       Nitration     Abs/cm< *ASTM D7644	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium     ppm     ASTM D5185m     1010     912     829     941       Calcium     ppm     ASTM D5185m     1070     986     896     953       Phosphorus     ppm     ASTM D5185m     1150     1020     902     976       Zinc     ppm     ASTM D5185m     1270     1212     1109     1162       Sulfur     ppm     ASTM D5185m     2060     3064     2699     2819       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     3     0     2       Sodium     ppm     ASTM D5185m     >20     2     1     1       Potassium     ppm     ASTM D5185m     >20     2     2     1       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >4     2.6     0.2     2.6       Nitration     Abs/.mm     *ASTM D7624	Molybdenum	ppm	ASTM D5185m	60	59	52	52
Calcium     ppm     ASTM D5185m     1070     986     896     953       Phosphorus     ppm     ASTM D5185m     1150     1020     902     976       Zinc     ppm     ASTM D5185m     1270     1212     1109     1162       Sulfur     ppm     ASTM D5185m     2060     3064     2699     2819       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     22     2     1       Sodium     ppm     ASTM D5185m     22     2     1       Potassium     ppm     ASTM D5185m     20     2     <1	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus     ppm     ASTM D5185m     1150     1020     902     976       Zinc     ppm     ASTM D5185m     1270     1212     1109     1162       Sulfur     ppm     ASTM D5185m     2060     3064     2699     2819       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     3     0     2       Sodium     ppm     ASTM D5185m     >20     2     1     1       Potassium     ppm     ASTM D5185m     >20     2     2     1       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >4     2.6     0.2     2.6       Nitration     Abs/cm     *ASTM D7624     >20     7.3     6.2     7.8       Sulfation     Abs/.1mm     *ASTM D7415     >30     22.3     17.7     22.1       FLUID DEGRADATION     method     limit/	Magnesium	ppm	ASTM D5185m	1010	912	829	941
Phosphorus     ppm     ASTM D5185m     1150     1020     902     976       Zinc     ppm     ASTM D5185m     1270     1212     1109     1162       Sulfur     ppm     ASTM D5185m     2060     3064     2699     2819       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     3     0     2       Sodium     ppm     ASTM D5185m     >25     3     0     2       Sodium     ppm     ASTM D5185m     >20     2     2     1       Potassium     ppm     ASTM D5185m     >20     2     2     1       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >4     2.6     0.2     2.6       Nitration     Abs/cm     *ASTM D7624     >20     7.3     6.2     7.8       Sulfation     Abs/.1mm     *ASTM D7415	Calcium	ppm	ASTM D5185m	1070	986	896	953
Zinc     ppm     ASTM D5185m     1270     1212     1109     1162       Sulfur     ppm     ASTM D5185m     2060     3064     2699     2819       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     3     0     2       Sodium     ppm     ASTM D5185m     >25     3     0     2       Sodium     ppm     ASTM D5185m     >20     2     2     1       Potassium     ppm     ASTM D5185m     >20     2     2     <1	Phosphorus			1150	1020		976
SulfurppmASTM D5185m2060306426992819CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>25302SodiumppmASTM D5185m>20221PotassiumppmASTM D5185m>2022<1	Zinc		ASTM D5185m	1270	1212	1109	1162
Silicon     ppm     ASTM D5185m     >25     3     0     2       Sodium     ppm     ASTM D5185m     >20     2     2     1       Potassium     ppm     ASTM D5185m     >20     2     2     <1       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >4     2.6     0.2     2.6       Nitration     Abs/cm     *ASTM D7624     >20     7.3     6.2     7.8       Sulfation     Abs/.1mm     *ASTM D7615     >30     22.3     17.7     22.1       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     13.7     13.9     13.2	Sulfur	ppm	ASTM D5185m	2060	3064	2699	2819
Sodium     ppm     ASTM D5185m     2     2     1       Potassium     ppm     ASTM D5185m     >20     2     2     <1	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium     ppm     ASTM D5185m     >20     2     2     <1       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >4     2.6     0.2     2.6       Nitration     Abs/cm     *ASTM D7624     >20     7.3     6.2     7.8       Sulfation     Abs/.1mm     *ASTM D7415     >30     22.3     17.7     22.1       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     13.7     13.9     13.2	Silicon	ppm	ASTM D5185m	>25	3	0	2
INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >4     2.6     0.2     2.6       Nitration     Abs/cm     *ASTM D7624     >20     7.3     6.2     7.8       Sulfation     Abs/.1mm     *ASTM D7415     >30     22.3     17.7     22.1       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     13.7     13.9     13.2	Sodium	ppm	ASTM D5185m		2	2	1
Soot %     %     *ASTM D7844     >4     2.6     0.2     2.6       Nitration     Abs/cm     *ASTM D7624     >20     7.3     6.2     7.8       Sulfation     Abs/.1mm     *ASTM D7415     >30     22.3     17.7     22.1       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     13.7     13.9     13.2	Potassium	ppm	ASTM D5185m	>20	2	2	<1
Nitration     Abs/cm     *ASTM D7624     >20     7.3     6.2     7.8       Sulfation     Abs/.1mm     *ASTM D7415     >30     22.3     17.7     22.1       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     13.7     13.9     13.2	INFRA-RED		method	limit/base	current	history1	history2
Sulfation     Abs/.1mm     *ASTM D7415     >30     22.3     17.7     22.1       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     13.7     13.9     13.2	Soot %	%	*ASTM D7844	>4	2.6	0.2	2.6
FLUID DEGRADATION method limit/base current history1 history2   Oxidation Abs/.1mm *ASTM D7414 >25 13.7 13.9 13.2	Nitration	Abs/cm	*ASTM D7624	>20	7.3	6.2	7.8
Oxidation Abs/.1mm *ASTM D7414 >25 <b>13.7</b> 13.9 13.2	Sulfation	Abs/.1mm	*ASTM D7415	>30	22.3	17.7	22.1
	FLUID DEGRAD	DATION	method	limit/base	current	history1	history2
Base Number (BN)     mg KOH/g     ASTM D2896     9.8     7.8     8.1     7.8	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.7	13.9	13.2
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	7.8	8.1	7.8

