

# **OIL ANALYSIS REPORT**



Component Natural Gas Engine Fluid LO-ASH ENGINE OIL SAE 40 (--- GAL)

## DIAGNOSIS

Machine Id 2086

#### Recommendation

The oil is near the end of it's useful service life, recommend schedule an oil change. We recommend an early resample to monitor this condition.

### Wear

All component wear rates are normal.

#### Contamination

Fuel content negligible. There is no indication of any contamination in the oil.

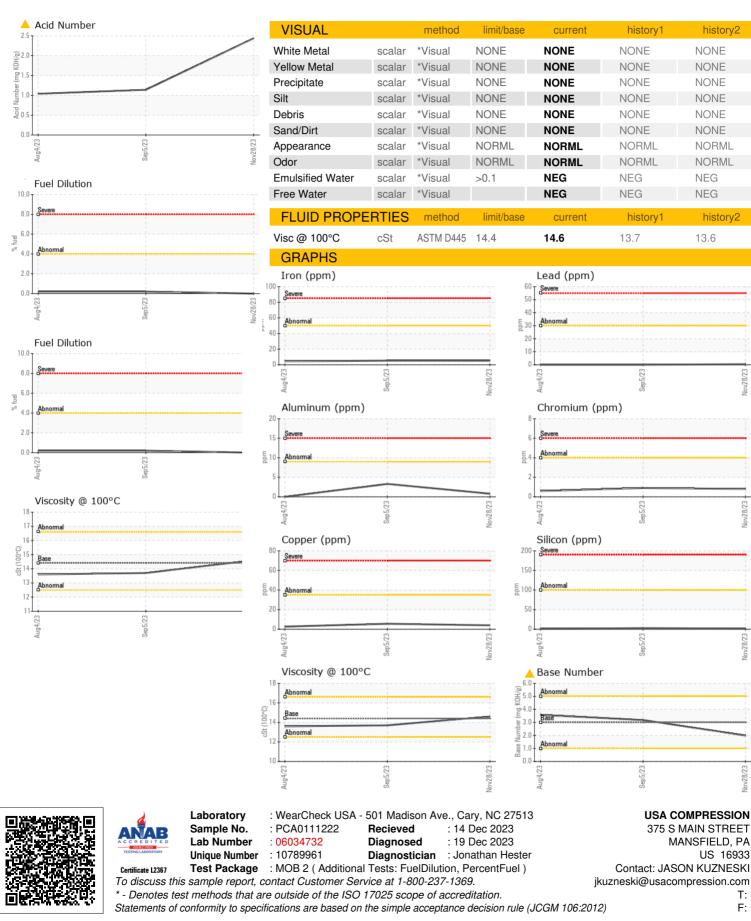
#### Fluid Condition

The BN level is low. The AN level is at the top-end of the recommended limit.

Sample NumberClient InfoPCA0111222PCA0199780PCA0099780PCA0099780Sample DateClient Info28 Nov 202305 Sep 20204 Aug 2023Machine AgehrsClient Info494924552131Oil AgeClient InfoN/AN/AN/ASample StatusClient InfoN/AN/AN/ACONTAMINATI-VMethodJointowNEGNethodWaterWC MethodNEGNethodNEGNethodVaterWC MethodS.1S54ContraminoppmASTM5585S4-NickelppmASTM5585S4-NickelppmASTM5585S4NickelppmASTM5585S4SilverppmASTM5585S40SilverppmASTM5585S40CadmiumppmASTM5585S40SilverppmASTM5585S1311-CadmiumppmASTM5585S13112-ReadppmASTM5585S13111-Astm5585S131112MandumppmASTM5585S131112-Astm5585S131112 <th>SAMPLE INFORI</th> <th>MATION</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age     hrs     Client Info     68690     66693     65922       Oil Ghanged     Client Info     4949     2455     2181       Oil Changed     Client Info     N/A     N/A     N/A       Sample Status     Client Info     N/A     N/A     N/A       CONTAMINATION     method     Imit/base     current     history1     history2       Water     WC Method     >0.1     NEG     NEG     NEG       WEAR METALS     method     imit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >50     5     5     4       Nickel     ppm     ASTM D5185m     >2     0     0     0       Silver     ppm     ASTM D5185m     >3     0     0     0       Cadmium     ppm     ASTM D5185m     >3     4     0     0     0       Cadmium     ppm     ASTM D5185m     >3     4     0     0     0       Cadmium     ppm	Sample Number		Client Info		PCA0111222	PCA0099789	PCA0099780
Oil AgehrsClient Info494924552181Oil ChangedClient InfoN/AN/AN/AN/ASample StatusIImit basecurrenthistory1NICMALCONTAMINATIONmethodlimit/basecurrenthistory1history2WaterWC Method>0.1NEGNEGNEGWEAR METALSmethodlimit/basecurrenthistory1history2IronppmASTM D5185m>5544ChromiumppmASTM D5185m>2000TitaniamppmASTM D5185m>3000SilverppmASTM D5185m>3000CopperppmASTM D5185m>30<100CadmiumppmASTM D5185m>34630Astm D5185m>40<1100Astm D5185m>40<110Astm D5185m>40<110Astm D5185m203644MagaeseppmASTM D5185m20364MolybdenumpmASTM D5185m131112BariumppmASTM D5185m20364MagaeseppmASTM D5185m20364MolybdenumpmASTM D5185m20364	Sample Date		Client Info		28 Nov 2023	05 Sep 2023	04 Aug 2023
Oli ChangedClient InfoN/AN/AN/AN/ASample StatusIIABNORMALNORMALNORMALCONTAMINATIONmethodimit/basecurrenthistory1history2WaterWC Method>0.1NEGNEGNEGWEAR METALSmethodimit/basecurrenthistory1history2IronppmASTM D5185m>4<1<1<1NickelppmASTM D5185m>4<1<1<1NickelppmASTM D5185m>2000TitaniumppmASTM D5185m>3000IluminumppmASTM D5185m>3000LeadppmASTM D5185m>3463TinppmASTM D5185m>3463YanadiumppmASTM D5185m>3463YanadiumppmASTM D5185m>4000AdminumppmASTM D5185m20000AdminumppmASTM D5185m20364MaloganeseppmASTM D5185m20364MaloganeseppmASTM D5185m200364MaloganeseppmASTM D5185m2003413711404PhosphorusppmASTM D5185m200245726072736Zincppm <th>Machine Age</th> <th>hrs</th> <th>Client Info</th> <th></th> <th>68690</th> <th>66696</th> <th>65922</th>	Machine Age	hrs	Client Info		68690	66696	65922
Sample Status     Image     ABNORMAL     NORMAL     NORMAL     NORMAL       CONTAMINATION     method     limit/base     current     history1     history2       Water     WC Method     >0.1     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >50     5     5     4       Chromium     ppm     ASTM D5185m     >2     0     0     0       Titanium     ppm     ASTM D5185m     >3     0     0     0       Silver     ppm     ASTM D5185m     >3     0     0     0       Lead     ppm     ASTM D5185m     >3     4     6     3       Tin     ppm     ASTM D5185m     >4     0     -1     0       Cadmium     ppm     ASTM D5185m     3     4     6     3       Tin     ppm     ASTM D5185m     5     13     11     1  <	Oil Age	hrs	Client Info		4949	2455	2181
CONTAMINATION     method     limit/base     current     history1     history2       Water     WC Method     >0.1     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >5     5     4       Chromium     ppm     ASTM D5185m     >2     0     0     0       Nickel     ppm     ASTM D5185m     >2     0     0     0       Silver     ppm     ASTM D5185m     >3     0     0     0       Aluminum     ppm     ASTM D5185m     >30     <1     0     0       Cadadium     ppm     ASTM D5185m     >30     <1     0     0       Vanadium     ppm     ASTM D5185m     >4     0     0     0       Vanadium     ppm     ASTM D5185m     10     0     0     0       Vanadium     ppm     ASTM D5185m     12     0     0     0	Oil Changed		Client Info		N/A	N/A	N/A
Water     WC Method<>0.1     NEG     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >50     5     5     4       Chromium     ppm     ASTM D5185m     >2     0     0     0       Nickel     ppm     ASTM D5185m     >2     0     0     0       Silver     ppm     ASTM D5185m     >3     0     0     0       Aluminum     ppm     ASTM D5185m     >3     0     0     0       Lead     ppm     ASTM D5185m     >30     <1     0     0       Cadmium     ppm     ASTM D5185m     >30     <1     0     0       Vanadium     ppm     ASTM D5185m     >30     <1     0     0       Cadmium     ppm     ASTM D5185m     0     0     0     0       Astim D5185m     12     0     0     0     0     0	Sample Status				ABNORMAL	NORMAL	NORMAL
WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >50     5     5     4       Chromium     ppm     ASTM D5185m     >2     0     0     0       Titanium     ppm     ASTM D5185m     >2     0     0     0       Silver     ppm     ASTM D5185m     >3     0     0     0       Aluminum     ppm     ASTM D5185m     >3     0     0     0       Lead     ppm     ASTM D5185m     >30     <1     0     0       Copper     ppm     ASTM D5185m     >30     <1     0     0       Cadmium     ppm     ASTM D5185m     >35     4     6     3     1       Boron     ppm     ASTM D5185m     37     <1     <1     1     1       Barium     ppm     ASTM D5185m     12     0     0     0     0       Magnese     ppm     ASTM D5185m     131	CONTAMINAT	ION	method	limit/base	current	history1	history2
IronppmASTM D5185m ATM D5185m>50554ChromiumppmASTM D5185m>4<1<1<1<1NickelppmASTM D5185m>20000SilverppmASTM D5185m>20000SilverppmASTM D5185m>30000AluminumppmASTM D5185m>30<1000LeadppmASTM D5185m>354633000<	Water		WC Method	>0.1	NEG	NEG	NEG
Chromium     ppm     ASTM D5185m     >4     <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel     ppm     ASTM D5185m     >2     0     0     0       Titanium     ppm     ASTM D5185m     >3     0     0     0       Silver     ppm     ASTM D5185m     >3     0     0     0       Aluminum     ppm     ASTM D5185m     >30     <1     0     0       Lead     ppm     ASTM D5185m     >30     <1     0     0       Copper     ppm     ASTM D5185m     >30     <1     0     0       Vanadium     ppm     ASTM D5185m     >30     <1     0     0     0       Cadmium     ppm     ASTM D5185m     >4     0     <1     1     1       Barium     ppm     ASTM D5185m     12     0     0     0     0       Manganese     ppm     ASTM D5185m     12     0     0     1     1     1       Manganesium     ppm     ASTM D5185m     1600     1418     1377     14044       Phosphorus	Iron	ppm	ASTM D5185m	>50	5	5	4
Titanium     ppm     ASTM D5185m     0     0     0       Silver     ppm     ASTM D5185m     >3     0     0     0       Aluminum     ppm     ASTM D5185m     >9     <1     3     0       Lead     ppm     ASTM D5185m     >30     <1     0     0       Copper     ppm     ASTM D5185m     >35     4     6     3       Tin     ppm     ASTM D5185m     >4     0     <1     0       Vanadium     ppm     ASTM D5185m     >4     0     0     0       Cadmium     ppm     ASTM D5185m     >4     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     37     <1     1     1       Barium     ppm     ASTM D5185m     30     31     11     12       Boron     ppm     ASTM D5185m     5     13     11     12 <tr< th=""><th>Chromium</th><th>ppm</th><th>ASTM D5185m</th><th>&gt;4</th><th>&lt;1</th><th>&lt;1</th><th>&lt;1</th></tr<>	Chromium	ppm	ASTM D5185m	>4	<1	<1	<1
Silver     ppm     ASTM D5185m     >3     0     0     0       Aluminum     ppm     ASTM D5185m     >9     <1     3     0       Lead     ppm     ASTM D5185m     >30     <1     0     0       Copper     ppm     ASTM D5185m     >35     4     6     3       Tin     ppm     ASTM D5185m     >4     0     <1     0       Vanadium     ppm     ASTM D5185m     >4     0     0     0       Cadmium     ppm     ASTM D5185m     0     0     0     0       Cadmium     ppm     ASTM D5185m     7     <1     <1     1       Barium     ppm     ASTM D5185m     12     0     0     0       Magnesse     ppm     ASTM D5185m     5     13     11     12       Calcium     ppm     ASTM D5185m     5     13     11     12       Calcium     ppm     ASTM D5185m     2600     2457     2607 <t< th=""><th>Nickel</th><th>ppm</th><th>ASTM D5185m</th><th>&gt;2</th><th>0</th><th>0</th><th>0</th></t<>	Nickel	ppm	ASTM D5185m	>2	0	0	0
Aluminum     ppm     ASTM D5185m     >9     <1	Titanium	ppm	ASTM D5185m		0	0	0
Lead     ppm     ASTM D5185m     >30     <1	Silver	ppm	ASTM D5185m	>3	0		0
Copper     ppm     ASTM D5185m     >35     4     6     3       Tin     ppm     ASTM D5185m     >4     0     <1     0       Vanadium     ppm     ASTM D5185m     0     0     0     0       Cadmium     ppm     ASTM D5185m     0     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     37     <1     <1     1       Barium     ppm     ASTM D5185m     200     3     6     4       Magnese     ppm     ASTM D5185m     200     3     11     12       Catium     ppm     ASTM D5185m     5     13     11     12       Catium     ppm     ASTM D5185m     300     295     285     296       Zinc     ppm     ASTM D5185m     2600     2457     2607     2736       CONTAMINANTS     method     limit/base     current     history1	Aluminum	ppm	ASTM D5185m	>9	<1	3	0
Tin     ppm     ASTM D5185m     >4     0     <1	Lead	ppm	ASTM D5185m	>30	<1		
Vanadium     ppm     ASTM D5185m     0     0     0     0       Cadmium     ppm     ASTM D5185m     0     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     37     <1     <1     1       Barium     ppm     ASTM D5185m     12     0     0     0       Molybdenum     ppm     ASTM D5185m     12     0     0     0       Manganese     ppm     ASTM D5185m     12     0     0     0     0       Manganese     ppm     ASTM D5185m     200     3     6     4       Manganese     ppm     ASTM D5185m     5     13     11     12       Calcium     ppm     ASTM D5185m     300     295     285     296       Zinc     ppm     ASTM D5185m     2600     2457     2607     2736       CONTAMINANTS     method     limit/base     current <th></th> <th>ppm</th> <th>ASTM D5185m</th> <th>&gt;35</th> <th>4</th> <th>6</th> <th>3</th>		ppm	ASTM D5185m	>35	4	6	3
Cadmium     ppm     ASTM D5185m     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     37     <1		ppm		>4			-
ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     37     <1     <1     1       Barium     ppm     ASTM D5185m     12     0     0     0       Maganese     ppm     ASTM D5185m     200     3     6     4       Magnesium     ppm     ASTM D5185m     200     3     11     <1       Calcium     ppm     ASTM D5185m     5     13     11     <1       Calcium     ppm     ASTM D5185m     1600     1418     1377     1404       Phosphorus     ppm     ASTM D5185m     300     295     285     296       Zinc     ppm     ASTM D5185m     2600     2457     2607     2736       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     2     3     1       Sodium     ppm     ASTM D5185m     >20	Vanadium	ppm	ASTM D5185m		-		0
Boron     ppm     ASTM D5185m     37     <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium     pm     ASTM D5185m     12     0     0     0       Molybdenum     ppm     ASTM D5185m     200     3     6     4       Manganese     ppm     ASTM D5185m     200     3     11     -1       Magnesium     ppm     ASTM D5185m     5     13     11     12       Calcium     ppm     ASTM D5185m     1600     1418     1377     1404       Phosphorus     ppm     ASTM D5185m     300     295     285     296       Zinc     ppm     ASTM D5185m     400     400     341     371       Sulfur     ppm     ASTM D5185m     2600     2457     2607     2736       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >20     0     0     0       Sodium     ppm     ASTM D5185m     >20     0.0     0.2     0.2       Fuel     %     ASTM D5185m     >20	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum     ppm     ASTM D5185m     200     3     6     4       Manganese     ppm     ASTM D5185m     200     3     6     4       Magnesium     ppm     ASTM D5185m     5     13     11     12       Calcium     ppm     ASTM D5185m     1600     1418     1377     1404       Phosphorus     ppm     ASTM D5185m     1000     295     285     296       Zinc     ppm     ASTM D5185m     400     400     3411     371       Sulfur     ppm     ASTM D5185m     2600     2457     2607     2736       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     2     3     1       Sodium     ppm     ASTM D5185m     >20     0     0     0       Fuel     %     ASTM D5324     >4.0     0.0     0     2       Sotifacion     %     *ASTM D7644     20	Boron	ppm	ASTM D5185m	37	<1	<1	
Manganese     ppm     ASTM D5185m     <1		ppm	ASTM D5185m		-		
Magnesium     ppm     ASTM D5185m     5     13     11     12       Calcium     ppm     ASTM D5185m     1600     1418     1377     1404       Phosphorus     ppm     ASTM D5185m     300     295     285     296       Zinc     ppm     ASTM D5185m     300     295     285     296       Zinc     ppm     ASTM D5185m     400     400     341     371       Sulfur     ppm     ASTM D5185m     2600     2457     2607     2736       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     2     3     1       Sodium     ppm     ASTM D5185m     >20     0     0     0       Fuel     %     ASTM D5185m     >20     0.0     0.2     0.2       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0	-	ppm	ASTM D5185m	200			
Calcium     ppm     ASTM D5185m     1600     1418     1377     1404       Phosphorus     ppm     ASTM D5185m     300     295     285     296       Zinc     ppm     ASTM D5185m     400     400     341     371       Sulfur     ppm     ASTM D5185m     2600     2457     2607     2736       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     2     3     1       Sodium     ppm     ASTM D5185m     >+100     2     3     1       Sodium     ppm     ASTM D5185m     >20     0     0     0       Fuel     %     ASTM D5185m     >20     0.0     0.2     0.2       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7624     >20     7.6     5.3     4.9       Sulfation     Abs/tmm     *ASTM D7415     >30	5	ppm					
Phosphorus     ppm     ASTM D5185m     300     295     285     296       Zinc     ppm     ASTM D5185m     400     400     341     371       Sulfur     ppm     ASTM D5185m     2600     2457     2607     2736       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     2     3     1       Sodium     ppm     ASTM D5185m     >+100     2     6     4       Potassium     ppm     ASTM D5185m     >20     0     0     0       Fuel     %     ASTM D5185m     >20     0     0.2     0.2       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7624     >20     7.6     5.3     4.9       Sulfation     Abs/1mm     *ASTM D7624     >20     7.6     5.3     4.9       Sulfation     Abs/1mm     *ASTM D7624	Magnesium	maa	ASTM D5185m	5	13	11	12
Zinc     ppm     ASTM D5185m     400     400     341     371       Sulfur     ppm     ASTM D5185m     2600     2457     2607     2736       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     2     3     1       Sodium     ppm     ASTM D5185m     >+100     2     3     1       Sodium     ppm     ASTM D5185m     >+20     0     0     0       Fuel     %     ASTM D5185m     >20     0     0.2     0.2       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7624     >20     7.6     5.3     4.9       Sulfation     Abs/.1mm     *ASTM D7415     >30     21.2     16.4     15.7       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414							
Sulfur     ppm     ASTM D5185m     2600     2457     2607     2736       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     2     3     1       Sodium     ppm     ASTM D5185m     >+100     2     6     4       Potassium     ppm     ASTM D5185m     >20     0     0     0       Fuel     %     ASTM D5185m     >20     0.0     0.2     0.2       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0     0     0       Nitration     Abs/cm     *ASTM D7624     >20     7.6     5.3     4.9       Sulfation     Abs/im     *ASTM D7415     >30     21.2     16.4     15.7       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/im     *ASTM D7414		ppm				1377	
CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >+100     2     3     1       Sodium     ppm     ASTM D5185m     >+100     2     6     4       Potassium     ppm     ASTM D5185m     >20     0     0     0       Fuel     %     ASTM D5185m     >20     0     0.0     0.2     0.2       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0     0     0       Nitration     Abs/cm     *ASTM D7624     >20     7.6     5.3     4.9       Sulfation     Abs/imm     *ASTM D7415     >30     21.2     16.4     15.7       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/imm     *ASTM D7414     >25     19.0     11.4     10.3       Acid Number (AN)     mg KOH/g	Phosphorus	ppm ppm	ASTM D5185m	300	295	1377 285	296
Silicon   ppm   ASTM D5185m   >+100   2   3   1     Sodium   ppm   ASTM D5185m   2   6   4     Potassium   ppm   ASTM D5185m   >20   0   0   0     Fuel   %   ASTM D5185m   >20   0.0   0.2   0.2     INFRA-RED   method   limit/base   current   history1   history2     Soot %   %   *ASTM D7844   0   0   0     Nitration   Abs/cm   *ASTM D7624   >20   7.6   5.3   4.9     Sulfation   Abs/.1mm   *ASTM D7415   >30   21.2   16.4   15.7     FLUID DEGRADATION   method   limit/base   current   history1   history2     Oxidation   Abs/.1mm   *ASTM D7414   >25   19.0   11.4   10.3     Acid Number (AN)   mg KOH/g   ASTM D8045   A 2.44   1.14   1.04	Phosphorus Zinc	ppm ppm ppm	ASTM D5185m ASTM D5185m	300 400	295 400	1377 285 341	296 371
Sodium     ppm     ASTM D5185m     2     6     4       Potassium     ppm     ASTM D5185m     >20     0     0     0       Fuel     %     ASTM D3524     >4.0     0.0     0.2     0.2       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0     0     0       Nitration     Abs/cm     *ASTM D7624     >20     7.6     5.3     4.9       Sulfation     Abs/.1mm     *ASTM D7415     >30     21.2     16.4     15.7       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     19.0     11.4     10.3       Acid Number (AN)     mg KOH/g     ASTM D8045      2.44     1.14     1.04	Phosphorus Zinc Sulfur	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	300 400	295 400	1377 285 341	296 371
Potassium     ppm     ASTM D5185m     >20     0     0     0       Fuel     %     ASTM D3524     >4.0     0.0     0.2     0.2       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0     0     0       Nitration     Abs/cm     *ASTM D7624     >20     7.6     5.3     4.9       Sulfation     Abs/.1mm     *ASTM D7415     >30     21.2     16.4     15.7       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     19.0     11.4     10.3       Acid Number (AN)     mg KOH/g     ASTM D8045     A 2.44     1.14     1.04	Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m method	300 400 2600 limit/base	295 400 2457 current	1377 285 341 2607 history1	296 371 2736
Fuel     %     ASTM D3524     >4.0     0.0     0.2     0.2       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0     0     0       Nitration     Abs/cm     *ASTM D7844     0     0     0     0       Nitration     Abs/cm     *ASTM D7624     >20     7.6     5.3     4.9       Sulfation     Abs/.1mm     *ASTM D7415     >30     21.2     16.4     15.7       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     19.0     11.4     10.3       Acid Number (AN)     mg KOH/g     ASTM D8045     < 2.44     1.14     1.04	Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	300 400 2600 limit/base	295 400 2457 current 2	1377 285 341 2607 history1	296 371 2736 history2
INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     0     0     0     0       Nitration     Abs/cm     *ASTM D7624     >20     7.6     5.3     4.9       Sulfation     Abs/.1mm     *ASTM D7415     >30     21.2     16.4     15.7       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     19.0     11.4     10.3       Acid Number (AN)     mg KOH/g     ASTM D8045      2.44     1.14     1.04	Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m	300 400 2600 limit/base >+100	295 400 2457 current 2 2	1377 285 341 2607 history1 3 6	296 371 2736 history2 1 4
Soot %     %     *ASTM D7844     0     0     0     0       Nitration     Abs/cm     *ASTM D7624     >20     7.6     5.3     4.9       Sulfation     Abs/.1mm     *ASTM D7415     >30     21.2     16.4     15.7       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     19.0     11.4     10.3       Acid Number (AN)     mg KOH/g     ASTM D8045	Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m	300 400 2600 limit/base >+100 >20	295 400 2457 current 2 2 2 0	1377 285 341 2607 history1 3 6 0	296 371 2736 history2 1 4 0
Nitration     Abs/cm     *ASTM D7624     >20     7.6     5.3     4.9       Sulfation     Abs/.1mm     *ASTM D7415     >30     21.2     16.4     15.7       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     19.0     11.4     10.3       Acid Number (AN)     mg KOH/g     ASTM D8045 $\checkmark$ 2.44     1.14     1.04	Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m	300 400 2600 limit/base >+100 >20	295 400 2457 current 2 2 2 0	1377 285 341 2607 history1 3 6 0	296 371 2736 history2 1 4 0
Sulfation     Abs/.1mm     *ASTM D7415     >30     21.2     16.4     15.7       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     19.0     11.4     10.3       Acid Number (AN)     mg KOH/g     ASTM D8045     Action     1.14     1.04	Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524	300 400 2600 limit/base >+100 >20 >4.0	295 400 2457 2 2 2 0 0.0	1377 285 341 2607 history1 3 6 0 0 0.2	296 371 2736 history2 1 4 0 0.2
FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     19.0     11.4     10.3       Acid Number (AN)     mg KOH/g     ASTM D8045     ▲ 2.44     1.14     1.04	Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm TS ppm ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524	300 400 2600 limit/base >+100 >20 >4.0	295 400 2457 2 2 2 0 0 0.0 2.0 0 0.0	1377 285 341 2607 history1 3 6 0 0 0.2 history1	296 371 2736 history2 1 4 0 0 0.2 history2
Oxidation     Abs/.1mm     *ASTM D7414     >25     19.0     11.4     10.3       Acid Number (AN)     mg KOH/g     ASTM D8045     ▲ 2.44     1.14     1.04	Phosphorus Zinc Sulfur CONTAMINAN Solicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm TS ppm ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524	300 400 2600 limit/base >+100 >20 >4.0 limit/base	295 400 2457 2 2 2 0 0.0 0.0 current 0	1377 285 341 2607 history1 3 6 0 0 0.2 history1 0	296 371 2736 history2 1 4 0 0.2 history2 0
Acid Number (AN) mg KOH/g ASTM D8045 🔺 2.44 1.14 1.04	Phosphorus Zinc Sulfur CONTAMINAN Solicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm TS ppm ppm ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 <b>method</b> *ASTM D7844 *ASTM D7624	300 400 2600 <b>limit/base</b> >+100 >20 >20 limit/base	295 400 2457 2 2 2 0 0.0 0.0 current 0 7.6	1377 285 341 2607 history1 3 6 0 0.2 history1 0 5.3	296 371 2736 history2 1 4 0 0.2 history2 0 4.9
	Phosphorus Zinc Sulfur Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm TS ppm ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 *ASTM D7844 *ASTM D7624	300 400 2600 >+100 >20 >4.0 Iimit/base >20 >20 >30	295 400 2457 2 2 2 0 0.0 0.0 current 0 7.6 21.2	1377 285 341 2607 history1 3 6 0 0.2 history1 0 5.3 16.4	296 371 2736 history2 1 4 0 0.2 history2 0 4.9 15.7
	Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm TS ppm ppm ppm ppm % % Abs/cm Abs/cm Abs/1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 *ASTM D7844 *ASTM D7844 *ASTM D7624 *ASTM D7415	300 400 2600 >+100 >20 >4.0 Iimit/base >20 >30 Iimit/base	295 400 2457 2 2 2 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 21.2 2 0 0 21.2 2	1377 285 341 2607 history1 3 6 0 0.2 history1 0 5.3 16.4 history1	296 371 2736 history2 1 4 0 0.2 history2 0 4.9 15.7 history2
	Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE Oxidation	ppm ppm ppm ppm TS ppm ppm ppm % % Abs/cm Abs/cm Abs/1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 *ASTM D7844 *ASTM D7624 *ASTM D7614 *ASTM D7415	300 400 2600 >+100 >20 >4.0 Iimit/base >20 >30 Iimit/base	295 400 2457 2 2 2 0 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 21.2 2 0 21.2 2 0 19.0	1377 285 341 2607 history1 3 6 0 0.2 history1 0 5.3 16.4 history1 11.4	296 371 2736 history2 1 4 0 0.2 history2 0 4.9 15.7 history2 10.3



# **OIL ANALYSIS REPORT**



Contact/Location: JASON KUZNESKI - USAMAN

T:

F: