

## **OIL ANALYSIS REPORT**

Sample Rating Trend

NORMAL



Machine Id 920018-192568

Component **Diesel Engine** Fluic

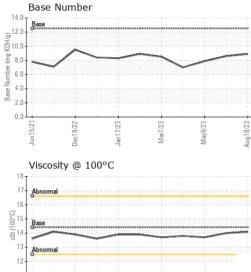
Recommendion         Sample Number         Client Info         GFL008538         GFL008538         GFL005532         GFL005533         GFL0005533         GFL005533         GFL005533	CHEVRON DELO 400 M	ULTIGRADE 15W40	( LTR)	Jun2021	Dec2022 Jan2023	Mar2023 May2023	Aug2023	
Becample at the next service interval to monitor.       Simple Date       Cilent Info       18 Aug 2023       07 Jul 2023       09 May 2         Machine Age       hrs       Cilent Info       80 102       7785       7486         There is no indication of any contamination in the Jul       The BM result Indicates that there is suitable function of any contamination of the BM result Indicates that there is suitable to further service.       NOR MAL       NOR MAL <th>DIAGNOSIS</th> <th>SAMPLE INFOR</th> <th>RMATION</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	DIAGNOSIS	SAMPLE INFOR	RMATION	method	limit/base	current	history1	history2
Arear       Machine Age       hts       Client Info       8012       7785       7496         II component wear rates are normal.       Onli Age       hts       Client Info       NOT Changed       7785       7496         bere is no indication of any contamination in the it.       Cont Changed       Client Info       NOT Changed       NA       NORMAL	ecommendation	Sample Number		Client Info		GFL0086328	GFL0086318	GFL0051141
Toroponent wear rates are normal.       Oil Age       Ins       Client Info       8012       7785       7496         Dottainiation       Pree Is no indication of any contamination in the k.       Client Info       NOTMAL	esample at the next service interval to monitor.	Sample Date		Client Info		18 Aug 2023	07 Jul 2023	09 May 2023
Definition (ref) is nulciation of any contamination in the is sublable for further service.       NIC hange NAMINAL       NORMAL NORMAL       NORMAL NORMAL       NORMAL NORMAL         CONTAMINATION       method       imit/base       current       history       history         Is sublable for further service.       WC Method       3.0       <1.0	ear	Machine Age	hrs	Client Info		8012	7785	7496
Sample Status         NORMAL	component wear rates are normal.	Oil Age	hrs	Client Info		8012	7785	7496
Sample Status       NORMAL       NORMAL       NORMAL       NORMAL         uid Condition Is BN result indicates that there is suitable is suitable for further service.       CONTAMINATION       method       limitbase       current       history       history         Fuel       WC Method       >3.0       <1.0	ontamination	Oil Changed		Client Info		Not Changd	N/A	Not Changd
CONTAMINATION         method         limitbase         current         history1		Sample Status				NORMAL	NORMAL	NORMAL
Juid Condition       eBN result indicates that three is suitable for further service.       Fuel       WC Method       >3.0       <1.0	pil.	CONTAMINAT		method	limit/base	current	historv1	history2
B M Regult indicates that there is suitable condition of the is suitable for further service.         Glycol         WC Method         NEG         NEG         NEG           Iron         ppm         ASTM 05155m         -120         7         9         28           Chromium         ppm         ASTM 05155m         -200         <1								
WEAR METALS         method         limit/base         current         history1         history1           Iron         ppm         ASTM 05185m         >12.0         7         9         28           Chromium         ppm         ASTM 05185m         >5.0         0         0         1         <1					20.0			
Iron       ppm       ASTM D5185m       >120       7       9       28         Chromium       ppm       ASTM D5185m       >20       -11       <1		WEAR METAL	S		limit/base	current		history2
Chromium         ppm         ASTM DS185m         >20         <1         <1         <1           Nickel         ppm         ASTM DS185m         >2         0         0         <1								
Nickel         ppm         ASTM D518sm         >5         0         0         <1           Titanium         ppm         ASTM D518sm         >2         0         0         0           Silver         ppm         ASTM D518sm         >2         0         0         0         0           Aluminum         ppm         ASTM D518sm         >20         5         2         7         1           Lead         ppm         ASTM D518sm         >40         0         0         0         0           Copper         ppm         ASTM D518sm         >40         0								
Titanium         ppm         ASTM D5185m         >2         0         0         0           Silver         ppm         ASTM D5185m         >20         5         2         7           Lead         ppm         ASTM D5185m         >40         0         0         0           Copper         ppm         ASTM D5185m         >330         <1								
Silver       ppm       ASTM D5185m       >2       0       0       0         Aluminum       ppm       ASTM D5185m       >40       0       0       0         Lead       ppm       ASTM D5185m       >40       0       0       0         Copper       ppm       ASTM D5185m       >40       0       0       0         Tin       ppm       ASTM D5185m       15       0       0       0       0         Vanadium       ppm       ASTM D5185m       151       82       67       0       0       0         ADDITVES       method       imit/base       current       history1       history1       112         Barium       ppm       ASTM D5185m       0.4       0       0       0       0         Molybdenum       ppm       ASTM D5185m       0.4       0       0       0       0         Manganesium       ppm       ASTM D5185m       0.4       0       0       0       0         Manganesium       ppm       ASTM D5185m       0.43       973       939       844         Zinc       ppm       ASTM D5185m       0.43       973       939       844								
Aluminum         ppm         ASTM D5185m         >20         5         2         7           Lead         ppm         ASTM D5185m         >40         0         0         0         2           Tin         ppm         ASTM D5185m         >330         <1								
Lead         ppm         ASTM D5185m         >40         0         0         0           Copper         ppm         ASTM D5185m         >330         <1								
Copper         ppm         ASTM D5185m         >330         <1         0         2           Tin         ppm         ASTM D5185m         >15         0         0         <1			ppm					
Tin       ppm       ASTM D5185m       >15       0       0       <1         Vanadium       ppm       ASTM D5185m       0       0       0       0         Cadmium       ppm       ASTM D5185m       0       0       0       0         ADDITIVES       method       limit/base       current       history1       history1         Boron       ppm       ASTM D5185m       151       82       67       112         Barium       ppm       ASTM D5185m       250       76       76       93         Magnesium       ppm       ASTM D5185m       0.4       0       0       <11         Magnesium       ppm       ASTM D5185m       0.4       0       <11       0       <11         Calcium       ppm       ASTM D5185m       0.4       0       <11       0       <11       0       <11       0       <11       0       <11       0       <11       0       <11       0       <11       0       <11       0       <11       0       <11       0       <11       0       0       0       0       0       0       0       0       0       0       0       0       <			ppm					
Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history1           Barium         ppm         ASTM D5185m         151         82         67         112           Barium         ppm         ASTM D5185m         0.4         0         0         0           Molybdenum         ppm         ASTM D5185m         0.4         0         0         -<1			ppm					
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history1           Boron         ppm         ASTM D5185m         151         82         67         112           Barium         ppm         ASTM D5185m         0.4         0         0         0           Molybdenum         ppm         ASTM D5185m         250         76         76         93           Manganese         ppm         ASTM D5185m         0         906         893         791           Calcium         ppm         ASTM D5185m         2046         1224         1156         1369           Phosphorus         ppm         ASTM D5185m         043         973         939         844           Zinc         ppm         ASTM D5185m         5012         3620         3449         2973           Sulfur         ppm         ASTM D5185m         5012         3620         3449         2973           CONTAMINANTS         method         limit/base         current         history1         history1           Sulfacion         ppm         ASTM D5185m         20 <t< td=""><td></td><td></td><td>ppm</td><td></td><td>&gt;15</td><td>0</td><td>0</td><td>&lt;1</td></t<>			ppm		>15	0	0	<1
ADDITIVES         method         limit/base         current         history1         history1           Boron         ppm         ASTM D5185m         151         82         67         112           Barium         ppm         ASTM D5185m         0.4         0         0         0           Molybdenum         ppm         ASTM D5185m         2.0         76         76         93           Manganese         ppm         ASTM D5185m         0         906         893         791           Calcium         ppm         ASTM D5185m         0         906         893         791           Calcium         ppm         ASTM D5185m         0         906         893         791           Calcium         ppm         ASTM D5185m         2046         1224         1156         1369           Phosphorus         ppm         ASTM D5185m         5012         3620         3449         2973           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >225         5         4         9           Sodium         ppm         ASTM D5185m         220		Vanadium	ppm	ASTM D5185m		0	0	0
Boron       ppm       ASTM D5185m       151       82       67       112         Barium       ppm       ASTM D5185m       0.4       0       0       0         Molybdenum       ppm       ASTM D5185m       250       76       76       93         Manganese       ppm       ASTM D5185m       0       906       893       791         Calcium       ppm       ASTM D5185m       0       906       893       791         Calcium       ppm       ASTM D5185m       0.4       906       893       791         Calcium       ppm       ASTM D5185m       0.43       973       939       844         Zinc       ppm       ASTM D5185m       1043       973       939       844         Zinc       ppm       ASTM D5185m       943       1184       1150       1051         Sulfur       ppm       ASTM D5185m       5012       3620       3449       2973         CONTAMINANTS       method       Imit/base       current       History1       history1       history1         Silicon       ppm       ASTM D5185m       >20       <1		Cadmium	ppm	ASTM D5185m		0	0	0
Barium       ppm       ASTM D5185m       0.4       0       0       0         Molybdenum       ppm       ASTM D5185m       250       76       76       93         Manganese       ppm       ASTM D5185m       250       76       76       93         Magnesium       ppm       ASTM D5185m       0       906       893       791         Calcium       ppm       ASTM D5185m       2046       1224       1156       1369         Phosphorus       ppm       ASTM D5185m       1043       973       939       844         Zinc       ppm       ASTM D5185m       943       1184       1150       1051         Sulfur       ppm       ASTM D5185m       943       1184       1150       1051         Sulfur       ppm       ASTM D5185m       512       3620       3449       2973         Sodium       ppm       ASTM D5185m       >20       <1		ADDITIVES		method	limit/base	current	history1	history2
Molybdenum       ppm       ASTM D5185m       250       76       76       93         Manganese       ppm       ASTM D5185m        <1       0       <1         Magnesium       ppm       ASTM D5185m       0       906       893       791         Calcium       ppm       ASTM D5185m       0.0       906       893       791         Calcium       ppm       ASTM D5185m       0.4       1224       1156       1369         Phosphorus       ppm       ASTM D5185m       1043       973       939       844         Zinc       ppm       ASTM D5185m       943       1184       1150       1051         Sulfur       ppm       ASTM D5185m       943       1184       1150       1051         Sulfur       ppm       ASTM D5185m       5012       3620       3449       2973         CONTAMINANTS       method       limit/base       current       history1       histor         Sillicon       ppm       ASTM D5185m       >20       <1       0       1         INFRA-RED       method       limit/base       current       history1       history1         Soot %       %       *ASTM		Boron	ppm	ASTM D5185m	151	82	67	112
Marganese       ppm       ASTM D5185m       <1       0       <1         Magnesium       ppm       ASTM D5185m       0       906       893       791         Calcium       ppm       ASTM D5185m       2046       1224       1156       1369         Phosphorus       ppm       ASTM D5185m       1043       973       939       844         Zinc       ppm       ASTM D5185m       943       1184       1150       1051         Sulfur       ppm       ASTM D5185m       5012       3620       3449       2973         CONTAMINANTS       method       limit/base       current       history1       histor         Silicon       ppm       ASTM D5185m       >25       5       4       9         Sodium       ppm       ASTM D5185m       >20       <1		Barium	ppm	ASTM D5185m	0.4	0	0	0
Magnesium       ppm       ASTM D5185m       0       906       893       791         Calcium       ppm       ASTM D5185m       2046       1224       1156       1369         Phosphorus       ppm       ASTM D5185m       1043       973       939       844         Zinc       ppm       ASTM D5185m       943       1184       1150       1051         Sulfur       ppm       ASTM D5185m       5012       3620       3449       2973         CONTAMINANTS       method       limit/base       current       history1       histor         Silicon       ppm       ASTM D5185m       >25       5       4       9         Sodium       ppm       ASTM D5185m       >20       <1		Molybdenum	ppm	ASTM D5185m	250	76	76	93
Calcium       ppm       ASTM D5185m       2046       1224       1156       1369         Phosphorus       ppm       ASTM D5185m       1043       973       939       844         Zinc       ppm       ASTM D5185m       943       1184       1150       1051         Sulfur       ppm       ASTM D5185m       5012       3620       3449       2973         CONTAMINANTS       method       limit/base       current       history1       history1         Silicon       ppm       ASTM D5185m       >25       5       4       9         Sodium       ppm       ASTM D5185m       >20       <1		Manganese	ppm	ASTM D5185m		<1	0	<1
Phosphorus       ppm       ASTM D5185m       1043       973       939       844         Zinc       ppm       ASTM D5185m       943       1184       1150       1051         Sulfur       ppm       ASTM D5185m       5012       3620       3449       2973         CONTAMINANTS       method       limit/base       current       history1       history1         Silicon       ppm       ASTM D5185m       >25       5       4       9         Sodium       ppm       ASTM D5185m       >25       5       4       9         Sodium       ppm       ASTM D5185m       >20       <1       0       1         INFRA-RED       method       limit/base       current       history1       history1         Soot %       %       *ASTM D7844       >4       0.5       0.5       0.6         Nitration       Abs/tmm       *ASTM D7624       >20       6.7       7.0       9.3         Sulfation       Abs/tmm       *ASTM D7145       >30       19.6       20.3       21.8         FLUID DEGRADATION       method       limit/base       current       history1       history1         Oxidation       Abs/tmm		Magnesium	ppm	ASTM D5185m	0	906	893	791