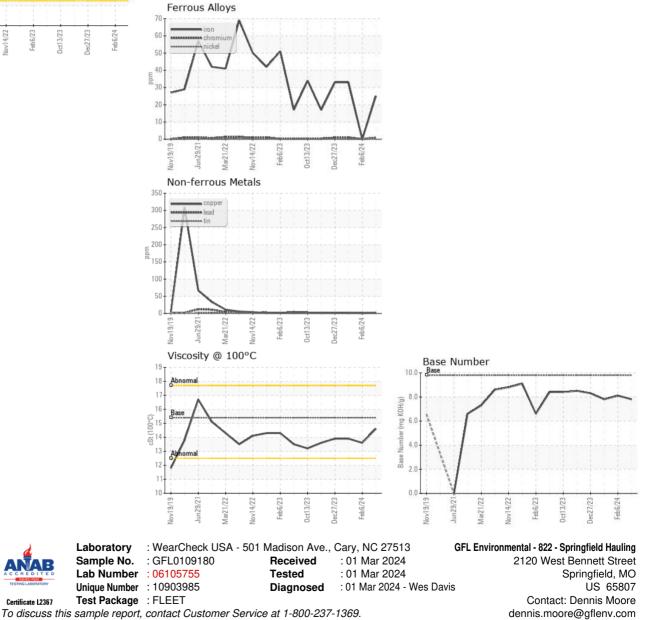


## **OIL ANALYSIS REPORT**





VISUAL		method				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	14.6	13.6	13.9
GRAPHS						



\* - 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: (417)403-3641

F: