

# **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id **182339** Component **Diesel Engine** Fluid **DIESEL ENGINE OIL SAE 40 (--- QTS)** 

#### DIAGNOSIS

#### Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor. Please specify the component make and model with your next sample. Please specify the brand, type, and viscosity of the oil on your next sample.

## Wear

All component wear rates are normal.

#### Contamination

Fuel content negligible. Elevated aluminum (AI) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. There is no indication of any contamination in the oil.

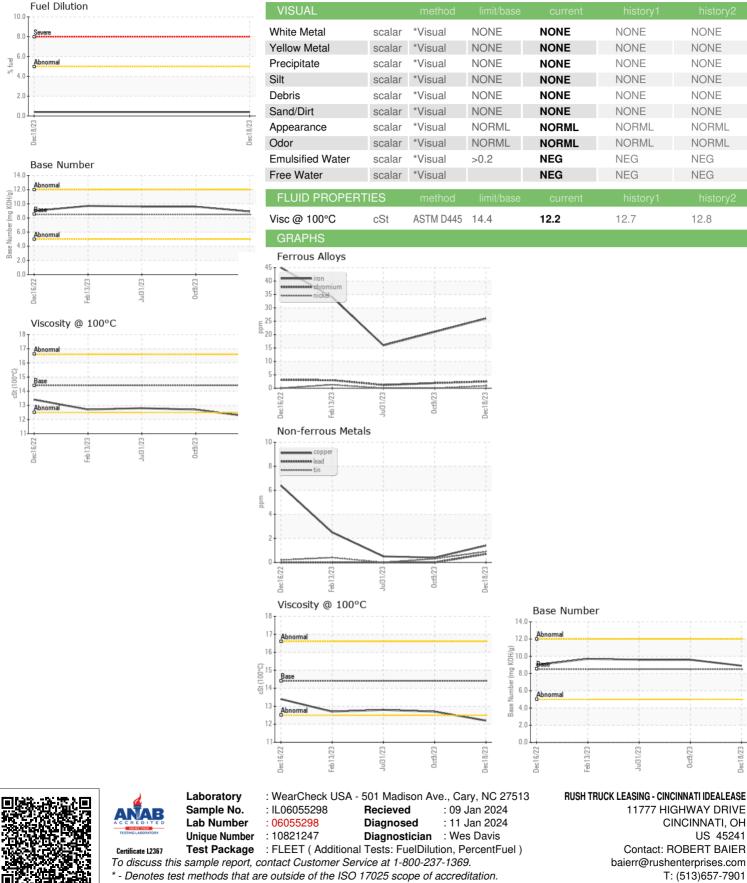
## Fluid Condition

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

Sample Number     Client Info     IL06035298     IL05991472     IL05991472     IL05991472       Machine Age     hrs     Client Info     18 Dec 2023     09 Oct 2023     31 Jul 2023       Machine Age     hrs     Client Info     0     0     0     0       Oil Age     hrs     Client Info     0     0     0     0       Oil Changed     Client Info     N/A     N/A     N/A     N/A       Sample Status     Imition     method     Imitionse     current     history1     history1       Water     WC Method     >0.2     NEG     NEG     NEG     NEG       WEAR METALS     method     imit/base     current     history1     history1       Iron     ppm     ASTM 05185m     >100     26     21     1     6       Chromium     ppm     ASTM 05185m     >20     13     19     18       Lead     ppm     ASTM 05185m     >20     13     19     18       Lead     ppm     ASTM 0			Dec2022	Feb2023	Jul2023 Oct2023	Dec2023	
Sample Date     Client Info     18 Dec 2023     09 Oct 2023     31 Jul 2023       Machine Age     hrs     Client Info     2970     2519     2697       Oil Age     hrs     Client Info     0     0     0       Oil Changed     Client Info     N/A     N/A     N/A       Sample Status     Client Info     N/A     N/A     NA       CONTAMINATION     method     imit/base     current     history1     history1       Water     WC Method     >0.2     NEG     NEG     NEG       WAter     WC Method     >0.2     NEG     NEG     NEG       WeAR METALS     method     imit/base     current     history1     history1       Iron     ppm     ASTM D5185m     >4     <1     0     0       Silver     ppm     ASTM D5185m     >4     <1     0     0       Copper     ppm     ASTM D5185m     >20     13     19     18       Lead     ppm     ASTM D5185m     >4	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Date     Client Info     18 Dec 2023     09 Oct 2023     31 Jul 2023       Machine Age     hrs     Client Info     2970     2519     2697       Oil Age     hrs     Client Info     0     0     0     0       Oil Changed     Client Info     N/A     N/A     N/A     N/A       Sample Status     Client Info     N/A     N/A     N/A     N/A       Water     WC Method     >0.2     NEG     NEG     NEG       Water     WC Method     >0.2     NEG     NEG     NEG       WEAR METALS     method     Imit/base     current     history1     nistory1       Iron     ppm     ASTM D5185m     >100     26     21     16       Chromium     ppm     ASTM D5185m     >4     1     0     0       Silver     ppm     ASTM D5185m     >4     1     0     0       Cadmium     ppm     ASTM D5185m     >20     13     19     18       Lead     ppm </th <th>Sample Number</th> <th></th> <th>Client Info</th> <th></th> <th>IL06055298</th> <th>IL05991472</th> <th>IL05931885</th>	Sample Number		Client Info		IL06055298	IL05991472	IL05931885
Machine Age     hrs     Client Info     2970     2519     2697       Oil Age     hrs     Client Info     0     0     0       Oil Changed     Client Info     N/A     N/A     N/A     N/A       Sample Status     Imit/base     current     History1     History1     History1       Water     WC Method     >0.2     NEG     NEG     NEG       Vater     WC Method     >0.2     NEG     NEG     NEG       Vickel     ppm     ASTM D5185m     >4     <1     0     0       Tatanium     ppm     ASTM D5185m     >3     0     0     0       Copper     ppm     ASTM D5185m     >40     <1     0     0       Cadmium     ppm     ASTM D5185m     1<							
Oil Age     hrs     Client Info     0     0     0       Oil Changed     Client Info     N/A     N/A     N/A     N/A       Sample Status     Imit/base     current     history1     history1       Water     WC Method     >0.2     NEG     NEG     NEG       Water     WC Method     >0.2     NEG     NEG     NEG       Wear METALS     method     Imit/base     current     history1     history       Iron     ppm     ASTM D5185m     >100     26     21     16       Chromium     ppm     ASTM D5185m     >20     2     2     1       Nickel     ppm     ASTM D5185m     >20     13     19     18       Lead     ppm     ASTM D5185m     >20     13     19     18       Lead     ppm     ASTM D5185m     >30     1     <1     0       Aluminum     ppm     ASTM D5185m     >20     13     19     18       Lead     ppm		hrs	Client Info				
Oil Changed Sample Status     Client Info     N/A     N/A     N/A     N/A       CONTAMINATION     method     limit/base     current     history1     history1       Water     WC Method     >0.2     NEG     NEG     NEG       Water     WC Method     >0.2     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history1     history1       Iron     ppm     ASTM D5185m     >100     26     21     16       Chromium     ppm     ASTM D5185m     >20     2     2     1       Nickel     ppm     ASTM D5185m     >20     13     19     18       Lead     ppm     ASTM D5185m     >20     13     19     18       Lead     ppm     ASTM D5185m     >15     <1     <1     0     0       Cadmium     ppm     ASTM D5185m     >15     <1     0     0     0       Copper     ppm     ASTM D5185m     10     0     <	U	hrs	Client Info		0		0
Sample Status     NORMAL     NORMAL     NORMAL     NORMAL     NORMAL       CONTAMINATION     method     limit/base     current     history1     history1       Water     WC Method     >0.2     NEG     NEG     NEG       Glycol     WC Method     Imit/base     current     history1     history1       Verset     method     limit/base     current     history1     history1       Iron     ppm     ASTM D5185m     >100     26     21     16       Chromium     ppm     ASTM D5185m     >4     <1     0     0       Nickel     ppm     ASTM D5185m     >4     <1     0     0       Silver     ppm     ASTM D5185m     >40     <1     0     0       Copper     ppm     ASTM D5185m     >15     <1     <1     0     0       Cadmium     ppm     ASTM D5185m     >50     3     2     0       Barium     ppm     ASTM D5185m     10     0     0	•				-	N/A	N/A
Water     WC Method     >0.2     NEG     NEG     NEG     NEG       Glycol     WC Method     Imit/base     current     history1     nistory1       WEAR METALS     method     limit/base     current     history1     nistory1       Iron     ppm     ASTM D5185m     >100     26     21     16       Chromium     ppm     ASTM D5185m     >20     2     2     1       Nickel     ppm     ASTM D5185m     >4     <1	Ũ				NORMAL	NORMAL	NORMAL
Glycol     WC Method     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history1     history1       Iron     ppm     ASTM D5185m     >20     2     2     1       Nickel     ppm     ASTM D5185m     >4     <1     0     0       Titanium     ppm     ASTM D5185m     >3     0     0     0       Silver     ppm     ASTM D5185m     >3     0     0     0       Lead     ppm     ASTM D5185m     >30     13     19     18       Lead     ppm     ASTM D5185m     >30     1     <1     0     0       Cadmium     ppm     ASTM D5185m     >30     1     <1     0     0     0       ADDITIVES     method     limit/base     current     history1     history1       Boron     ppm     ASTM D5185m     10     0     0     0       Molybdenum     ppm     ASTM D5185m     10     60     <	CONTAMINATION	٧	method	limit/base	current	history1	history2
WEAR METALS     method     imit/base     current     history1     history1       Iron     ppm     ASTM D5185m     >100     26     21     16       Chromium     ppm     ASTM D5185m     >20     2     2     1       Nickel     ppm     ASTM D5185m     >20     2     2     1       Nickel     ppm     ASTM D5185m     >3     0     0     0       Sliver     ppm     ASTM D5185m     >3     0     0     0       Copper     ppm     ASTM D5185m     >40<     <1     0     0       Cadmium     ppm     ASTM D5185m     >40     <1     0     0       Cadmium     ppm     ASTM D5185m     >15     <1     <1     0     0       Cadmium     ppm     ASTM D5185m     250     3     2     0       Barium     ppm     ASTM D5185m     100     0     0     0     0       Molybdenum     ppm     ASTM D5185m     150	Water		WC Method	>0.2	NEG	NEG	NEG
Iron     ppm     ASTM D5185m     >100     26     21     16       Chromium     ppm     ASTM D5185m     >20     2     2     1       Nickel     ppm     ASTM D5185m     >4     <1	Glycol		WC Method		NEG	NEG	NEG
Chromium     ppm     ASTM D5185m     >20     2     2     1       Nickel     ppm     ASTM D5185m     >4     <1     0     0       Titanium     ppm     ASTM D5185m     >4     <1     0     0       Silver     ppm     ASTM D5185m     >3     0     0     0       Aluminum     ppm     ASTM D5185m     >20     13     19     18       Lead     ppm     ASTM D5185m     >40     <1     0     0       Copper     ppm     ASTM D5185m     >40     <1     0     0       Cadmium     ppm     ASTM D5185m     >15     <1     <1     0     0       ADDITVES     method     limit/base     current     history1     history1     history1       Boron     ppm     ASTM D5185m     10     0     0     0       Magnesium     ppm     ASTM D5185m     10     60     57     63       Magnesium     ppm     ASTM D5185m     150	WEAR METALS		method	limit/base	current	history1	history2
Nickel     ppm     ASTM D5185m     >4     <1	Iron	ppm	ASTM D5185m	>100	26	21	16
Titanium     ppm     ASTM D5185m     <1	Chromium	ppm	ASTM D5185m	>20	2	2	1
Silver     ppm     ASTM D5185m     >3     0     0     0       Aluminum     ppm     ASTM D5185m     >20     13     19     18       Lead     ppm     ASTM D5185m     >20     13     19     18       Lead     ppm     ASTM D5185m     >330     1     <1	Nickel	ppm	ASTM D5185m	>4	<1	0	0
Aluminum     ppm     ASTM D5185m     >20     13     19     18       Lead     ppm     ASTM D5185m     >40     <1     0     0       Copper     ppm     ASTM D5185m     >330     1     <1     <1     <1       Tin     ppm     ASTM D5185m     >15     <1     <1     0     0       Vanadium     ppm     ASTM D5185m     >15     <1     0     0     <1       Cadmium     ppm     ASTM D5185m     <1     0     0     <1     0     0       ADDITIVES     method     limit/base     current     history1     history1     history1       Boron     ppm     ASTM D5185m     250     3     2     0       Barium     ppm     ASTM D5185m     100     60     57     63       Maganese     ppm     ASTM D5185m     100     60     57     63       Calcium     ppm     ASTM D5185m     3000     1073     993     1105  P	Titanium	ppm	ASTM D5185m		<1	0	0
Lead     ppm     ASTM D5185m     >40     <1	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper     ppm     ASTM D5185m     >330     1     <1	Aluminum	ppm	ASTM D5185m	>20	13	19	18
Tin     ppm     ASTM D5185m     >15     <1	Lead	ppm	ASTM D5185m	>40	<1	0	0
Vanadium     ppm     ASTM D5185m     0     0     <1	Copper	ppm	ASTM D5185m	>330	1	<1	<1
Cadmium     ppm     ASTM D5185m     <1	Tin	ppm	ASTM D5185m	>15	<1	<1	0
ADDITIVES     method     limit/base     current     history1     history       Boron     ppm     ASTM D5185m     250     3     2     0       Barium     ppm     ASTM D5185m     10     0     0     0       Manganese     ppm     ASTM D5185m     100     60     57     63       Manganese     ppm     ASTM D5185m     1     <1     <1     <1       Magnesium     ppm     ASTM D5185m     450     928     876     963       Calcium     ppm     ASTM D5185m     150     1073     993     1105       Phosphorus     ppm     ASTM D5185m     1350     1198     1142     1205       Sulfur     ppm     ASTM D5185m     4250     3387     2740     3583       CONTAMINANTS     method     limit/base     current     history1     history1       Silicon     ppm     ASTM D5185m     >216     0     2     2       Potassium     ppm     ASTM D5185m     >20	Vanadium	ppm	ASTM D5185m		0	0	<1
Boron     ppm     ASTM D5185m     250     3     2     0       Barium     ppm     ASTM D5185m     10     0     0     0     0       Molybdenum     ppm     ASTM D5185m     10     60     57     63       Manganese     ppm     ASTM D5185m     10     60     57     63       Magnesium     ppm     ASTM D5185m     1     <1     <1     <1       Magnesium     ppm     ASTM D5185m     450     928     876     963       Calcium     ppm     ASTM D5185m     3000     1073     993     1105       Phosphorus     ppm     ASTM D5185m     1350     1198     1142     1205       Sulfur     ppm     ASTM D5185m     4250     3387     2740     3583       CONTAMINANTS     method     limit/base     current     history1     history       Silicon     ppm     ASTM D5185m     >216     0     2     2       Potassium     ppm     ASTM D5185m	Cadmium	ppm	ASTM D5185m		<1	0	0
Barium     ppm     ASTM D5185m     10     0     0     0       Molybdenum     ppm     ASTM D5185m     100     60     57     63       Manganese     ppm     ASTM D5185m     1     <1     <1     <1       Magnesium     ppm     ASTM D5185m     450     928     876     963       Calcium     ppm     ASTM D5185m     3000     1073     993     1105       Phosphorus     ppm     ASTM D5185m     3000     1073     993     1105       Zinc     ppm     ASTM D5185m     1350     1198     1142     1205       Sulfur     ppm     ASTM D5185m     1350     1198     1142     1205       Sulfur     ppm     ASTM D5185m     250     3387     2740     3583       CONTAMINANTS     method     limit/base     current     history1     history       Silicon     ppm     ASTM D5185m     >20     22     39     33       Fuel     %     ASTM D524							
Molybdenum     ppm     ASTM D5185m     100     60     57     63       Manganese     ppm     ASTM D5185m     1     <1     <1     <1       Magnesium     ppm     ASTM D5185m     450     928     876     963       Calcium     ppm     ASTM D5185m     3000     1073     993     1105       Phosphorus     ppm     ASTM D5185m     150     882     934     1016       Zinc     ppm     ASTM D5185m     1350     1198     1142     1205       Sulfur     ppm     ASTM D5185m     4250     3387     2740     3583       CONTAMINANTS     method     limit/base     current     history1     history1       Silicon     ppm     ASTM D5185m     >20     22     39     33       Fuel     %     ASTM D5185m     >20     22     39     33       Fuel     %     ASTM D5185m     >20     22     39     33       Soot %     %     *ASTM D7844     >3	ADDITIVES		method	limit/base	current	history1	history2
Manganese     ppm     ASTM D5185m     1     <1		ppm					
Magnesium     ppm     ASTM D5185m     450     928     876     963       Calcium     ppm     ASTM D5185m     3000     1073     993     1105       Phosphorus     ppm     ASTM D5185m     3000     1073     993     1105       Phosphorus     ppm     ASTM D5185m     1150     882     934     1016       Zinc     ppm     ASTM D5185m     1350     1198     1142     1205       Sulfur     ppm     ASTM D5185m     4250     3387     2740     3583       CONTAMINANTS     method     limit/base     current     history1     history1       Silicon     ppm     ASTM D5185m     >25     5     5     4       Sodium     ppm     ASTM D5185m     >20     22     39     33       Fuel     %     ASTM D5185m     >20     22     39     33       Fuel     %     ASTM D5184     >3     0.5     0.4     0.2       Nitration     Abs/cm     *ASTM D7624	Boron		ASTM D5185m	250	3	2	0
Calcium     ppm     ASTM D5185m     3000     1073     993     1105       Phosphorus     ppm     ASTM D5185m     1150     882     934     1016       Zinc     ppm     ASTM D5185m     1350     1198     1142     1205       Sulfur     ppm     ASTM D5185m     4250     3387     2740     3583       CONTAMINANTS     method     limit/base     current     history1     history1       Silicon     ppm     ASTM D5185m     >25     5     5     4       Sodium     ppm     ASTM D5185m     >26     22     39     33       Fuel     %     ASTM D5185m     >20     22     39     33       Fuel     %     ASTM D5185m     >20     22     39     33       Fuel     %     ASTM D5185m     >20     22     39     33       Fuel     %     ASTM D5184     >3     0.5     0.4     0.2       Nitration     Abs/cm     *ASTM D7624     >20	Boron Barium	ppm	ASTM D5185m ASTM D5185m	250 10	3 0	2 0	0
Phosphorus     ppm     ASTM D5185m     1150     882     934     1016       Zinc     ppm     ASTM D5185m     1350     1198     1142     1205       Sulfur     ppm     ASTM D5185m     4250     3387     2740     3583       CONTAMINANTS     method     limit/base     current     history1     history       Silicon     ppm     ASTM D5185m     >25     5     5     4       Sodium     ppm     ASTM D5185m     >216     0     2     2       Potassium     ppm     ASTM D5185m     >20     22     39     33       Fuel     %     ASTM D5324     >5     0.4     <1.0	Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	3 0 60	2 0 57	0 0 63
Zinc     ppm     ASTM D5185m     1350     1198     1142     1205       Sulfur     ppm     ASTM D5185m     4250     3387     2740     3583       CONTAMINANTS     method     limit/base     current     history1     history       Silicon     ppm     ASTM D5185m     >25     5     5     4       Sodium     ppm     ASTM D5185m     >216     0     2     2       Potassium     ppm     ASTM D5185m     >20     22     39     33       Fuel     %     ASTM D5324     >5     0.4     <1.0     <1.0       INFRA-RED     method     limit/base     current     history1     history1       Soot %     %     *ASTM D7844     >3     0.5     0.4     0.2       Nitration     Abs/cm     *ASTM D7624     >20     8.2     8.0     6.3       Sulfation     Abs/.1mm     *ASTM D7415     >30     19.7     19.6     18.6	Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	3 0 60 1	2 0 57 <1	0 0 63 <1
SulfurppmASTM D5185m4250338727403583CONTAMINANTSmethodlimit/basecurrenthistory1history1SiliconppmASTM D5185m>25554SodiumppmASTM D5185m>216022PotassiumppmASTM D5185m>20223933Fuel%ASTM D5185m>20223933Fuel%ASTM D5185m>20223933Soot %%*ASTM D5185m>20223933Soot %%*ASTM D7844>30.4<1.0<1.0INFRA-REDmethodlimit/basecurrenthistory1history1Soot %%*ASTM D7624>208.28.06.3SulfationAbs/cm*ASTM D7624>3019.719.618.6FLUID DEGRADATIONmethodlimit/basecurrenthistory1history1	Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	3 0 60 1 928	2 0 57 <1 876	0 0 63 <1 963
CONTAMINANTSmethodlimit/basecurrenthistory1history1SiliconppmASTM D5185m<>25554SodiumppmASTM D5185m<>216022PotassiumppmASTM D5185m<>20223933Fuel%ASTM D5185m>20223933Fuel%ASTM D5185m>20223933Fuel%ASTM D5185m>20223933Soot %%*ASTM D7824>50.4<1.0<1.0INFRA-REDmethodlimit/basecurrenthistory1history1Soot %%*ASTM D7844>30.50.40.2NitrationAbs/cm*ASTM D7624>208.28.06.3SulfationAbs/.1mm*ASTM D7415>3019.719.618.6FLUID DEGRADATIONmethodlimit/basecurrenthistory1history1	Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	3 0 60 1 928 1073	2 0 57 <1 876 993	0 0 63 <1 963 1105
Silicon     ppm     ASTM D5185m     >25     5     5     4       Sodium     ppm     ASTM D5185m     >216     0     2     2       Potassium     ppm     ASTM D5185m     >20     22     39     33       Fuel     %     ASTM D3524     >5     0.4     <1.0     <1.0       INFRA-RED     method     limit/base     current     history1     history1       Soot %     %     *ASTM D7844     >3     0.5     0.4     0.2       Nitration     Abs/cm     *ASTM D7624     >20     8.2     8.0     6.3       Sulfation     Abs/.1mm     *ASTM D7415     >30     19.7     19.6     18.6       FLUID DEGRADATION     method     limit/base     current     history1     history1	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150	3 0 60 1 928 1073 882	2 0 57 <1 876 993 934	0 0 63 <1 963 1105 1016
Sodium     ppm     ASTM D5185m     >216     0     2     2       Potassium     ppm     ASTM D5185m     >20     22     39     33       Fuel     %     ASTM D3524     >5     0.4     <1.0	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350	3 0 60 1 928 1073 882 1198	2 0 57 <1 876 993 934 1142	0 0 63 <1 963 1105 1016 1205
Potassium     ppm     ASTM D5185m     >20     22     39     33       Fuel     %     ASTM D3524     >5     0.4     <1.0	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250	3 0 60 1 928 1073 882 1198 3387	2 0 57 <1 876 993 934 1142 2740	0 0 63 <1 963 1105 1016 1205
Fuel     %     ASTM D3524     >5     0.4     <1.0	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250	3 0 60 1 928 1073 882 1198 3387 current	2 0 57 <1 876 993 934 1142 2740 history1	0 0 63 <1 963 1105 1016 1205 3583 history2
INFRA-REDmethodlimit/basecurrenthistory1history1Soot %%*ASTM D7844>30.50.40.2NitrationAbs/cm*ASTM D7624>208.28.06.3SulfationAbs/.1mm*ASTM D7115>3019.719.618.6FLUID DEGRADATIONmethodlimit/basecurrenthistory1history1	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >25	3 0 60 1 928 1073 882 1198 3387 current 5	2 0 57 <1 876 993 934 1142 2740 history1 5	0 0 63 <1 963 1105 1016 1205 3583 history2 4
