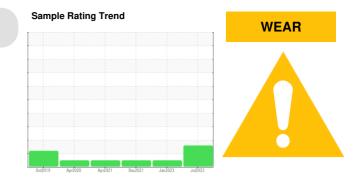


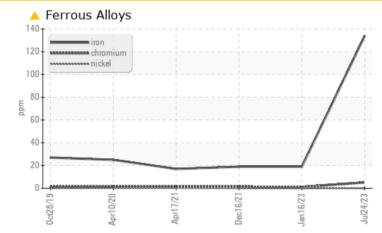
Aluminum

ppm

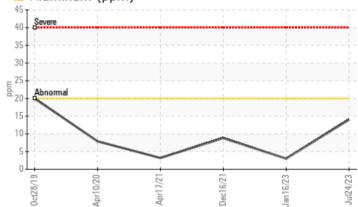


### Machine Id **16397** Component **Diesel Engine** Fluid **MOBIL DELVAC 1300 SUPER15W40 (--- QTS)**

### COMPONENT CONDITION SUMMARY



### Aluminum (ppm)



3

9

### RECOMMENDATION

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. We recommend an early resample to monitor this condition.

PROBLEMATIC T	EST RE	SULTS				
Sample Status				ABNORMAL	NORMAL	NORMAL
Iron	nnm	ASTM D5185m	>100	A 134	19	19

**1**4

ASTM D5185m >20

Customer Id: IDEEFF Sample No.: IL0027065 Lab Number: 05935155 Test Package: FLEET



To manage this report scan the QR code

*To discuss the diagnosis or test data:* Don Baldridge +1 <u>don.b505@comcast.net</u>

*To change component or sample information:* Customer Service +1 1-800-237-1369 <u>customerservice@wearcheck.com</u>

RECOMMENDED ACTIONS					
Action	Status	Date	Done By	Description	
Change Fluid			?	Oil and filter change at the time of sampling has been noted.	
Change Filter			?	Oil and filter change at the time of sampling has been noted.	
Resample			?	We recommend an early resample to monitor this condition.	

### **HISTORICAL DIAGNOSIS**



NORMAL

### 16 Jan 2023 Diag: Wes Davis

Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Please specify the component make and model with your next sample.All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.



view report

16 Dec 2021 Diag: Wes Davis

Resample at the next service interval to monitor. Please specify the component make and model with your next sample.Metal levels are typical for a new component breaking in. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.





Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. 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**

Sample Rating Trend



**16397** Component

Machine Id

Diesel Engine

MOBIL DELVAC 1300 SUPER15W40 (--- QTS)

### DIAGNOSIS

### Recommendation

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. We recommend an early resample to monitor this condition.

### 🔺 Wear

Piston, ring and cylinder wear is indicated. All other component wear rates are normal.

### Contamination

There is no indication of any contamination in the oil.

