

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



Machine Id 920018-192568

Component **Diesel Engine** Fluic

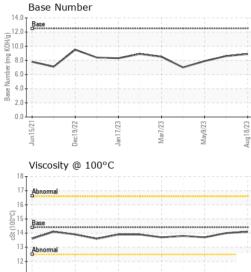
Recommendion Sample Number Client Info GFL008538 GFL008538 GFL005532 GFL005533 GFL0005533 GFL005533 GFL005533	CHEVRON DELO 400 M	ULTIGRADE 15W40	(LTR)	Jun2021	Dec2022 Jan2023	Mar2023 May2023	Aug2023	
Becample at the next service interval to monitor. Simple Date Cilent Info 18 Aug 2023 07 Jul 2023 09 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>>15</td><td>0</td><td>0</td><td><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



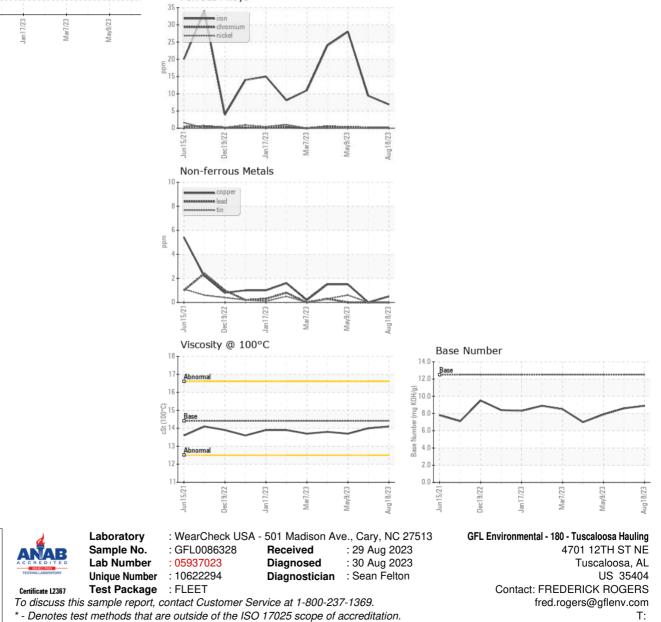
Jun15/21

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

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