Soot %     %     *ASTM D7844     >3     0.5     0.4     0.2       Nitration     Abs/cm     *ASTM D7624     >20     8.2     8.0     6.3       Sulfation     Abs/.1mm     *ASTM D7415     >30     19.7     19.6     18.6       FLUID DEGRADATION     method     limit/base     current     history1     history	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >25 >216	3 0 60 1 928 1073 882 1198 3387 current 5 0	2 0 57 <1 876 993 934 1142 2740 history1 5 2	0 0 63 <1 963 1105 1016 1205 3583 history2 4 2
Nitration     Abs/cm     *ASTM D7624     >20     8.2     8.0     6.3       Sulfation     Abs/.1mm     *ASTM D7415     >30     19.7     19.6     18.6       FLUID DEGRADATION     method     limit/base     current     history1     history1	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>linit/base</b> >25 >216 >20	3 0 60 1 928 1073 882 1198 3387 <u>current</u> 5 0 22	2 0 57 <1 876 993 934 1142 2740 <b>history1</b> 5 2 39	0 0 63 <1 963 1105 1016 1205 3583 history2 4 2 2 33
Sulfation     Abs/.1mm     *ASTM D7415     >30     19.7     19.6     18.6       FLUID DEGRADATION     method     limit/base     current     history1     history	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 20 >25 >216 >20 >5	3 0 60 1 928 1073 882 1198 3387 current 5 0 22 0.4	2 0 57 <1 876 993 934 1142 2740 history1 5 2 39 <1.0	0 0 63 <1 963 1105 1016 1205 3583 history2 4 2 2 33
FLUID DEGRADATION method limit/base current history1 history	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 20 >25 >216 >20 >5 S	3 0 60 1 928 1073 882 1198 3387 current 5 0 22 0.4 current	2 0 57 <1 876 993 934 1142 2740 history1 5 2 39 <1.0 history1	0 0 63 <1 963 1105 1016 1205 3583 history2 4 2 33
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 20 >25 >216 >20 >20 >5 S	3 0 60 1 928 1073 882 1198 3387 <i>current</i> 5 0 22 0.4 <i>current</i>	2 0 57 <1 876 993 934 1142 2740 history1 5 2 39 <1.0 history1 0.4	0 0 63 <1 963 1105 1016 1205 3583 history2 4 2 33
Ovidation Abs/1mm *ASTM D7414 >25 15 7 15.5 14.0	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D3524 <b>method</b> *ASTM D7844	250 10 100 450 3000 1150 1350 4250 20 >25 >216 >20 >5 20 imit/base >3 >20	3 0 60 1 928 1073 882 1198 3387 current 5 0 22 0.4 22 0.4 0.5 8.2	2 0 57 <1 876 993 934 1142 2740 history1 5 2 39 <1.0 history1 0.4 8.0	0 0 63 <1 963 1105 1016 1205 3583 history2 4 2 33 <1.0 history2 0.2 6.3
Oxidation Avalianti Autority 220 13.1 10.0 14.2	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>binit/base</b> >25 >216 >20 >216 >20 >5 <b>binit/base</b> >3 >20 >30	3 0 60 1 928 1073 882 1198 3387 <i>current</i> 5 0 22 0.4 22 0.4 <i>current</i> 0.5 8.2 19.7	2 0 57 <1 876 993 934 1142 2740 history1 5 2 39 <1.0 history1 0.4 8.0 19.6	0 0 63 <1 963 1105 1016 1205 3583 history2 4 2 33 <1.0 history2 0.2 6.3
Base Number (BN) mg KOH/g ASTM D2896 8.5 8.9 9.6 9.6	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>binit/base</b> >25 >216 >20 >216 >20 >5 <b>binit/base</b> >3 >20 >30	3 0 60 1 928 1073 882 1198 3387 <i>current</i> 5 0 22 0.4 22 0.4 <i>current</i> 0.5 8.2 19.7	2 0 57 <1 876 993 934 1142 2740 history1 5 2 39 <1.0 history1 0.4 8.0 19.6	0 0 63 <1 963 1105 1016 1205 3583 history2 4 2 33 <1.0 history2 0.2 6.3 18.6



# **OIL ANALYSIS REPORT**



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

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