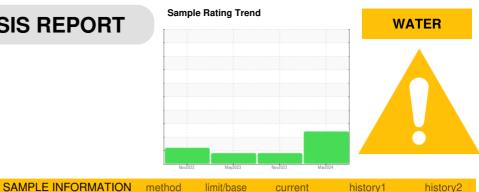


## **OIL ANALYSIS REPORT**



current

history1

history2

Machine Id **KAESER 7780478** 

### Component Compressor Fluid KAESER SIGMA (OEM) M-460 (--- QTS)

#### DIAGNOSIS

#### Recommendation

The filter change at the time of sampling has been noted. We advise that you stop the unit and follow the water drain-off procedure for this component. We recommend an early resample in 500 hours to monitor this condition.

#### Wear

All component wear rates are normal.

#### Contamination

There is a high amount of silt (particulates < 14 microns in size) present in the oil. There is a light concentration of water present in the oil.

#### Fluid Condition

The AN level is acceptable for this fluid.

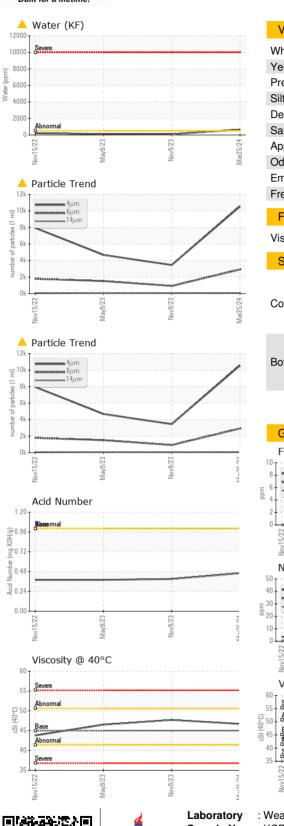
Sample Date         Client Info         25 Mar 2024         09 Nov 2023         09 M           Machine Age         hrs         Client Info         4287         4179         2945           Oil Age         hrs         Client Info         108         0         1274           Oil Charged         Client Info         Not Chargd         NA         Not Chargd         ATTENTION         ATTE           WEAR METALS         method         limit/base         current         history1         ATTENTION         ATTE           WEAR METALS         method         limit/base         current         history1         0         0           Tron         ppm         ASTM 05185m         >3         0         0         0         0           Nickel         ppm         ASTM 05185m         >3         <1         0	SAMPLE INFORM	ATION	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         4287         4179         2945           Oil Age         hrs         Client Info         108         0         1274           Oil Changed         Client Info         Not Changd         N/A         Not Classical           Sample Status         Imitable         Current         history1         Imitable           WEAR METALS         method         Imitables         current         history1         Imitables           Iron         ppm         ASTM D5165m         >50         0         0         0           Nickel         ppm         ASTM D5165m         >33         0         0         0           Silver         ppm         ASTM D5165m         >10         3         <1         0         0           Cadadium         ppm         ASTM D5165m         >10         0         0         0         0         0         0           Cadadium         ppm         ASTM D5165m         >10         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0	Sample Number		Client Info		KCPA015924	KCPA006984	KCP47803D
Oil Age         hrs         Client Info         108         0         1274           Oil Changed         Client Info         Not Changd         N/A         Not Class           Sample Status         Image         Client Info         Not Changd         N/A         Not Class           WEAR METALS         method         Imit/base         current         history1         Image           Iron         ppm         ASTM D5185m         >50         0         0         0           Chromium         ppm         ASTM D5185m         >30         0         0         0           Nickel         ppm         ASTM D5185m         >33         <1         0         0         0           Silver         ppm         ASTM D5185m         >10         0         0         0         0           Cadmium         ppm         ASTM D5185m         >10         <1         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0         0           Cadmium         ppm         ASTM D5185m	Sample Date		Client Info		25 Mar 2024	09 Nov 2023	09 May 2023
Oil Changed Sample Status         Client Info         Not Changed ABNORMAL         N/A         Not CT           WEAR METALS         method         limit/base         current         history1         ATTENTION         ATTENTION           Iron         ppm         ASTM D5185m         >50         0         0         0           Nickel         ppm         ASTM D5185m         >30         0         0         0           Silver         ppm         ASTM D5185m         >3         0         0         0           Silver         ppm         ASTM D5185m         >2         <1	Machine Age	hrs	Client Info		4287	4179	2945
Sample Status         Image: Control of the status         ABNORMAL         ATTENTION         ATTENTION         ATTENTION           WEAR METALS         method         limit/base         current         history1         Image: Current         0         0         0           Nickel         ppm         ASTM D5185m         >3         <1         0         0         0           Silver         ppm         ASTM D5185m         >10         3         <1         0         0           Copper         ppm         ASTM D5185m         >10         0         0         0         0           Cadmium         ppm         ASTM D5185m         >10         <1         0         0         0           Sarout         ASTM D5185m         >10         <1         0         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0         0         0         0         0         0         0	Oil Age	hrs	Client Info		108	0	1274
WEAR METALS         method         limit/base         current         history1         //           Iron         ppm         ASTM 05185m         >50         0         0         0           Chromium         ppm         ASTM 05185m         >10         <1         0         0           Nickel         ppm         ASTM 05185m         >3         0         0         0           Silver         ppm         ASTM 05185m         >2         <1         0         1           Aluminum         ppm         ASTM 05185m         >10         3         <1         2           Lead         ppm         ASTM 05185m         >10         0         0         0         0           Cadmium         ppm         ASTM 05185m         >10         <1         0         0         0           Cadmium         ppm         ASTM 05185m         0         0         0         0         0           Boron         ppm         ASTM 05185m         0         0         0         0         0           Magnese         ppm         ASTM 05185m         0         6         1         0         0           Calcium         ppm         AS	Oil Changed		Client Info		Not Changd	N/A	Not Changd
Iron         ppm         ASTM D5185m         >50         0         0         0           Nickel         ppm         ASTM D5185m         >3         0         0         0           Nickel         ppm         ASTM D5185m         >3         0         0         0           Silver         ppm         ASTM D5185m         >2         <1         0         0           Aluminum         ppm         ASTM D5185m         >10         3         <1         0         0           Copper         ppm         ASTM D5185m         >50         19         46         12           Tin         ppm         ASTM D5185m         >50         19         46         0         0           Vanadium         ppm         ASTM D5185m         0         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0         0           Boron         ppm         ASTM D5185m         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0	Sample Status				ABNORMAL	ATTENTION	ATTENTION
Chromium         ppm         ASTM D5185m         >10         <1	WEAR METALS		method	limit/base	current	history1	history2
Chromium         ppm         ASTM D5185m         >10         <1	Iron	ppm	ASTM D5185m	>50	0	0	0
Titanium         ppm         ASTM D5185m         >3         <1	Chromium		ASTM D5185m	>10	<1	0	0
Titanium       ppm       ASTM D5185m       >3       <1	Nickel	ppm	ASTM D5185m	>3	0	0	0
Aluminum         ppm         ASTM D5185m         >10         3         <1	Titanium		ASTM D5185m	>3	<1	0	0
Lead       ppm       ASTM D5185m       >10       0       0       0         Copper       ppm       ASTM D5185m       >50       19       46       12         Tin       ppm       ASTM D5185m       >10       <1       0       0         Vanadium       ppm       ASTM D5185m       0       0       0       0         Cadmium       ppm       ASTM D5185m       0       0       0       0         ADDITIVES       method       limit/base       current       history1       0         Boron       ppm       ASTM D5185m       0       0       0       0         Molybdenum       ppm       ASTM D5185m       0       0       0       0         Magnese       ppm       ASTM D5185m       0       6       1       0         Calcium       ppm       ASTM D5185m       0       4       18       0         Sulfur       ppm       ASTM D5185m       0       3       0       0         Sulfur       ppm       ASTM D5185m       23500       27810       27032       21         Sulfur       ppm       ASTM D5185m       220       10       <1       2 </th <td>Silver</td> <td>ppm</td> <td>ASTM D5185m</td> <td>&gt;2</td> <th>&lt;1</th> <td>0</td> <td>1</td>	Silver	ppm	ASTM D5185m	>2	<1	0	1
Copper         ppm         ASTM D5185m         >50         19         46         12           Tin         ppm         ASTM D5185m         >10         <1         0         0           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         0           Boron         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         0         6         1         0           Calcium         ppm         ASTM D5185m         0         4         18         0           Zinc         ppm         ASTM D5185m         0         4         18         0           Sulfur         ppm         ASTM D5185m         23500         27810         27032         21           CONTAMINANTS         method         limit/base         current         history1         1 </th <td>Aluminum</td> <td>ppm</td> <td>ASTM D5185m</td> <td>&gt;10</td> <th>3</th> <td>&lt;1</td> <td>2</td>	Aluminum	ppm	ASTM D5185m	>10	3	<1	2
Tin       ppm       ASTM D5185m       >10       <1	Lead	ppm	ASTM D5185m	>10	0	0	0
Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0         0           ADDITIVES         method         limit/base         current         history1         1           Boron         ppm         ASTM D5185m         0         0         0         0         0         0           Barium         ppm         ASTM D5185m         0         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0         0         0           Magnesium         ppm         ASTM D5185m         100         63         <1	Copper	ppm	ASTM D5185m	>50	19	<b>4</b> 6	12
Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         1           Boron         ppm         ASTM D5185m         0         0         0         0         0         0           Barium         ppm         ASTM D5185m         90         35         7         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0         0         0           Manganese         ppm         ASTM D5185m         0         63         <1	Tin		ASTM D5185m	>10	<1	0	0
ADDITIVES         method         limit/base         current         history1         I           Boron         ppm         ASTM D5185m         0         0         0         0         0           Barium         ppm         ASTM D5185m         90         35         7         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0         0           Magaese         ppm         ASTM D5185m         100         63         <1         0         0           Magnesium         ppm         ASTM D5185m         0         6         1         0         0           Calcium         ppm         ASTM D5185m         0         4         18         0	Vanadium	ppm	ASTM D5185m		0	0	0
Boron         ppm         ASTM D5185m         0	Cadmium	ppm	ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         90         35         7         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Manganese         ppm         ASTM D5185m         100         63         <1         0           Magnesium         ppm         ASTM D5185m         100         63         <1         0           Calcium         ppm         ASTM D5185m         0         6         1         0           Phosphorus         ppm         ASTM D5185m         0         4         18         0           Sulfur         ppm         ASTM D5185m         0         3         0         0           Sulfur         ppm         ASTM D5185m         23500         27810         27032         21           CONTAMINANTS         method         limit/base         current         history1         M           Silicon         ppm         ASTM D5185m         >20         10         <1         2           Sodium         ppm         ASTM D6304         >0.05         0.065         0.007         0.           ppm Water         ppm         ASTM D7647         10543         3457<	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         0         0         0         0         0           Manganese         ppm         ASTM D5185m         100         633         <1         0           Magnesium         ppm         ASTM D5185m         100         633         <1         0           Calcium         ppm         ASTM D5185m         0         4         18         0           Calcium         ppm         ASTM D5185m         0         4         18         0           Zinc         ppm         ASTM D5185m         0         3         0         0         0           Sulfur         ppm         ASTM D5185m         23500         27810         27032         21           CONTAMINANTS         method         limit/base         current         history1         0         6           Silicon         ppm         ASTM D5185m         >20         10         <1         2           Vater         %         ASTM D5185m         >20         10         <1         2           Water         ppm         ASTM D5304         >0.05         0.065         0.007         0.           Particles >4µm         ASTM D7647	Boron	ppm	ASTM D5185m	0	0	0	0
Manganese       ppm       ASTM D5185m       0       0       0       0         Magnesium       ppm       ASTM D5185m       100       63       <1       0         Calcium       ppm       ASTM D5185m       0       6       1       0         Phosphorus       ppm       ASTM D5185m       0       4       18       0         Zinc       ppm       ASTM D5185m       0       3       0       0         Sulfur       ppm       ASTM D5185m       23500       27810       27032       21         CONTAMINANTS       method       limit/base       current       history1       1         Silicon       ppm       ASTM D5185m       >25       <1       0       <1         Sodium       ppm       ASTM D5185m       >20       10       <1       2         Water       %       ASTM D5185m       >20       0.065       0.007       0.         ppm Water       ppm       ASTM D5185m       >20       10       <1       2         Particles >4µm       ASTM D6304       >0.05       0.065       0.007       0.       1         Particles >4µm       ASTM D7647       >1300       2924	Barium	ppm	ASTM D5185m	90	35	7	0
Magnesium       ppm       ASTM D5185m       100       63       <1       0         Calcium       ppm       ASTM D5185m       0       6       1       0         Phosphorus       ppm       ASTM D5185m       0       4       18       0         Zinc       ppm       ASTM D5185m       0       3       0       0         Sulfur       ppm       ASTM D5185m       23500       27810       27032       21         CONTAMINANTS       method       limit/base       current       history1       1         Silicon       ppm       ASTM D5185m       >25       <1       0       <1       2         Sodium       ppm       ASTM D5185m       >25       <1       0       <1       2         Vater       %       ASTM D5185m       >20       10       <1       2       2         Water       %       ASTM D6304       >0.05       0.065       0.007       0.       1       2         Particles >4µm       ASTM D7647       >1300       2924       918       1       1       1       1       1       1       0       1       0       1       1       1       0	Molybdenum	ppm	ASTM D5185m	0	0	0	0
Calcium       ppm       ASTM D5185m       0       6       1       0         Phosphorus       ppm       ASTM D5185m       0       4       18       0         Zinc       ppm       ASTM D5185m       0       3       0       0         Sulfur       ppm       ASTM D5185m       23500       27810       27032       21         CONTAMINANTS       method       limit/base       current       history1       d         Silicon       ppm       ASTM D5185m       >25       <1       0       <1         Sodium       ppm       ASTM D5185m       >20       10       <1       2         Water       %       ASTM D6304       >0.05       0.0655       0.007       0.0         ppm Water       ppm       ASTM D6304       >500       ▲ 659       78.7       12         FLUID CLEANLINESS       method       limit/base       current       history1       d         Particles >4µm       ASTM D7647       10543       3457       46         Particles >6µm       ASTM D7647       >80       62       56       37         Particles >14µm       ASTM D7647       >20       8       15       9	Manganese	ppm	ASTM D5185m		0	0	0
Phosphorus         ppm         ASTM D5185m         0         4         18         0           Zinc         ppm         ASTM D5185m         0         3         0         0           Sulfur         ppm         ASTM D5185m         23500         27810         27032         21           CONTAMINANTS         method         limit/base         current         history1         4           Silicon         ppm         ASTM D5185m         >25         <1	Magnesium	ppm					
Zinc       ppm       ASTM D5185m       0       3       0       0         Sulfur       ppm       ASTM D5185m       23500       27810       27032       21         CONTAMINANTS       method       limit/base       current       history1       4         Silicon       ppm       ASTM D5185m       >25       <1	Calcium	ppm		0	6		0
Sulfur       ppm       ASTM D5185m       23500       27810       27032       21         CONTAMINANTS       method       limit/base       current       history1       A         Silicon       ppm       ASTM D5185m       >25       <1       0       <1         Sodium       ppm       ASTM D5185m       >20       10       <1       2         Vater       %       ASTM D6304       >0.05       0.0655       0.007       0.0         ppm Water       ppm       ASTM D6304       >500       659       78.7       12         FLUID CLEANLINESS       method       limit/base       current       history1       M         Particles >4µm       ASTM D7647       >10543       3457       46         Particles >6µm       ASTM D7647       >1300       2924       918       15         Particles >14µm       ASTM D7647       >20       8       15       9         Particles >38µm       ASTM D7647       >20       8       15       9         Particles >71µm       ASTM D7647       >3       0       0       0         Oil Cleanliness       ISO 4406 (c)       >/17/13       21/19/13       19/17/13       19/17/13	Phosphorus	ppm			-		
CONTAMINANTS         method         limit/base         current         history1         H           Silicon         ppm         ASTM D5185m         >25         <1         0         <1           Sodium         ppm         ASTM D5185m         >20         10         <1         2           Potassium         ppm         ASTM D5185m         >20         10         <1         2           Water         %         ASTM D6304         >0.05         0.0655         0.007         0.0           ppm Water         ppm         ASTM D6304         >500         ▲ 659         78.7         12           FLUID CLEANLINESS         method         limit/base         current         history1         M           Particles >4µm         ASTM D7647         10543         3457         46           Particles >6µm         ASTM D7647         >1300         2924         918         15           Particles >14µm         ASTM D7647         >20         8         15         9           Particles >21µm         ASTM D7647         >20         8         15         9           Particles >71µm         ASTM D7647         >3         0         0         0           Oll Cl	Zinc	ppm	ASTM D5185m	0	3	0	0
Silicon       ppm       ASTM D5185m       >25       <1		ppm	ASTM D5185m	23500	27810	27032	21959
Sodium         ppm         ASTM D5185m         11         0         6           Potassium         ppm         ASTM D5185m         >20         10         <1         2           Water         %         ASTM D6304         >0.05         0.065         0.007         0.1           ppm Water         ppm         ASTM D6304         >500         ▲ 659         78.7         12           FLUID CLEANLINESS         method         limit/base         current         history1         M           Particles >4µm         ASTM D7647         10543         3457         46           Particles >6µm         ASTM D7647         >1300         2924         918         15           Particles >14µm         ASTM D7647         >80         62         56         37           Particles >21µm         ASTM D7647         >20         8         15         9           Particles >38µm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/13         21/19/13         19/17/13         19           FLUID DEGRADATION         method         limit/base         current         history1         M	CONTAMINANTS		method	limit/base	current		history2
Potassium       ppm       ASTM D5185m       >20       10       <1				>25			<1
Water       %       ASTM D6304       >0.05       ▲ 0.065       0.007       0.1         ppm Water       ppm       ASTM D6304       >500       ▲ 659       78.7       12         FLUID CLEANLINESS       method       limit/base       current       history1       H         Particles >4µm       ASTM D7647       10543       3457       46         Particles >6µm       ASTM D7647       >1300       2924       918       15         Particles >6µm       ASTM D7647       >80       62       56       37         Particles >14µm       ASTM D7647       >20       8       15       9         Particles >21µm       ASTM D7647       >20       8       15       9         Particles >38µm       ASTM D7647       >3       0       0       0         Particles >71µm       ASTM D7647       >3       0       0       0         Oil Cleanliness       ISO 4406 (c)       >/17/13       21/19/13       19/17/13       19         FLUID DEGRADATION       method       limit/base       current       history1       H							
ppm Water         ppm         ASTM D6304         >500         ▲ 659         78.7         12           FLUID CLEANLINESS         method         limit/base         current         history1         H           Particles >4µm         ASTM D7647         10543         3457         46           Particles >6µm         ASTM D7647         >1300         ▲ 2924         918         15           Particles >14µm         ASTM D7647         >80         62         56         37           Particles >21µm         ASTM D7647         >20         8         15         9           Particles >38µm         ASTM D7647         >4         0         1         0           Particles >71µm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/13         21/19/13         19/17/13         19           FLUID DEGRADATION         method         limit/base         current         history1         H							
FLUID CLEANLINESS       method       limit/base       current       history1       H         Particles >4µm       ASTM D7647       10543       3457       46         Particles >6µm       ASTM D7647       >1300       2924       918       15         Particles >14µm       ASTM D7647       >80       62       56       37         Particles >21µm       ASTM D7647       >20       8       15       9         Particles >38µm       ASTM D7647       >4       0       1       0         Particles >71µm       ASTM D7647       >3       0       0       0         Oil Cleanliness       ISO 4406 (c)       >/17/13       21/19/13       19/17/13       19         FLUID DEGRADATION       method       limit/base       current       history1       H							0.012
Particles >4µm       ASTM D7647       10543       3457       46         Particles >6µm       ASTM D7647       >1300       2924       918       15         Particles >14µm       ASTM D7647       >80       62       56       37         Particles >21µm       ASTM D7647       >20       8       15       9         Particles >21µm       ASTM D7647       >20       8       15       9         Particles >38µm       ASTM D7647       >4       0       1       0         Particles >71µm       ASTM D7647       >3       0       0       0         Oil Cleanliness       ISO 4406 (c)       >/17/13       21/19/13       19/17/13       19         FLUID DEGRADATION       method       limit/base       current       history1       H	ppm Water	ppm	ASTM D6304	>500	<b>▲</b> 659	78.7	120.1
Particles >6µm       ASTM D7647       >1300       ▲ 2924       918       15         Particles >14µm       ASTM D7647       >80       62       56       37         Particles >21µm       ASTM D7647       >20       8       15       9         Particles >38µm       ASTM D7647       >20       8       15       9         Particles >38µm       ASTM D7647       >4       0       1       0         Particles >71µm       ASTM D7647       >3       0       0       0         Oil Cleanliness       ISO 4406 (c)       >/17/13       ▲ 21/19/13       19/17/13       19         FLUID DEGRADATION       method       limit/base       current       history1       H		ESS		limit/base		history1	history2
Particles >14µm       ASTM D7647       >80       62       56       37         Particles >21µm       ASTM D7647       >20       8       15       9         Particles >38µm       ASTM D7647       >4       0       1       0         Particles >38µm       ASTM D7647       >4       0       1       0         Particles >71µm       ASTM D7647       >3       0       0       0         Oil Cleanliness       ISO 4406 (c)       >/17/13       21/19/13       19/17/13       19         FLUID DEGRADATION       method       limit/base       current       history1       H							4666
Particles >21µm         ASTM D7647         >20         8         15         9           Particles >38µm         ASTM D7647         >4         0         1         0           Particles >38µm         ASTM D7647         >4         0         1         0           Particles >71µm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/13         21/19/13         19/17/13         19           FLUID DEGRADATION         method         limit/base         current         history1         H							- 1511
Particles >38μm         ASTM D7647         >4         0         1         0           Particles >71μm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/13         21/19/13         19/17/13         19           FLUID DEGRADATION         method         limit/base         current         history1         H							37
Particles >71μm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/13         ▲ 21/19/13         19/17/13         19           FLUID DEGRADATION         method         limit/base         current         history1         H							
Oil Cleanliness         ISO 4406 (c)         >/17/13         21/19/13         19/17/13         19           FLUID DEGRADATION         method         limit/base         current         history1         H							
FLUID DEGRADATION method limit/base current history1 H	-						
			ISO 4406 (c)	>/17/13	<b>21/19/13</b>	19/17/13	9/18/12
Acid Number (AN) mg KOH/g ASTM D8045 1.0 0.46 0.39 0.1	FLUID DEGRADA	TION	method	limit/base		history1	history2
	Acid Number (AN)	mg KOH/g	ASTM D8045	1.0	0.46	0.39	0.38

limit/base

Contact/Location: Service Manager - AAOLON Page 1 of 2

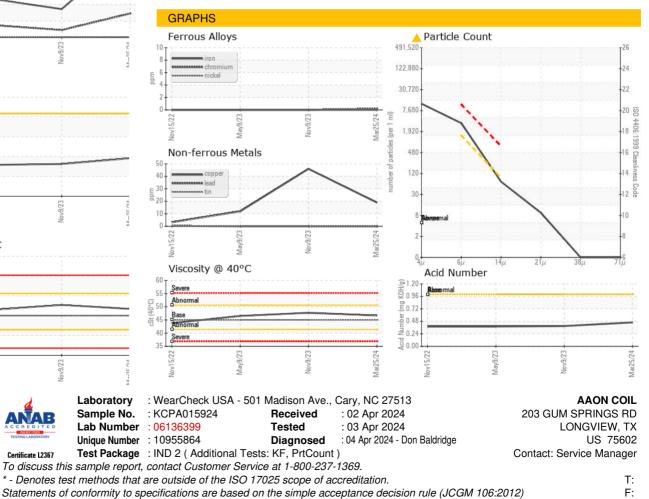


# **OIL ANALYSIS REPORT**



VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	LIGHT
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	LIGHT
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.05	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	45	46.7	47.7	46.5
SAMPLE IMAGES	6	method	limit/base	current	history1	history2
Color						

Bottom



Contact/Location: Service Manager - AAOLON Page 2 of 2