

# **OIL ANALYSIS REPORT**

Sample Rating Trend

NORMAL



### MONTGOMERY **MACK 928112**

Component **Diesel Engine** Fluid

PETRO CANADA DURON

SAMP 15W40 (       L         SAMPLE INFORMAT         Sample Date       I         Machine Age       hrs         Oil Age       hrs         Oil Changed       sample Status         Oil Changed       I         Sample Status       I         CONTAMINATION       Fuel         Glycol       I         WEAR METALS       I         Iron       pp         Chromium       pp         Nickel       pp         Aluminum       pp         Lead       pp         Copper       pp         Tin       pp         Cadmium       pp         Boron       pp         Barium       pp         Malybdenum       pp         Manganese       pp	TION method Client Ini Client Ini s Client Ini s Client Ini s Client Ini Client Ini S Client Ini Client Ini S Client Ini Client Ini S Client Ini S C	fo fo fo fo fo fo fo fo fo imit/ba ba ba ba ba ba ba ba ba ba ba ba ba b	GFL0089895 31 Oct 2023 13572 640 Not Changd NORMAL se current <1.0 NEG	Nistory1           GFL00923711           02 Oct 2023           13366           434           Not Changd           NORMAL           history1           <1.0           NEG           10           <1.0           6434           0           <1.0           0           <1.0           10           <1.0           NEG           0           <10           <10           <10           <11           0           <11           0           <11           0           <11           0           <11           0           <10           <10           <10           <10	history2         GFL0092410         11 Sep 2023         13204         272         Not Changd         NORMAL         history2         <1.0         history2         <1.0         history2         <1.0         <1.0         <1.0         0
Sample Number Sample Date Machine Age hrs Oil Age hrs Oil Changed Sample Status CONTAMINATION Fuel Glycol P WEAR METALS Iron pp Chromium pp Nickel pp Titanium pp Silver pp Aluminum pp Lead pp Copper pp Tin pp Vanadium pp Cadmium pp Cadmium pp Barium pp Molybdenum pp Manganese pp	Client In Client In S Client In S Client In Client In Client In Client In Client In WC Methor WC Methor WC Methor WC Methor WC Methor WC Methor WC Methor MC Methor WC Methor MC	fo fo fo fo fo fo fo fo fo imit/ba ba ba ba ba ba ba ba ba ba ba ba ba b	GFL008989895         31 Oct 2023         13572         640         Not Changd         NORMAL         Se       current         4         Se       current         4       <1         51       <1         64       0         7       <1         7       <1         7       <1         7       <1         7       <1         7       <1         7       <1	GFL0092371 02 Oct 2023 13366 434 Not Changd NORMAL 10 10 10 10 10 10 10 0	GFL0092410 11 Sep 2023 13204 272 Not Changd NORMAL   <br< th=""></br<>
Sample Date       Image         Machine Age       hrs         Oil Age       hrs         Oil Changed       sample Status         CONTAMINATION       Image         Fuel       Glycol         WEAR METALS       Image         Iron       pp         Chromium       pp         Nickel       pp         Silver       pp         Aluminum       pp         Lead       pp         Copper       pp         Cadmium       pp         Boron       pp         Barium       pp         Molybdenum       pp         Manganese       pp	Client Inf S Client Inf Client Inf Client Inf Client Inf Client Inf Client Inf WC Metho WC Metho WC Metho WC Metho MC MC MC METHO MC MC MC MC METHO MC MC M	fo fo fo fo fo bd bd bd bd bd bd bd bd bd bd bd bd bd	31 Oct 2023         13572         640         Not Changd         NORMAL         se       current         <1.0	02 Oct 2023 13366 434 Not Changd NORMAL 10<1.0	11 Sep 2023 13204 272 Not Changd NORMAL <1.0 NEG history2 8 0 0 0 <1 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
Machine Age       hrs         Oil Age       hrs         Oil Changed       sample Status         CONTAMINATION         Fuel         Glycol       Image Control (Control (Contro) (Contro) (Control (Control (Contro) (Control (Contro)	s Client Int Client Int Client Int Client Int Client Int WC Method WC Method WC Method WC Method WC Method MC MC METHOD MC METHOD MC METHOD MC MC METHOD MC MC METHOD MC METHOD MC METHOD MC MC METHOD MC MC METHOD MC MC METHOD MC MC MC METHOD MC MC MC METHOD MC	fo fo fo limit/ba od od od imit/ba od limit/ba od limit/ba od som >20 of som Som Som Som Som Som Som Som Som Som S	13572         640         Not Changd         NORMAL         Se       current         <1.0	13366 434 Not Changd NORMAL <1.0 NEG history1 10 <10 <1 0 <1 0 <1 0 6 0 0 <1 0 0 <1 0	13204 272 Not Changd NORMAL
Oil Age     hrs       Oil Changed     Sample Status       Sample Status     Image: Contramination of the status       CONTAMINATION       Fuel     Glycol       Glycol     Image: Contramination of the status       WEAR METALS       Iron     pp       Chromium     pp       Chromium     pp       Silver     pp       Aluminum     pp       Lead     pp       Copper     pp       Tin     pp       Cadmium     pp       Boron     pp       Barium     pp       Manganese     pp	S Client In Client In Client In WC Method WC Method WC Method WC Method MC MC M	fo fo limit/ba od od od limit/ba od limit/ba od limit/ba od som >20 of som som som som som som som som som som	640         Not Changd         NORMAL         se       current         4         se       current         4          <1	434 Not Changd NORMAL -1.0 NEG history1 10 <10 <1 0 <1 0 <1 0 6 0 0 <1 0 0 <1 0 0 5 1 0	272 Not Changd NORMAL -1.0 NEG NEG bistory2 8 0 0 -1 0 -1 0 0 0 0 -1 0 0 -1 -1 -1 -1
Dil Changed Sample Status CONTAMINATION Fuel Glycol WEAR METALS ron pp Chromium pp Nickel pp Titanium pp Lead pp Copper pp Fin pp Vanadium pp Cadmium pp Cadmium pp Barium pp Molybdenum pp Manganese pp	Client Internet Inter	fo limit/ba od >3.0 od >3.0 imit/ba 5m >120 5m >20 5m >2 5m >2 5m >20 5m >15 5m >15	Not Changd NORMAL           se         current           <1.0	Not Changd NORMAL history1 <1.0 NEG history1 10 <10 <10 <10 0 <1 0 6 0 <1 0 <1 0 6 0 <1 0 6 0 <1 0 0 <1 0 0 0 0 0 0 0 0 0 0 0 0 0	Not Changd NORMAL
Sample Status         CONTAMINATION         Fuel         Glycol         WEAR METALS         ron       pp         Chromium       pp         Nickel       pp         Silver       pp         Aluminum       pp         Copper       pp         Vanadium       pp         Cadmium       pp         Boron       pp         Manganese       pp	V method WC Metho WC Metho WC Metho Mathod M	Imit/ba           J         Iimit/ba           J         Jimit/ba           J         Iimit/ba           J         Jimit/ba           J         Jimit/ba           J         Jimit/ba           J         Jimit/ba           J         Jimit/ba           J         Jimit/ba           J         Som	NORMAL           se         current           <1.0	NORMAL           history1           <1.0	NORMAL           history2           <1.0
Fuel         Glycol         WEAR METALS         ron       pp         Chromium       pp         Chromium       pp         Silver       pp         Aluminum       pp         Lead       pp         Copper       pp         Zanadium       pp         Cadmium       pp         Boron       pp         Barium       pp         Molybdenum       pp         Manganese       pp	WC Methy WC Methy WC Methy MC Method Mm ASTM D518 Mm ASTM D518	od         >3.0           od         limit/ba           5m         >120           5m         >20           5m         >2           5m         >2           5m         >20           5m         >2           5m         >20           5m         >20           5m         >20           5m         >20           5m         >330           5m         >15           5m         >15           5m         >15	<1.0 NEG Se current 4 <1 <1 <1 0 4 0 4 0 0 4 0 0 4 0 0 4 0 0 4 0 0 4 0 1 <1 5 1 0 4 0 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1	<1.0 NEG history1 10 <1 0 <1 0 <1 0 6 0 <1 0	<1.0 NEG history2 8 0 0 <1 0 0 0 0 0 0 0 <1
GlycolWEAR METALSronppChromiumppChromiumppNickelppFitaniumppSilverppAluminumppLeadppCopperppTinppVanadiumppCadmiumppBoronppBariumppMolybdenumppManganesepp	WC Metho method m ASTM D518 m ASTM D518	Imit/ba           Imit/ba           5m           >20           5m           >5           5m           >2           5m           >2           5m           >2           5m           >20           5m           >2           5m           >20           5m           >20           5m           >20           5m           >330           5m           >15           5m	NEG           se         current           4         <1	NEG history1 10 <1 0 <1 0 6 0 0 <1 0	NEG history2 8 0 0 <1 0 0 0 0 0 <1
GlycolWEAR METALSronppChromiumppChromiumppNickelppFitaniumppSilverppAluminumppLeadppCopperppFinppVanadiumppCadmiumppBoronppBariumppMolybdenumppManganesepp	WC Metho method m ASTM D518 m ASTM D518	Imit/ba           Imit/ba           5m           >20           5m           >5           5m           >2           5m           >2           5m           >2           5m           >20           5m           >2           5m           >20           5m           >20           5m           >20           5m           >330           5m           >15           5m	NEG           se         current           4         <1	NEG history1 10 <1 0 <1 0 6 0 0 <1 0	NEG history2 8 0 0 <1 0 0 0 0 0 <1
WEAR METALS         ron       pp         Chromium       pp         Nickel       pp         Nickel       pp         Silver       pp         Aluminum       pp         Lead       pp         Copper       pp         Vanadium       pp         Cadmium       pp         Boron       pp         Barium       pp         Manganese       pp	method           am         ASTM D518:	limit/ba 5m >120 5m >20 5m >5 5m >2 5m >2 5m >20 5m >20 5m >20 5m >330 5m >15 5m	Se         Current           4         <1	history1           10           <1	history2 8 0 0 <1 0 0 0 <1 <1 1 0 0 <1 1 0 0 0 <1 1 0 0 1 0 0 1 0 0
ron pp Chromium pp Nickel pp Titanium pp Silver pp Aluminum pp Lead pp Copper pp Tin pp Vanadium pp Cadmium pp ADDITIVES Boron pp Barium pp Molybdenum pp	ASTM D518:	5m         >120           5m         >20           5m         >5           5m         >2           5m         >2           5m         >2           5m         >20           5m         >2           5m         >20           5m         >20           5m         >20           5m         >40           5m         >330           5m         >15           5m	4 <1 <1 0 4 0 <1 <1 <1	10 <1 0 <1 0 6 0 <1 0	8 0 <1 0 0 0 0 <1
ChromiumppNickelppFitaniumppSilverppAluminumppLeadppCopperppCopperppZadmiumppADDITIVESBoronBariumppMolybdenumppManganesepp	ASTM D518:           mm         ASTM D518:	5m         >20           5m         >5           5m         >2           5m         >2           5m         >20           5m         >20           5m         >20           5m         >20           5m         >330           5m         >15           5m         >15	<1 <1 <1 0 4 0 <1 <1 <1 <1	<1 0 <1 0 6 0 <1 0	0 0 <1 0 0 0 0 <1
NickelppVickelppFitaniumppSilverppAluminumpp_eadppCopperppCopperppZadmiumppCadmiumppBoronppBariumppMolybdenumppManganesepp	ASTM D518:	5m >5 5m >2 5m >2 5m >20 5m >20 5m >40 5m >330 5m >15 5m	<1 <1 0 4 0 <1 <1 <1	0 <1 0 6 0 <1 0	0 <1 0 0 0 <1
FitaniumppSilverppAluminumppLeadppCopperppFinppZanadiumppCadmiumppADDITIVESBoronppBariumppMolybdenumppManganesepp	ASTM D518	5m         >2           5m         >2           5m         >20           5m         >40           5m         >330           5m         >15           5m	<1 0 4 0 <1 <1 <1 <1	<1 0 6 0 <1 0	<1 0 0 0 0 <1
Silver pp Aluminum pp Lead pp Copper pp Fin pp /anadium pp Cadmium pp ADDITIVES Boron pp Barium pp Molybdenum pp Manganese pp	ASTM D518:           vm         ASTM D518:	5m >2 5m >20 5m >40 5m >330 5m >15 5m	0 4 0 <1 <1 <1	0 6 0 <1 0	0 0 0 0 <1
Aluminum pp Lead pp Copper pp Fin pp /anadium pp Cadmium pp ADDITIVES Boron pp Barium pp Molybdenum pp Manganese pp	ASTM D518 ASTM D518 ASTM D518 ASTM D518 ASTM D518 ASTM D518 ASTM D518	5m >20 5m >40 5m >330 5m >15 5m	4 0 <1 <1 <1	6 0 <1 0	0 0 0 <1
Lead pp Copper pp Fin pp /anadium pp Cadmium pp ADDITIVES Boron pp Barium pp Molybdenum pp Manganese pp	ASTM D518 ASTM D518 ASTM D518 ASTM D518 ASTM D518	5m >40 5m >330 5m >15 5m	0 <1 <1 <1	0 <1 0	0 0 <1
Copper pp Fin pp /anadium pp Cadmium pp ADDITIVES Boron pp Barium pp Molybdenum pp Manganese pp	ASTM D518 ASTM D518 ASTM D518 ASTM D518	5m >330 5m >15 5m	<1 <1 <1	<1 0	0 <1
Tin pp Vanadium pp Cadmium pp ADDITIVES Boron pp Barium pp Molybdenum pp Manganese pp	ASTM D518 ASTM D518	5m >15 5m	<1 <1	0	<1
Vanadium pp Cadmium pp ADDITIVES Boron pp Barium pp Molybdenum pp Manganese pp	ASTM D518	5m	<1		
Cadmium pp ADDITIVES Boron pp Barium pp Molybdenum pp Manganese pp				0	0
ADDITIVES Boron pp Barium pp Molybdenum pp Manganese pp	ASTM D518	5m	<1		
Boron pp Barium pp Molybdenum pp Manganese pp				0	0
Barium pp Molybdenum pp Manganese pp	methoo	l limit/ba	se current	history1	history2
Molybdenum pp Manganese pp	ASTM D518	5m O	2	<1	0
Manganese pp	ASTM D518	5m O	<1	0	0
<b>e</b>	ASTM D518	5m 60	64	56	60
Magnesium pp	ASTM D518	5m O	0	<1	<1
	ASTM D518	5m 1010	959	976	1046
Calcium pp	ASTM D518	5m 1070	1061	1030	1164
Phosphorus pp			1018	980	1054
Zinc pp	ASTM D518	5m 1270	1242	1243	1320
Sulfur pp		5m 2060	3768	2869	3769
CONTAMINANTS	methoo	l limit/ba	se current	history1	history2
Silicon pp	ASTM D518	5m >25	5	13	11
Sodium pp	ASTM D518	5m	6	9	5
Potassium pp	ASTM D518	5m >20	5	6	4
INFRA-RED	method	l limit/ba	se current	history1	history2
Soot % %	*ASTM D78	44 >4	0.2	0.6	0.4
Nitration Abs	s/cm *ASTM D76	24 >20	5.1	7.5	6.6
Sulfation Abs	/.1mm *ASTM D74	15 >30	17.8	19.3	17.8
FLUID DEGRADAT	ON method	l limit/ba	se current	history1	history2
Dxidation Abs					
Base Number (BN) mg		14 >25	13.5	14.7	13.1

### 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.

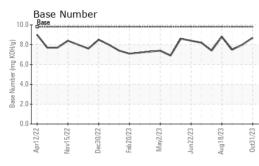
### Fluid Condition

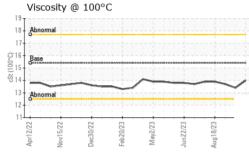
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.



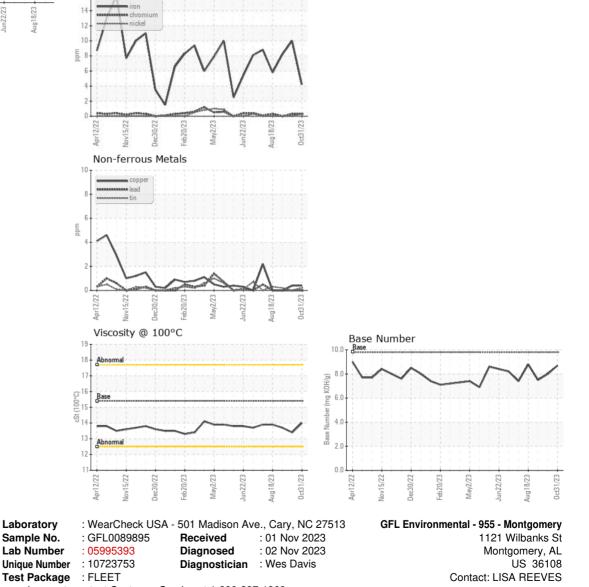
## **OIL ANALYSIS REPORT**

Ferrous Alloys





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	14.0	13.4	13.7
GRAPHS						



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)

Certificate L2367