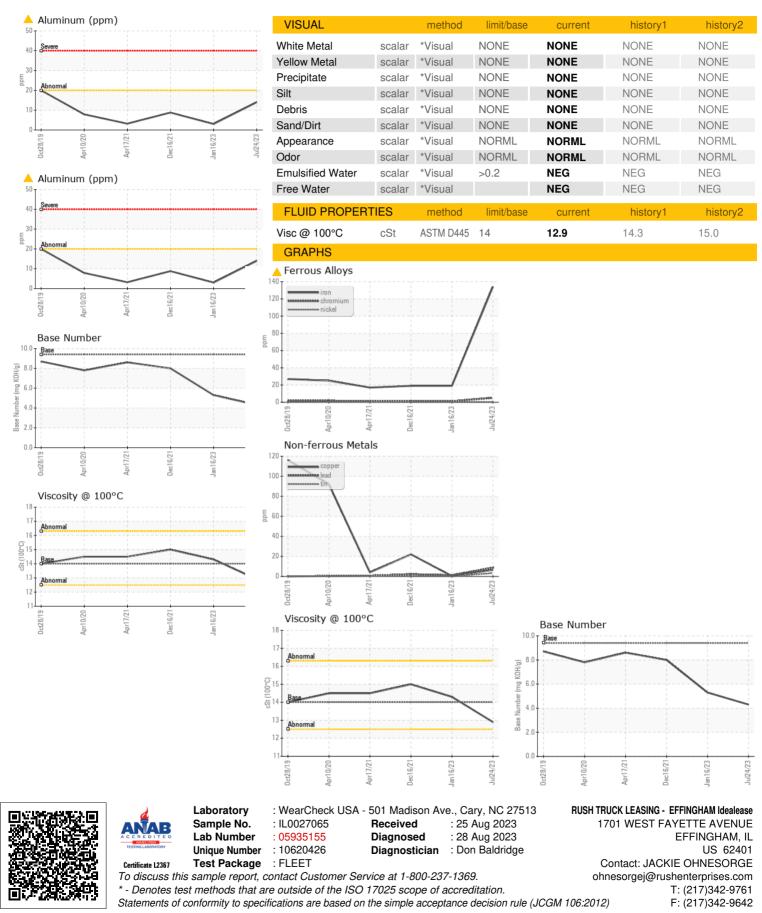
### Fluid Condition

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

Sample NumberClient InfoIL0027055IL0027124IL0015577Sample DateClient Info24 Jul 202315 Jan 20216 Doc 2021Machine AgemisClient Info96721123912012Oil AgemisClient InfoP6721123912012Oil AngedClient InfoChangedChangedChangedChangedSample StatusIClient InfoChangedNEGNNEGNCONTAMINATIONWot MethodS5<1.0<1.01.0GlycolIWC MethodS5<1.0<1.01.0GlycolIWC MethodS5<1.0<1.01.0GlycolIWC MethodS5<1.0<1.01.0NickelppmASTM 051656>2.0A1341.91.9ChromiumppmASTM 051656>2.0A1.41.91.9NickelppmASTM 051656>3.2<1.00.00.00.0SilverppmASTM 051656>3.2<1.40.00.11.0AutimiumppmASTM 051656>3.3<1.10.00.11.0AutimiumppmASTM 051656>3.3<1.10.00.11.0AutimiumppmASTM 051656000.11.0AutimiumppmASTM 05165602.05.25.11.0AutimiumppmASTM 05165602.05.1	SAMPLE INFORM	ATION	method	limit/base	current	history1	history2
Machine AgemisClient Info1036059376171588Oil AgemisClient Info96721123912012Oil ChangedChangedChangedChangedChangedChangedSample StatusaaABNORMALNORMALNORMALCONTAMINATIONmethodimit/basecurrenthistory1history2FuelWC Method>5<1.0<1.0<1.0GlycolaWC MethodS<1.0NEGNEGWEAR METALSmethodimit/basecurrenthistory1history2IronppmASTM D5185>1001341919ChromiumppmASTM D5185>4000NickelpmASTM D5185>4000ItaniumppmASTM D5185>3<100JuminumppmASTM D5185>306<122CopperppmASTM D5185>306<122TinppmASTM D5185>306<122NatimonyppmASTM D51850000Astm D5185>15306<12221NatimonyppmASTM D51850000Astm D518502872651NatimonyppmASTM D518502055NatimonppmASTM D5185	Sample Number		Client Info		IL0027065	IL0027124	IL0015577
Oil AgemisClient Info96721123912012Oil ChangedClient InfoChangedChangedChangedChangedChangedChangedShangelNoRMALNORMAL <th>Sample Date</th> <th></th> <th>Client Info</th> <th></th> <th>24 Jul 2023</th> <th>16 Jan 2023</th> <th>16 Dec 2021</th>	Sample Date		Client Info		24 Jul 2023	16 Jan 2023	16 Dec 2021
Oli Ohanged Sample Status Client Info Changed ABNORMAL Changed NORMAL Changed NORMAL Changed NORMAL Changed NORMAL   CONTAMINATION method imit/base current history1 history2   Fuel WC Method 55 •1.0 <1.0 <1.0   Glycol method imit/base current history1 history2   Fuel WC Method 5 •1.0 <1.0 <1.0   Othornium ppm ASTM DSIS5m >100 5 1 1   Nickel ppm ASTM DSIS5m >20 5 1 1   Nickel ppm ASTM DSIS5m >20 4 14 3 9   Lead ppm ASTM DSIS5m >20 4 14 3 9   Lead ppm ASTM DSIS5m >20 4 14 3 9   Lead ppm ASTM DSIS5m >30 6 <1 22   Tin ppm ASTM DSIS5m >15 3 0 <1   Athuninum ppm ASTM DSIS5m 0 0 0 0   Athuninum ppm ASTM DSIS5m >10 28 7	Machine Age	mls	Client Info		103605	93761	71588
Sample Status     Image of the status     Method     Method     Method     Method     Current     History1     History2       Fuel     WC Method     >5     <1.0     <1.0     <1.0     <1.0       Glycol     Imate of the status     WC Method     >5     <1.0     <1.0     <1.0       MEAR METALS     method     Imate of the status     NEG     NEG     NEG       VeCAM METALS     method     Imate of the status     NEG     NEG     NEG       Normium     ppm     ASTM D5185m     >100     134     19     19       Chromium     ppm     ASTM D5185m     >40     0     0     0       Nickel     ppm     ASTM D5185m     >33     <1     0     0     1     2       Copper     ppm     ASTM D5185m     >330     66     <1     2     2       Antimony     ppm     ASTM D5185m     0     0     0     0     0       Astm D5185m     0     28     0     0 <td< th=""><th>Oil Age</th><th>mls</th><th>Client Info</th><th></th><th>9672</th><th>11239</th><th>12012</th></td<>	Oil Age	mls	Client Info		9672	11239	12012
CONTAMINATION     method     limit/base     current     history1     history2       Fuel     WC Method     >5     <1.0     <1.0     <1.0       Glycol     WC Method     NEG     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >100     134     19     19       Chromium     ppm     ASTM D5185m     >20     5     1     1       Nickel     ppm     ASTM D5185m     >20     5     1     0     0       Silver     ppm     ASTM D5185m     >4     0     0     0     0       Aluminum     ppm     ASTM D5185m     >3     <1     0     0     22       Tin     ppm     ASTM D5185m     >330     6     <1     22     2       Antimony     ppm     ASTM D5185m     0     0     0     0     0       Anadium     ppm     ASTM D5185m </th <th>Oil Changed</th> <th></th> <th>Client Info</th> <th></th> <th>Changed</th> <th>Changed</th> <th>Changed</th>	Oil Changed		Client Info		Changed	Changed	Changed
FuelWC Method>5<1.0	Sample Status				ABNORMAL	NORMAL	NORMAL
GlycolWC MethodNEGNEGNEGWEAR METALSmethodlimit/basecurrenthistory1history2IronppmASTM D5185m>20511NickelppmASTM D5185m>4000TitaniumppmASTM D5185m>3<100SilverppmASTM D5185m>3<100AluminumppmASTM D5185m>306<122CopperppmASTM D5185m>3306<122TinppmASTM D5185m>1530<1AntimonyppmASTM D5185m>1530<1AntimonyppmASTM D5185m0000AdaditionppmASTM D5185m0000AdaditionppmASTM D5185m028726BariumppmASTM D5185m020525ManganeseppmASTM D5185m020525ManganeseppmASTM D5185m0701945727CalciumppmASTM D5185m0701945727CalciumppmASTM D5185m163513341381PhosphorusppmASTM D5185m20163513341381PhosphorusppmASTM D5185m2014911SodiumppmASTM D	CONTAMINATION	N	method	limit/base	current	history1	history2
WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5165m     >100     ▲ 134     19     19       Chromium     ppm     ASTM D5165m     >20     5     1     1       Nickel     ppm     ASTM D5165m     >4     0     0     0       Silver     ppm     ASTM D5165m     >3     <1     0     0       Aluminum     ppm     ASTM D5165m     >30     <14     0     0       Lead     ppm     ASTM D5165m     >33     6     <11     22       Copper     ppm     ASTM D5165m     >15     3     0     <14       Antimony     ppm     ASTM D5165m     15     3     0     <1       Vanadium     ppm     ASTM D5165m     15     3     0     <1       Vanadium     ppm     ASTM D5165m     0     0     0     0       Cadmium     ppm     ASTM D5165m     0     20     52 </th <th>Fuel</th> <th></th> <th>WC Method</th> <th>&gt;5</th> <th>&lt;1.0</th> <th>&lt;1.0</th> <th>&lt;1.0</th>	Fuel		WC Method	>5	<1.0	<1.0	<1.0
Ion     ppm     ASTM D5185m     >100     ▲ 134     19     19       Chromium     ppm     ASTM D5185m     >20     5     1     1       Nickel     ppm     ASTM D5185m     >4     0     0     0       Silver     ppm     ASTM D5185m     >3     <1     0     0       Aluminum     ppm     ASTM D5185m     >30     ▲ 14     3     9       Lead     ppm     ASTM D5185m     >30     6     <1     22       Copper     ppm     ASTM D5185m     >15     3     0     <1       Vanadium     ppm     ASTM D5185m     0     0     0     0       Cadmium     ppm     ASTM D5185m     0     28     7     26       Barium     ppm     ASTM D5185m     0     20     52     5       Maganese     ppm     ASTM D5185m     0     701     945     727       Calcium     ppm     ASTM D5185m     1635     1334     1381	Glycol		WC Method		NEG	NEG	NEG
Chromium     ppm     ASTM D5185m     >20     5     1     1       Nickel     ppm     ASTM D5185m     >4     0     0     0       Silver     ppm     ASTM D5185m     >3     <1     0     0       Aluminum     ppm     ASTM D5185m     >30     <14     3     9       Lead     ppm     ASTM D5185m     >40     9     1     2       Copper     ppm     ASTM D5185m     >30     6     <1     22       Tin     ppm     ASTM D5185m     >15     3     0     <1       Vanadium     ppm     ASTM D5185m     >15     3     0     <1       Vanadium     ppm     ASTM D5185m     0     0     0     0       Cadmium     ppm     ASTM D5185m     0     20     52     5       Manganese     ppm     ASTM D5185m     0     701     945     727       Calcium     ppm     ASTM D5185m     1635     1334     131	WEAR METALS		method	limit/base	current	history1	history2
Nickel     ppm     ASTM D5185m     >4     0     0     0       Titanium     ppm     ASTM D5185m     >3     <1     0     0       Silver     ppm     ASTM D5185m     >20     ▲ 14     3     9       Lead     ppm     ASTM D5185m     >30     6     <1     22       Copper     ppm     ASTM D5185m     >330     6     <1     22       Tin     ppm     ASTM D5185m     >30     6     <1     22       Antimony     ppm     ASTM D5185m     >30     6     <1     22       Vanadium     ppm     ASTM D5185m     0     0     0     0       Cadmium     ppm     ASTM D5185m     0     28     7     26       Barium     ppm     ASTM D5185m     0     20     52     5       Magnesium     ppm     ASTM D5185m     0     701     945     727       Catoum     ppm     ASTM D5185m     1635     1334     1381<	Iron	ppm	ASTM D5185m	>100	<u> </u>	19	19
Titanium     ppm     ASTM D5185m     0     0     0     0       Silver     ppm     ASTM D5185m     >3     <1     0     0       Aluminum     ppm     ASTM D5185m     >20     ▲ 14     3     9       Lead     ppm     ASTM D5185m     >40     9     1     2       Copper     ppm     ASTM D5185m     >330     6     <1     22       Tin     ppm     ASTM D5185m     >330     6     <1     22       Vanadium     ppm     ASTM D5185m     >15     3     0     <1       Vanadium     ppm     ASTM D5185m      0     0     0       Cadmium     ppm     ASTM D5185m     0     28     7     26       Barium     ppm     ASTM D5185m     0     20     52     5       Magnesium     ppm     ASTM D5185m     0     701     945     727       Calcium     ppm     ASTM D5185m     1635     1334     1381 </th <th>Chromium</th> <th>ppm</th> <th>ASTM D5185m</th> <th>&gt;20</th> <th>5</th> <th>1</th> <th>1</th>	Chromium	ppm	ASTM D5185m	>20	5	1	1
Silver     ppm     ASTM D5185m     >3     <1	Nickel	ppm	ASTM D5185m	>4	0	0	0
Aluminum     ppm     ASTM D5185m     >20     ▲ 14     3     9       Lead     ppm     ASTM D5185m     >40     9     1     2       Copper     ppm     ASTM D5185m     >330     6     <1     22       Tin     ppm     ASTM D5185m     >15     3     0     <1       Antmony     ppm     ASTM D5185m     0     0     0     0       Vanadium     ppm     ASTM D5185m     0     0     0     0       Cadmium     ppm     ASTM D5185m     0     28     7     26       Boron     ppm     ASTM D5185m     0     20     52     5       Manganese     ppm     ASTM D5185m     0     20     52     5       Manganese     ppm     ASTM D5185m     0     701     945     727       Calcium     ppm     ASTM D5185m     0     701     945     727       Calcium     ppm     ASTM D5185m     3488     3448     2514	Titanium	ppm	ASTM D5185m		0	0	0
Lead     ppm     ASTM D5185m     >40     9     1     2       Copper     ppm     ASTM D5185m     >330     6     <1     22       Tin     ppm     ASTM D5185m     >15     3     0     <1       Antimony     ppm     ASTM D5185m     >15     3     0     <1       Vanadium     ppm     ASTM D5185m     0     0     0     0       Cadmium     ppm     ASTM D5185m     0     28     7     26       Boron     ppm     ASTM D5185m     0     20     52     5       Manganese     ppm     ASTM D5185m     0     20     52     5       Manganese     ppm     ASTM D5185m     0     701     945     727       Calcium     ppm     ASTM D5185m     0     701     945     727       Calcium     ppm     ASTM D5185m     0     701     945     727       Calcium     ppm     ASTM D5185m     0     987     1221<	Silver	ppm		>3			
Copper     ppm     ASTM D5185m     >330     6     <1		ppm					
Tin     ppm     ASTM D5185m     >15     3     0     <1							
Antimony     ppm     ASTM D5185m      <1					-		
VanadiumppmASTM D5185m000CadmiumppmASTM D5185mImit/basecurrenthistory1history2BoronppmASTM D5185m028726BariumppmASTM D5185m00000MolybdenumppmASTM D5185m020525ManganeseppmASTM D5185m0701945727CalciumppmASTM D5185m0701945727CalciumppmASTM D5185m0701945727CalciumppmASTM D5185m0701945727CalciumppmASTM D5185m0701945727CalciumppmASTM D5185m0701945727CalciumppmASTM D5185m0701945727CalciumppmASTM D5185m0701945727SulfarppmASTM D5185m0701945727SulfarppmASTM D5185m2812962708SulfarppmASTM D5185m2812962708SulfarppmASTM D5185m>29871221865SulfarppmASTM D5185m>214911SodiumppmASTM D5185m>214911PotassiumppmASTM D5185m>20396 <th></th> <th></th> <th></th> <th>&gt;15</th> <th></th> <th></th> <th></th>				>15			
Cadmium     ppm     ASTM D5185m     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     28     7     26       Barium     ppm     ASTM D5185m     0     0     0     0     0       Molybdenum     ppm     ASTM D5185m     0     20     52     5       Manganese     ppm     ASTM D5185m     0     701     945     727       Calcium     ppm     ASTM D5185m     1635     1334     1381       Phosphorus     ppm     ASTM D5185m     987     1221     8							
ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     28     7     26       Barium     ppm     ASTM D5185m     0     0     0     0       Molybdenum     ppm     ASTM D5185m     0     20     52     5       Manganese     ppm     ASTM D5185m     0     701     945     727       Calcium     ppm     ASTM D5185m     0     702     708     708       Silicon     ppm     ASTM D5185m     2     987     1221     865       Sodium     ppm     ASTM D5185m     >25     14 </th <th></th> <th></th> <th></th> <th></th> <th>-</th> <th></th> <th></th>					-		
Boron     ppm     ASTM D5185m     0     28     7     26       Barium     ppm     ASTM D5185m     0     0     0     0       Molybdenum     ppm     ASTM D5185m     0     20     52     5       Manganese     ppm     ASTM D5185m     0     701     945     727       Calcium     ppm     ASTM D5185m     0     987     1221     865       Sulfur     ppm     ASTM D5185m     2     3488     3448     2514       CONTAMINANTS     method     limit/base     current     history1     history2       Solium     ppm     ASTM D5185m     >20     39     6     11       INFRA-RED     method     limit/base     current	Cadmium	ppm	ASTM D5185m		U	0	0
Barium     ppm     ASTM D5185m     0     0     0     0       Molybdenum     ppm     ASTM D5185m     0     20     52     5       Manganese     ppm     ASTM D5185m     0     701     945     727       Calcium     ppm     ASTM D5185m     812     962     708       Zinc     ppm     ASTM D5185m     812     962     708       Sulfur     ppm     ASTM D5185m     987     1221     865       Sulfur     ppm     ASTM D5185m     25     14     9     11       Sodium     ppm     ASTM D5185m     >20     39     6     11  <							
Molybdenum     ppm     ASTM D5185m     0     20     52     5       Manganese     ppm     ASTM D5185m     0     701     945     727       Calcium     ppm     ASTM D5185m     0     987     1221     865       Sulfur     ppm     ASTM D5185m     20     3488     3448     2514       CONTAMINANTS     method     limit/base     current     history1     history2       Solium     ppm     ASTM D5185m     >20     39     6     11       INFRA-RED     method     limit/base     curr	ADDITIVES		method	limit/base	current	history1	history2
Manganese     ppm     ASTM D5185m     3     <1		ppm	ASTM D5185m	0	28	7	26
Magnesium     ppm     ASTM D5185m     0     701     945     727       Calcium     ppm     ASTM D5185m     1635     1334     1381       Phosphorus     ppm     ASTM D5185m     812     962     708       Zinc     ppm     ASTM D5185m     987     1221     865       Sulfur     ppm     ASTM D5185m     987     1221     865       Sulfur     ppm     ASTM D5185m     9488     3448     2514       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     14     9     11       Sodium     ppm     ASTM D5185m     >20     39     6     11       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >3     0.6     2     2.4       Nitration     Abs/.tm     *ASTM D7624     >20     12.5     10.8     12.3	Boron		ASTM D5185m ASTM D5185m	0	28 0	7 0	26 0
Calcum     ppm     ASTM D5185m     1635     1334     1381       Phosphorus     ppm     ASTM D5185m     812     962     708       Zinc     ppm     ASTM D5185m     987     1221     865       Sulfur     ppm     ASTM D5185m     3488     3448     2514       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     14     9     11       Sodium     ppm     ASTM D5185m     >25     14     9     11       Sodium     ppm     ASTM D5185m     >25     14     9     11       Sodium     ppm     ASTM D5185m     >20     39     6     11       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7624     >20     12.5     10.8     12.3       Sulfation     Abs/.mm     *ASTM D7415     >30     29.0     23.6     27.9	Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	28 0 20	7 0 52	26 0 5
Phosphorus     ppm     ASTM D5185m     812     962     708       Zinc     ppm     ASTM D5185m     987     1221     865       Sulfur     ppm     ASTM D5185m     3488     3448     2514       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     14     9     11       Sodium     ppm     ASTM D5185m     >25     14     9     11       Sodium     ppm     ASTM D5185m     >25     14     9     11       Sodium     ppm     ASTM D5185m     >20     39     6     11       Potassium     ppm     ASTM D7844     >3     0.6     2     2.4       Nitration     Abs/cm     *ASTM D7624     >20     12.5     10.8     12.3       Sulfation     Abs/.1mm     *ASTM D7415     >30     29.0     23.6     27.9       FLUID DEGRADATION     method     limit/base     current     history1	Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0	28 0 20 3	7 0 52 <1	26 0 5 <1
Zinc     ppm     ASTM D5185m     987     1221     865       Sulfur     ppm     ASTM D5185m     3488     3448     2514       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     14     9     11       Sodium     ppm     ASTM D5185m     >25     14     9     11       Sodium     ppm     ASTM D5185m     >25     14     9     11       Sodium     ppm     ASTM D5185m     >20     39     6     11       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >3     0.6     2     2.4       Nitration     Abs/cm     *ASTM D7624     >20     12.5     10.8     12.3       Sulfation     Abs/.tmm     *ASTM D7415     >30     29.0     23.6     27.9       FLUID DEGRADATION     method     limit/base     current     histo	Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0	28 0 20 3 701	7 0 52 <1 945	26 0 5 <1 727
SulfurppmASTM D5185m348834482514CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>2514911SodiumppmASTM D5185m2039611PotassiumppmASTM D5185m>2039611INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.622.4NitrationAbs/cm*ASTM D7624>2012.510.812.3SulfationAbs/lm*ASTM D7415>3029.023.627.9FLUID DEGRADATIONMethodlimit/basecurrenthistory1history2OxidationAbs/lm*ASTM D7414>2527.917.418.3	Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0	28 0 20 3 701 1635	7 0 52 <1 945 1334	26 0 5 <1 727 1381
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>2514911SodiumppmASTM D5185m421PotassiumppmASTM D5185m>2039611INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.622.4NitrationAbs/cm*ASTM D7624>2012.510.812.3SulfationAbs/lmm*ASTM D7415>3029.023.627.9FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/lmm*ASTM D7414>2527.917.418.3	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	0 0 0	28 0 20 3 701 1635 812	7 0 52 <1 945 1334 962	26 0 5 <1 727 1381 708
Silicon     ppm     ASTM D5185m     >25     14     9     11       Sodium     ppm     ASTM D5185m     4     2     1       Potassium     ppm     ASTM D5185m     >20 <b>39</b> 6     11       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >3     0.6     2     2.4       Nitration     Abs/cm     *ASTM D7624     >20 <b>12.5</b> 10.8     12.3       Sulfation     Abs/.1mm     *ASTM D7415     >30 <b>29.0</b> 23.6     27.9       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25 <b>27.9</b> 17.4     18.3	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	0 0 0	28 0 20 3 701 1635 812 987	7 0 52 <1 945 1334 962 1221	26 0 5 <1 727 1381 708 865
Sodium     ppm     ASTM D5185m     4     2     1       Potassium     ppm     ASTM D5185m     >20 <b>39</b> 6     11       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >3     0.6     2     2.4       Nitration     Abs/cm     *ASTM D7624     >20 <b>12.5</b> 10.8     12.3       Sulfation     Abs/.1mm     *ASTM D7415     >30 <b>29.0</b> 23.6     27.9       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25 <b>27.9</b> 17.4     18.3	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0	28 0 20 3 701 1635 812 987	7 0 52 <1 945 1334 962 1221 3448	26 0 5 <1 727 1381 708 865 2514
Potassium     ppm     ASTM D5185m     >20 <b>39</b> 6     11       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >3     0.6     2     2.4       Nitration     Abs/cm     *ASTM D7624     >20 <b>12.5</b> 10.8     12.3       Sulfation     Abs/.1mm     *ASTM D7415     >30 <b>29.0</b> 23.6     27.9       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25 <b>27.9</b> 17.4     18.3	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	0 0 0 0 Iimit/base	28 0 20 3 701 1635 812 987 3488 current	7 0 52 <1 945 1334 962 1221 3448 history1	26 0 5 <1 727 1381 708 865 2514 history2
INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.622.4NitrationAbs/cm*ASTM D7624>2012.510.812.3SulfationAbs/.1mm*ASTM D7415>3029.023.627.9FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2527.917.418.3	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 method ASTM D5185m	0 0 0 0 Iimit/base	28 0 20 3 701 1635 812 987 3488 <u>current</u> 14	7 0 52 <1 945 1334 962 1221 3448 history1 9	26 0 5 <1 727 1381 708 865 2514 history2 11
Soot %     %     *ASTM D7844     >3     0.6     2     2.4       Nitration     Abs/cm     *ASTM D7624     >20     12.5     10.8     12.3       Sulfation     Abs/.1mm     *ASTM D7415     >30     29.0     23.6     27.9       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     27.9     17.4     18.3	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 ASTM D5185m ASTM D5185m	0 0 0 0 imit/base >25	28 0 20 3 701 1635 812 987 3488 <u>current</u> 14 4	7 0 52 <1 945 1334 962 1221 3448 history1 9 2	26 0 5 <1 727 1381 708 865 2514 history2 11 1
Nitration     Abs/cm     *ASTM D7624     >20     12.5     10.8     12.3       Sulfation     Abs/.1mm     *ASTM D7415     >30     29.0     23.6     27.9       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     27.9     17.4     18.3	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 0 <u>limit/base</u> >25 >20	28 0 20 3 701 1635 812 987 3488 <u>current</u> 14 4 39	7 0 52 <1 945 1334 962 1221 3448 history1 9 2 6	26 0 5 <1 727 1381 708 865 2514 history2 11 1 1 1
Sulfation     Abs/.1mm     *ASTM D7415     >30     29.0     23.6     27.9       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     27.9     17.4     18.3	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	28 0 20 3 701 1635 812 987 3488 current 14 4 39 39 current	7 0 52 <1 945 1334 962 1221 3448 history1 9 2 6 history1	26 0 5 <1 727 1381 708 865 2514 history2 11 1 1 1 1 1 1 1 1 1
FLUID DEGRADATION method limit/base current history1 history2   Oxidation Abs/.1mm *ASTM D7414 >25 27.9 17.4 18.3	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	0 0 0 0 imit/base >25 >20 imit/base >3	28 0 20 3 701 1635 812 987 3488 <u>current</u> 14 4 39 20 <u>current</u> 0.6	7 0 52 <1 945 1334 962 1221 3448 history1 9 2 6 history1 2	26 0 5 <1 727 1381 708 865 2514 history2 11 1 1 1 1 1 1 1 1 1 2.4
Oxidation     Abs/.1mm     *ASTM D7414     >25     27.9     17.4     18.3	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 0 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1	28 0 20 3 701 1635 812 987 3488 current 14 4 39 current 0.6 12.5	7 0 52 <1 945 1334 962 1221 3448 history1 9 2 6 6 history1 2 10.8	26 0 5 <1 727 1381 708 865 2514 history2 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 0 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1	28 0 20 3 701 1635 812 987 3488 current 14 4 39 current 0.6 12.5	7 0 52 <1 945 1334 962 1221 3448 history1 9 2 6 6 history1 2 10.8	26 0 5 <1 727 1381 708 865 2514 history2 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Base Number (BN)     mg KOH/g     ASTM D2896     9.4     4.3     5.3     8	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	0 0 0 0 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1	28 0 20 3 701 1635 812 987 3488 current 14 4 39 current 0.6 12.5 29.0 current	7 0 52 <1 945 1334 962 1221 3448 history1 9 2 6 history1 2 6 history1 2 10.8 23.6	26 0 5 <1 727 1381 708 865 2514 history2 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 0 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1	28 0 20 3 701 1635 812 987 3488 current 14 4 39 current 0.6 12.5 29.0 current 27.9	7 0 52 <1 945 1334 962 1221 3448 history1 9 2 6 history1 2 10.8 23.6 history1 17.4	26 0 5 <1 727 1381 708 865 2514 history2 11 1 1 1 1 1 1 1 1 1 2.4 12.3 27.9 history2 18.3



# **OIL ANALYSIS REPORT**



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