

## **OIL ANALYSIS REPORT**

ISO

Sample Number     Client Info     ST43241     ST4449     ST4388       Sample Date     Client Info     26 Mar 2024     19 Dec 2023     28 Sep 2023       Machine Age     hrs     Client Info     0     0     0       Dil Age     hrs     Client Info     N/A     N/A     N/A       Sample Status     Client Info     N/A     ABNORMAL     ABNORMAL     ABNORMAL       WEAR METALS     method     Imit/base     current     history1     history2       from     ppm     ASTM D5185m     >15     0     0     0       Kickel     ppm     ASTM D5185m     >10     0     0     0       Biver     ppm     ASTM D5185m     >20     <1     <1     <1       Kickel     ppm     ASTM D5185m     >20     0     0     0     0       Lead     ppm     ASTM D5185m     >20     <1     <1     <1     <1       Vanadium     ppm     ASTM D5185m     >20     0     0     0		ATION		11 1. 11			
Sample DateClient Info26 Mar 202419 Dec 202328 Sep 2023Machine AgehrsClient Info000Oil AgehrsClient InfoN/AN/ASample StatusImageClient InfoN/AN/ASample StatusImageImageN/AABNORMALABNORMALWEAR METALSmethodImit/basecurrenthistory1history2IronppmASTM D5185m>15<10<1NickelppmASTM D5185m>15000SilverppmASTM D5185m>15000SilverppmASTM D5185m>100000CopperppmASTM D5185m>252000CadmiumppmASTM D5185m>250000ASTM D5185m>200<1<1<<1<11TinppmASTM D5185m>250000ASTM D5185m>200<1<1<1<11VanadiumppmASTM D5185m50242111BoronppmASTM D5185m50242111ASTM D5185m502619201120ASTM D5185m12500166731418914016120SoldenumppmASTM D5185m5034731729120 </th <th></th> <th>ATION</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>		ATION	method	limit/base	current	history1	history2
Machine Age Dil Age Dil Age NrsClient Info000Dil Age Dig ChangedClient InfoN/AN/AN/ASample StatusClient InfoN/AN/AN/AWEAR METALSmethodImit/basecurrenthistory1/history2IronppmASTM D5185m>200675855ChromiumppmASTM D5185m>15000NickelppmASTM D5185m>15000SilverppmASTM D5185m>10000AluminumppmASTM D5185m>25200AluminumppmASTM D5185m>25000CopperppmASTM D5185m>25000CopperppmASTM D5185m>25000AdminumppmASTM D5185m>50242116BariumppmASTM D5185m15000AddybdenumppmASTM D5185m15000MagnesiumppmASTM D5185m150242116BariumppmASTM D5185m150261920MagnesiumppmASTM D5185m150261920PhosphorusppmASTM D5185m150347317291SulfurppmASTM D5185m150445Sodium <td< th=""><th>Sample Number</th><th></th><th>Client Info</th><th></th><th></th><th>ST44459</th><th>ST43888</th></td<>	Sample Number		Client Info			ST44459	ST43888
Di Age hrs Client Info 0 0 0   Di Changed Client Info N/A N/A N/A N/A   Sample Status Client Info N/A ABNORMAL ABNORMAL ABNORMAL   WEAR METALS method limit/base current history1 history2   Iron ppm ASTM D5185m >200 67 58 55   Chromium ppm ASTM D5185m >15 0 0 0   Nickel ppm ASTM D5185m 0 0 0 0   Nickel ppm ASTM D5185m 0 0 0 0   Aluminum ppm ASTM D5185m >200 <1	Sample Date		Client Info		26 Mar 2024	19 Dec 2023	28 Sep 2023
N/A     N/A     N/A     N/A     N/A     ABNORMAL     ABNORMAL     ABNORMAL     ABNORMAL     ABNORMAL     ABNORMAL       WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >200     67     58     55       Chromium     ppm     ASTM D5185m     >15     0     0     0       Nickel     ppm     ASTM D5185m     >15     0     0     0     0       Itanium     ppm     ASTM D5185m     >200     <1     <1     <1       Copper     ppm     ASTM D5185m     >200     <1     <1     <1       Vanadium     ppm     ASTM D5185m     >200     0     <1     <1       Vanadium     ppm     ASTM D5185m     >20     0     0     0       Addition     ppm     ASTM D5185m     50     24     21     16       Barium     ppm     ASTM D5185m     50     26     19     20	Machine Age	hrs	Client Info		•		-
Sample StatusImage: methodImit/baseCurrentNBNORMALABNORMALABNORMALWEAR METALSmethodlimit/basecurrenthistory1history2IronppmASTM D5185m>15<1	Oil Age	hrs	Client Info		-	÷	÷
WEAR METALS     method     limit/base     current     history1     history2       iron     ppm     ASTM D5185m     >200     67     58     55       Chromium     ppm     ASTM D5185m     >15     0     0     <1	Oil Changed		Client Info			,	
ron     ppm     ASTM D5185m     >200     67     58     55       Chromium     ppm     ASTM D5185m     >15     0     0     0       Nickel     ppm     ASTM D5185m     >15     0     0     0       Silver     ppm     ASTM D5185m     >55     2     0     0       Aluminum     ppm     ASTM D5185m     >255     2     0     0       Lead     ppm     ASTM D5185m     >200     <1     <1     <1       Tin     ppm     ASTM D5185m     >200     <1     <1     <1     <1       Vanadium     ppm     ASTM D5185m     0     0     0     0       Cadmium     ppm     ASTM D5185m     50     24     21     16       Barium     ppm     ASTM D5185m     15     0     0     <1       Magnesium     ppm     ASTM D5185m     50     26     19     20       Phosphorus     ppm     ASTM D5185m     50     26 <th>Sample Status</th> <th></th> <th></th> <th></th> <th>ABNORMAL</th> <th>ABNORMAL</th> <th>ABNORMAL</th>	Sample Status				ABNORMAL	ABNORMAL	ABNORMAL
Dromium     ppm     ASTM D5185m     >15     <1	WEAR METALS		method	limit/base	current	history1	history2
NickelppmASTM D5185m>15000TitaniumppmASTM D5185m0000SilverppmASTM D5185m>25200AluminumppmASTM D5185m>200<1	Iron	ppm	ASTM D5185m	>200	67	58	55
Titanium     ppm     ASTM D5185m     0     0     0       Silver     ppm     ASTM D5185m     >25     2     0     0       Aluminum     ppm     ASTM D5185m     >255     2     0     0       Lead     ppm     ASTM D5185m     >200     <1	Chromium	ppm	ASTM D5185m	>15	<1	0	<1
Silver     ppm     ASTM D5185m     >25     2     0     0       Aluminum     ppm     ASTM D5185m     >25     2     0     0       Lead     ppm     ASTM D5185m     >200     <1	Nickel	ppm	ASTM D5185m	>15	0	0	0
Atuminum     ppm     ASTM D5185m     >25     2     0     0       Lead     ppm     ASTM D5185m     >100     0     0     0       Copper     ppm     ASTM D5185m     >200     <1	Titanium	ppm	ASTM D5185m		0	0	0
Lead     ppm     ASTM D5185m     >100     0     0     0       Copper     ppm     ASTM D5185m     >200     <1	Silver	ppm	ASTM D5185m		0	0	0
Copper     ppm     ASTM D5185m     >200     <1     <1     <1       Tin     ppm     ASTM D5185m     >25     0     0     0       Vanadium     ppm     ASTM D5185m     >25     0     0     0       Cadmium     ppm     ASTM D5185m     0     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     50     24     21     16       Barium     ppm     ASTM D5185m     15     0     0     0       Molybdenum     ppm     ASTM D5185m     15     0     0     0       Magnesium     ppm     ASTM D5185m     50     26     19     20       Phosphorus     ppm     ASTM D5185m     50     24     4     14016       Calcium     ppm     ASTM D5185m     12500     16673     14189     14016       Sulfur     ppm     ASTM D5185m     50     4	Aluminum	ppm	ASTM D5185m	>25	2	0	0
Tin     ppm     ASTM D5185m     >25     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     history2       Boron     ppm     ASTM D5185m     50     24     21     16       Barium     ppm     ASTM D5185m     50     24     21     16       Magnese     ppm     ASTM D5185m     15     0     0     0       Magnesium     ppm     ASTM D5185m     50     26     19     20       Calcium     ppm     ASTM D5185m     50     26     19     20       Phosphorus     ppm     ASTM D5185m     12500     16673     14189     14016       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     50     4	Lead	ppm	ASTM D5185m	>100	0	0	0
Vanadium     ppm     ASTM D5185m     0     0     0       Cadmium     ppm     ASTM D5185m     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     50     24     21     16       Barium     ppm     ASTM D5185m     15     0     0     0       Maganese     ppm     ASTM D5185m     15     0     0     0       Maganesium     ppm     ASTM D5185m     50     26     19     20       Calcium     ppm     ASTM D5185m     50     26     19     20       Calcium     ppm     ASTM D5185m     100     3     0     1       Sulfur     ppm     ASTM D5185m     12500     16673     14189     14016       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >50     4     4     5	Copper	ppm	ASTM D5185m	>200	<1	<1	<1
Cadmium     ppm     ASTM D5185m     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     50     24     21     16       Barium     ppm     ASTM D5185m     15     0     0     0       Molybdenum     ppm     ASTM D5185m     15     0     0     0       Magnese     ppm     ASTM D5185m     15     0     0     0     1       Magnesium     ppm     ASTM D5185m     50     <1     0     <1     1       Calcium     ppm     ASTM D5185m     50     26     19     20       Phosphorus     ppm     ASTM D5185m     50     347     317     291       Zinc     ppm     ASTM D5185m     12500     16673     14189     14016       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >20 <td>Tin</td> <td>ppm</td> <td>ASTM D5185m</td> <td>&gt;25</td> <th>0</th> <td>0</td> <td>&lt;1</td>	Tin	ppm	ASTM D5185m	>25	0	0	<1
ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     50     24     21     16       Barium     ppm     ASTM D5185m     15     0     0     0       Molybdenum     ppm     ASTM D5185m     15     0     0     0       Maganese     ppm     ASTM D5185m     <<1	Vanadium	ppm	ASTM D5185m		0	0	0
Boron     ppm     ASTM D5185m     50     24     21     16       Barium     ppm     ASTM D5185m     15     0     0     0       Molybdenum     ppm     ASTM D5185m     15     0     0     0       Manganese     ppm     ASTM D5185m     <	Cadmium	ppm	ASTM D5185m		0	0	0
Barium     ppm     ASTM D5185m     15     0     0     0       Molybdenum     ppm     ASTM D5185m     15     0     0     0       Manganese     ppm     ASTM D5185m     15     0     0     0       Magnesium     ppm     ASTM D5185m     50     <1     0     <1       Calcium     ppm     ASTM D5185m     50     26     19     20       Phosphorus     ppm     ASTM D5185m     350     347     317     291       Zinc     ppm     ASTM D5185m     100     3     0     1       Sulfur     ppm     ASTM D5185m     12500     16673     14189     14016       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >50     4     4     5       Sodium     ppm     ASTM D5185m     >20     1     0     <1       Water     %     ASTM D6304     >0.2     0.004 </th <th>ADDITIVES</th> <th></th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum     ppm     ASTM D5185m     15     0     0     0       Manganese     ppm     ASTM D5185m     50     <1	Boron	ppm	ASTM D5185m	50	24	21	16
Manganese     ppm     ASTM D5185m     <1     <1     <1       Magnesium     ppm     ASTM D5185m     50     <1	Barium	ppm	ASTM D5185m	15	0	0	0
Magnesium     ppm     ASTM D5185m     50     <1     0     <1       Calcium     ppm     ASTM D5185m     50     26     19     20       Phosphorus     ppm     ASTM D5185m     350     347     317     291       Zinc     ppm     ASTM D5185m     100     3     0     1       Sulfur     ppm     ASTM D5185m     12500     16673     14189     14016       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >50     4     4     5       Sodium     ppm     ASTM D5185m     >20     1     0     <1	Molybdenum	ppm	ASTM D5185m	15	0	0	0
Calcium     ppm     ASTM D5185m     50     26     19     20       Phosphorus     ppm     ASTM D5185m     350     347     317     291       Zinc     ppm     ASTM D5185m     100     3     0     1       Sulfur     ppm     ASTM D5185m     12500     16673     14189     14016       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >50     4     4     5       Sodium     ppm     ASTM D5185m     >50     4     4     4       Potassium     ppm     ASTM D5185m     >20     1     0     <1	Manganese	ppm	ASTM D5185m		<1	<1	<1
Phosphorus     ppm     ASTM D5185m     350     347     317     291       Zinc     ppm     ASTM D5185m     100     3     0     1       Sulfur     ppm     ASTM D5185m     12500     16673     14189     14016       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >50     4     4     5       Sodium     ppm     ASTM D5185m     >50     4     4     4       Potassium     ppm     ASTM D5185m     >20     1     0     <1	Magnesium	ppm	ASTM D5185m	50		0	<1
Zinc     ppm     ASTM D5185m     100     3     0     1       Sulfur     ppm     ASTM D5185m     12500     16673     14189     14016       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >50     4     4     5       Sodium     ppm     ASTM D5185m     >50     4     4     4       Potassium     ppm     ASTM D5185m     >20     1     0     <1	Calcium	ppm	ASTM D5185m	50	26	19	20
Sulfur     ppm     ASTM D5185m     12500     16673     14189     14016       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >50     4     4     5       Sodium     ppm     ASTM D5185m     >50     4     4     5       Sodium     ppm     ASTM D5185m     >20     1     0     <1       Potassium     ppm     ASTM D5185m     >20     1     0     <1       Water     %     ASTM D6304     >0.2     0.004     0.01     0.006       opm Water     ppm     ASTM D6304     >2000     47     100     68.7       FLUID CLEANLINESS     method     limit/base     current     history1     history2       Particles >4µm     ASTM D7647     >40000     115539     123329     116604       Particles >6µm     ASTM D7647     >640     1988     1279     523       Particles >1µm     ASTM D7647     40     1 <td>Phosphorus</td> <td>ppm</td> <td>ASTM D5185m</td> <td>350</td> <th>347</th> <td>317</td> <td>291</td>	Phosphorus	ppm	ASTM D5185m	350	347	317	291
CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >50     4     4     5       Sodium     ppm     ASTM D5185m     >50     4     4     4       Potassium     ppm     ASTM D5185m     >20     1     0     <1	Zinc	ppm	ASTM D5185m	100	3	0	1
Silicon   ppm   ASTM D5185m   >50   4   4   5     Sodium   ppm   ASTM D5185m   >50   4   4   4     Potassium   ppm   ASTM D5185m   >20   1   0   <1     Water   %   ASTM D6304   >0.2   0.004   0.01   0.006     opm   ASTM D6304   >2000   47   100   68.7     FLUID CLEANLINESS   method   limit/base   current   history1   history2     Particles >4µm   ASTM D7647   >40000   115539   123329   116604     Particles >6µm   ASTM D7647   >640   1988   1279   523     Particles >14µm   ASTM D7647   >40   1   0   31     Particles >21µm   ASTM D7647   >40   1   0   31     Particles >38µm   ASTM D7647   >40   1   0   0     Particles >71µm   ASTM D7647   >10   0   0   0	Sulfur	ppm	ASTM D5185m	12500	16673	14189	14016
Sodium     ppm     ASTM D5185m     5     4     4       Potassium     ppm     ASTM D5185m     >20     1     0     <1       Water     %     ASTM D6304     >0.2     0.004     0.01     0.006       opm Water     ppm     ASTM D6304     >2000     47     100     68.7       FLUID CLEANLINESS     method     limit/base     current     history1     history2       Particles >4µm     ASTM D7647     >40000     115539     123329     116604       Particles >6µm     ASTM D7647     >5000     44296     37683     33450       Particles >14µm     ASTM D7647     >640     1988     1279     523       Particles >21µm     ASTM D7647     >40     1     1     0       Particles >38µm     ASTM D7647     >40     1     0     0	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium     ppm     ASTM D5185m     >20     1     0     <1       Water     %     ASTM D6304     >0.2     0.004     0.01     0.006       opm Water     ppm     ASTM D6304     >2000     47     100     68.7       FLUID CLEANLINESS     method     limit/base     current     history1     history2       Particles >4µm     ASTM D7647     >40000     115539     123329     116604       Particles >6µm     ASTM D7647     >5000     44296     37683     33450       Particles >14µm     ASTM D7647     >640     1988     1279     523       Particles >21µm     ASTM D7647     >40     1     1     0       Particles >38µm     ASTM D7647     >40     1     0     0       Particles >71µm     ASTM D7647     >10     0     0     0	Silicon	ppm	ASTM D5185m	>50	4	4	5
Water     %     ASTM D6304     >0.2     0.004     0.01     0.006       opm Water     ppm     ASTM D6304     >2000     47     100     68.7       FLUID CLEANLINESS     method     limit/base     current     history1     history2       Particles >4µm     ASTM D7647     >40000     115539     123329     116604       Particles >6µm     ASTM D7647     >5000     44296     37683     33450       Particles >14µm     ASTM D7647     >640     1988     1279     523       Particles >21µm     ASTM D7647     >40     1     1     0       Particles >38µm     ASTM D7647     >40     1     0     0       Particles >71µm     ASTM D7647     >10     0     0     0	Sodium	ppm	ASTM D5185m		5	4	4
oppm Water     ppm     ASTM D6304     >2000     47     100     68.7       FLUID CLEANLINESS     method     limit/base     current     history1     history2       Particles >4µm     ASTM D7647     >40000     115539     123329     116604       Particles >6µm     ASTM D7647     >5000     44296     37683     33450       Particles >14µm     ASTM D7647     >640     1988     1279     523       Particles >21µm     ASTM D7647     >40     1     0       Particles >38µm     ASTM D7647     >40     1     0       Particles >71µm     ASTM D7647     >10     0     0	Potassium	ppm	ASTM D5185m	>20	1	0	<1
FLUID CLEANLINESS   method   limit/base   current   history1   history2     Particles >4µm   ASTM D7647   >40000   115539   123329   116604     Particles >6µm   ASTM D7647   >5000   44296   37683   33450     Particles >14µm   ASTM D7647   >640   1988   1279   523     Particles >21µm   ASTM D7647   >160   226   119   31     Particles >38µm   ASTM D7647   >40   1   1   0     Particles >71µm   ASTM D7647   >10   0   0   0	Water	%	ASTM D6304	>0.2	0.004	0.01	0.006
Particles >4μm   ASTM D7647   >40000   ▲ 115539   ▲ 123329   ▲ 116604     Particles >6μm   ASTM D7647   >5000   ▲ 44296   ▲ 37683   ▲ 33450     Particles >14μm   ASTM D7647   >640   ▲ 1988   ▲ 1279   523     Particles >21μm   ASTM D7647   >160   ▲ 226   119   31     Particles >38μm   ASTM D7647   >40   1   1   0     Particles >71μm   ASTM D7647   >10   0   0   0	ppm Water	ppm	ASTM D6304	>2000	47	100	68.7
Particles >6µm   ASTM D7647   >5000   ▲ 44296   ▲ 37683   ▲ 33450     Particles >14µm   ASTM D7647   >640   ▲ 1988   ▲ 1279   523     Particles >21µm   ASTM D7647   >160   ▲ 226   119   31     Particles >38µm   ASTM D7647   >40   1   1   0     Particles >71µm   ASTM D7647   >10   0   0   0	FLUID CLEANLINE	ESS	method	limit/base	current	history1	history2
Particles >14μm     ASTM D7647     >640     ▲ 1988     ▲ 1279     523       Particles >21μm     ASTM D7647     >160     ▲ 226     119     31       Particles >38μm     ASTM D7647     >40     1     1     0       Particles >71μm     ASTM D7647     >10     0     0     0	Particles >4µm		ASTM D7647	>40000	<b>A</b> 115539	123329	🔺 116604
Particles >21μm     ASTM D7647     >160     226     119     31       Particles >38μm     ASTM D7647     >40     1     1     0       Particles >71μm     ASTM D7647     >10     0     0     0	Particles >6µm		ASTM D7647	>5000	<u> </u>	<b>A</b> 37683	▲ 33450
Particles >38μm     ASTM D7647     >40     1     0       Particles >71μm     ASTM D7647     >10     0     0     0	Particles >14µm			>640	<u> </u>	<b>1</b> 279	523
Particles >71μm     ASTM D7647     >10     0     0     0	Particles >21µm		ASTM D7647	>160	<u> </u>	119	31
Particles >71μm     ASTM D7647     >10     0     0     0	Particles >38µm		ASTM D7647	>40	1	1	0
	Particles >71µm		ASTM D7647	>10	0	0	0
	Oil Cleanliness		ISO 4406 (c)	>22/19/16	<b>4/23/18</b>	<b>4</b> /22/17	▲ 24/22/16

Acid Number (AN)

FLUID DEGRADATION

method mg KOH/g ASTM D8045 0.85

limit/base

current

0.63

history2

0.68

#### Report Id: ZAPDAR [WUSCAR] 06137427 (Generated: 04/05/2024 18:03:16) Rev: 1

Contact/Location: Greg Walton - ZAPDAR Page 1 of 2

history1

0.56

Machine Id

### 42 IN MILL 53 Compo

Gearbox Fluid GEAR OIL ISO 220 (--- GAL)

#### DIAGNOSIS

#### Recommendation

We recommend you service the filters on this component if applicable. Resample at the next service interval to monitor. Due to an abnormal test result it is recommended to contact Stauff Corp at (201)-444-7800 for help resolving the issue.

#### Wear

All component wear rates are normal.

#### Contamination

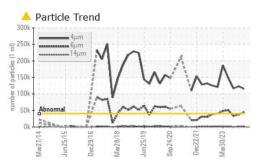
There is a high amount of particulates present in the oil.

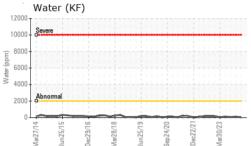
#### Fluid Condition

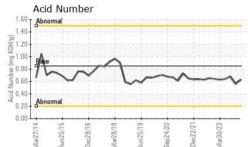
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

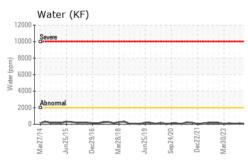


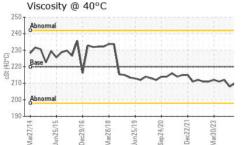
# **OIL ANALYSIS REPORT**

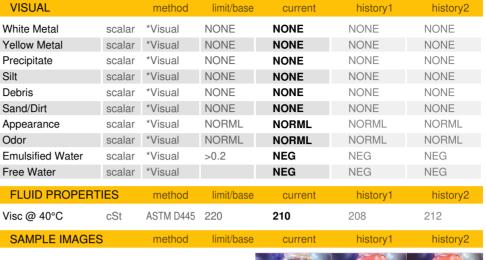








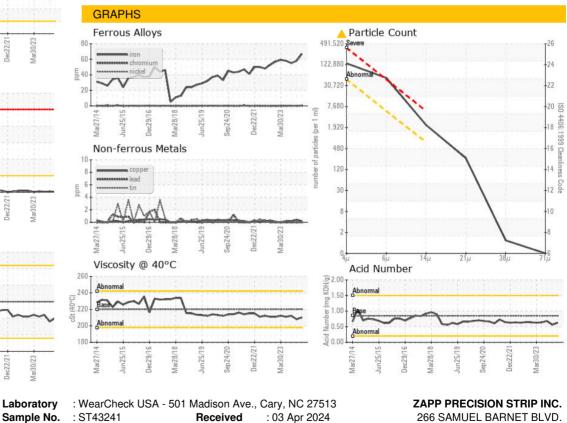




Color



Bottom



: 04 Apr 2024

: 05 Apr 2024 - Don Baldridge



Certificate L2367 Test Package : IND 2 (Additional Tests: KF, PrtCount) To discuss this sample report, contact Customer Service at 1-800-237-1369. \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Lab Number : 06137427

Unique Number : 10956892

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

Tested

Diagnosed

T: 2) F: (508)998-6310

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DARTMOUTH, MA

Contact: Greg Walton

US 02745

Report Id: ZAPDAR [WUSCAR] 06137427 (Generated: 04/05/2024 18:03:17) Rev: 1

Contact/Location: Greg Walton - ZAPDAR Page 2 of 2