Zinc       pm       ASTM D5185m       943       1184       1150       1051         Sulfur       ppm       ASTM D5185m       5012       3620       3449       2973         CONTAMINANTS       method       limit/base       current       history1       history1         Silicon       ppm       ASTM D5185m       >25       5       4       9         Sodium       ppm       ASTM D5185m       >25       5       4       9         Sodium       ppm       ASTM D5185m       >20       <1		Calcium	ppm	ASTM D5185m	2046	1224	1156	1369
Zinc       ppm       ASTM D5185m       943       1184       1150       1051         Sulfur       ppm       ASTM D5185m       5012       3620       3449       2973         CONTAMINANTS       method       limit/base       current       history1       histor         Silicon       ppm       ASTM D5185m       >25       5       4       9         Sodium       ppm       ASTM D5185m       >25       5       4       9         Sodium       ppm       ASTM D5185m       >20       <11		Phosphorus	ppm	ASTM D5185m	1043	973	939	844
CONTAMINANTSmethodlimit/basecurrenthistory1historSiliconppmASTM D5185m>25549SodiumppmASTM D5185m338PotassiumppmASTM D5185m>20<1		Zinc		ASTM D5185m	943	1184	1150	1051
Silicon       ppm       ASTM D5185m       >25       5       4       9         Sodium       ppm       ASTM D5185m       >20       3       3       8         Potassium       ppm       ASTM D5185m       >20       <1       0       1         INFRA-RED       method       limit/base       current       history1       histor         Soot %       %       *ASTM D7844       >4       0.5       0.5       0.6         Nitration       Abs/cm       *ASTM D7624       >20       6.7       7.0       9.3         Sulfation       Abs/tmm       *ASTM D7624       >30       19.6       20.3       21.8         FLUID DEGRADATION       method       limit/base       current       history1       history1         Oxidation       Abs/tmm       *ASTM D7624       >20       6.7       7.0       9.3         Intration       Abs/tmm       *ASTM D7615       >30       19.6       20.3       21.8         FLUID DEGRADATION       method       limit/base       current       history1       history1         Oxidation       Abs/tmm       *ASTM D7414       >25       14.8       16.0       16.6		Sulfur	ppm	ASTM D5185m	5012	3620	3449	2973
Sodium         ppm         ASTM D5185m         3         3         8           Potassium         ppm         ASTM D5185m         >20         <1		CONTAMINAN	NTS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         <1         0         1           INFRA-RED         method         limit/base         current         history1         histor           Soot %         %         *ASTM D7844         >4         0.5         0.5         0.6           Nitration         Abs/cm         *ASTM D7624         >20         6.7         7.0         9.3           Sulfation         Abs/rm         *ASTM D7415         >30         19.6         20.3         21.8           FLUID DEGRADATION         method         limit/base         current         history1         history1           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.8         16.0         16.6		Silicon	ppm	ASTM D5185m	>25	5	4	9
INFRA-REDmethodlimit/basecurrenthistory1historSoot %%*ASTM D7844>40.50.50.6NitrationAbs/cm*ASTM D7624>206.77.09.3SulfationAbs/1mm*ASTM D7415>3019.620.321.8FLUID DEGRADATION methodlimit/basecurrenthistory1historOxidationAbs/1mm*ASTM D7414>2514.816.016.6		Sodium	ppm	ASTM D5185m		3	3	8
Soot %         %         *ASTM D7844         >4         0.5         0.6           Nitration         Abs/cm         *ASTM D7624         >20         6.7         7.0         9.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.6         20.3         21.8           FLUID DEGRADATION         method         limit/base         current         history1         histor           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.8         16.0         16.6		Potassium	ppm	ASTM D5185m	>20	<1	0	1
Nitration         Abs/cm         *ASTM D7624         >20         6.7         7.0         9.3           Sulfation         Abs/lmm         *ASTM D7415         >30         19.6         20.3         21.8           FLUID DEGRADATION         method         limit/base         current         history1         histor           Oxidation         Abs/lmm         *ASTM D7414         >25         14.8         16.0         16.6		INFRA-RED		method	limit/base	current	history1	history2
SulfationAbs/.1mm*ASTM D7415>3019.620.321.8FLUID DEGRADATIONmethodlimit/basecurrenthistory1historOxidationAbs/.1mm*ASTM D7414>2514.816.016.6		Soot %	%	*ASTM D7844	>4	0.5	0.5	0.6
SulfationAbs/.1mm*ASTM D7415>3019.620.321.8FLUID DEGRADATIONmethodlimit/basecurrenthistory1historOxidationAbs/.1mm*ASTM D7414>2514.816.016.6		Nitration	Abs/cm	*ASTM D7624	>20		7.0	9.3
Oxidation         Abs/.1mm         *ASTM D7414         >25         14.8         16.0         16.6		Sulfation						
		FLUID DEGRA	DATION	method	limit/base	current	history1	history2
		Oxidation	Abs/.1mm	*ASTM D7414	>25	14.8	16.0	16.6
Base Number (BN)         mg KOH/g         ASTM D2896         12.5         8.9         8.6         7.9		Base Number (BN)				8.9	8.6	7.9



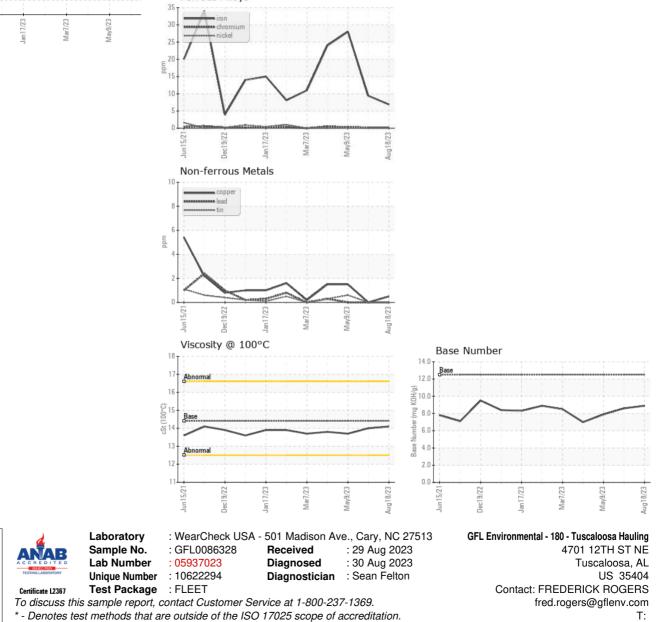
Jun15/21

Dec19/22

## **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	14.4	14.1	14.0	13.7
GRAPHS						
Ferrous Alloys						



Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Submitted By: see also GFL868 - Chelsea Bryan

F: