

## **OIL ANALYSIS REPORT**

#### Sample Rating Trend



## <sup>Machine Id</sup> 7071044 (S/N 1007) Component

## Compressor Fluid

KAESER SIGMA (OEM) S-460 (--- GAL)

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

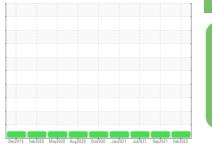
All component wear rates are normal.

#### Contamination

The amount and size of particulates present in the system are acceptable.

### Fluid Condition

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

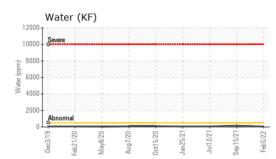


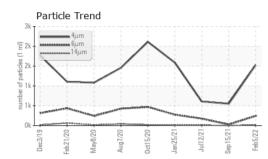


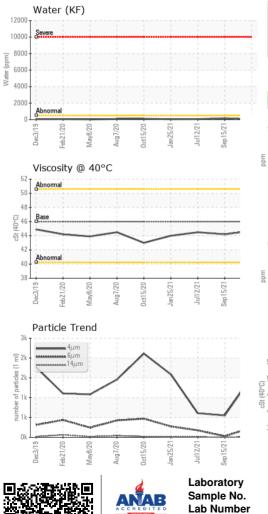
Sample Number         Client Info         KC93451         KC92958         KC98243           Sample Date         Client Info         05 Feb 2022         15 Sep 2021         12 Jul 2021           Machine Age         hrs         Client Info         21430         18048         16494           Oil Age         hrs         Client Info         5000         1554         8106           Oil Age         Client Info         Not Changd         Not Changd         NORMAL         NORMAL           WEAR METALS         method         limit/base         current         history1         history1           Iron         ppm         ASTM 05185m         >10         0         0         0           Nickel         ppm         ASTM 05185m         >20         <1         0         0           Silver         ppm         ASTM 05185m         >20         <1         0         0           Gadmium         ppm         ASTM 05185m         >10         <1         0         0           Gadmium         ppm         ASTM 05185m         >10         <1         0         0           Gadmium         ppm         ASTM 05185m         0         <1         0         0	SAMPLE INFORM	/IAT <u>ION</u>	method	limit/base	current	history1	history2
Sample Date         Client Info         D5 Feb 2022         15 Sep 2021         12 Jul 2021           Machine Age         hrs         Client Info         21430         18048         16494           Oil Age         hrs         Client Info         2000         1554         8106           Oil Changed         Client Info         Not Changd         NoRMAL         NORMAL         NORMAL           WEAR METALS         method         limitbase         current         history1         history2           Iron         ppm         ASTM 05185n         >30         0         0         0           Nickel         ppm         ASTM 05185n         >3         0         0         0           Silver         ppm         ASTM 05185n         >10         <1         <1         0           Lead         ppm         ASTM 05185n         >10         <1         0         0           Antimomy         ppm         ASTM 05185n         0         0         0         0           Antimomy         ppm         ASTM 05185n         0         0         0         0           Antimomy         ppm         ASTM 05185n         0         0         0         0      <							
Machine Age Oil Age Oil Age Agm estatus         hrs Client Info         21430         18048         16494           Oil Age Sample Status         Client Info         S000         1554         8106           Oil Age Sample Status         Client Info         Not Changed         Changed         Changed           Sample Status         nethod         limit/base         current         history1         history2           Iron         ppm         ASTM 05185m         >50         <1         0         <1           Nickel         ppm         ASTM 05185m         >3         0         0         <1           Silver         ppm         ASTM 05185m         >3         0         0         0           Capper         ppm         ASTM 05185m         >10         <1         0         0           Vanadium         ppm         ASTM 05185m         0         0         0         0           Adminum         ppm         ASTM 05185m         0         0         0         0           Vanadium         ppm         ASTM 05185m         0         <11         0           Somon         ppm         ASTM 05185m         0         <11         0           Astm 05185m							
Oil Age         hrs         Client Info         5000         1554         8106           Oil Changed         Client Info         Not Changd         Not Changd         Changed           Sample Status         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         <1         0         <1           Chromium         ppm         ASTM D5185m         >50         <1         0         0           Nickel         ppm         ASTM D5185m         >20         0         <1         0           Auminum         ppm         ASTM D5185m         >10         0         0         0           Auminum         ppm         ASTM D5185m         >10         <1         0         0           Auminum         ppm         ASTM D5185m         >10         0         0         0           Auminum         ppm         ASTM D5185m         >10         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0		hrs					
Oil Changed Sample Status         Client Info         Not Changd NORMAL         Not Changed NORMAL         Changed NORMAL         Changed NORMAL           WEAR METALS         method         Imit/base         current         history1         history2           Iron         ppm         ASTM D5185n         >50         <1         0         <1           Chromium         ppm         ASTM D5185n         >30         0         0         0           Nickel         ppm         ASTM D5185n         >30         0         0         <1           Silver         ppm         ASTM D5185n         >10         <1         <1         0           Lead         ppm         ASTM D5185n         >10         <1         0         0           Antimony         ppm         ASTM D5185n         >10         <1         0         0           Vanadium         ppm         ASTM D5185n         >10         <1         0         0           Antimony         ppm         ASTM D5185n         0         0         0         0           Antimony         ppm         ASTM D5185n         0         0         0         0           Antimony         ppm         ASTM D5185n	-						
Sample Status         method         Imit/base         current         NoRMAL         NORMAL           WEAR METALS         method         Imit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         <1         0         <1           Chromium         ppm         ASTM D5185m         >3         0         0         0           Nickel         ppm         ASTM D5185m         >3         0         0         <1           Silver         ppm         ASTM D5185m         >10         <1         <1         0           Lead         ppm         ASTM D5185m         >10         <1         <1         0         0           Copper         ppm         ASTM D5185m         >10         <1         0         0         0           Vanadium         ppm         ASTM D5185m         0         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           Astm D5185m         0         0         <1         0         0         0           Astm D5185m         0         0         <1	-	1110					
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM 05185m         >50         <1         0         <1           Chromium         ppm         ASTM 05185m         >50         <1         0         0           Nickel         ppm         ASTM 05185m         >20         0         <1         0           Aluminum         ppm         ASTM 05185m         >20         0         <1         0           Lead         ppm         ASTM 05185m         >10         C1         <1         0           Lead         ppm         ASTM 05185m         >10         C1         0         0           Antimony         ppm         ASTM 05185m         >10         C1         0         0           Antimony         ppm         ASTM 05185m         0         0         0         0           Vanadium         ppm         ASTM 05185m         0         0         0         0           Boron         ppm         ASTM 05185m         0         0         0         0           Molybdenum         ppm         ASTM 05185m         0         0         2	-				-		0
Iron         ppm         ASTM D5185m         >50         <1	· ·			11 11 /1			
Chromium         ppm         ASTM D5185m         >10         0         0         0           Nickel         ppm         ASTM D5185m         >3         0         0         <1           Silver         ppm         ASTM D5185m         >2         0         <1         0           Aluminum         ppm         ASTM D5185m         >10         <1         <1         0           Lead         ppm         ASTM D5185m         >10         0         0         0           Copper         ppm         ASTM D5185m         >10         0         0         0           Antimony         ppm         ASTM D5185m         >10         <1         0         0         0           Antimony         ppm         ASTM D5185m         0         0         0         0         0           Antimony         ppm         ASTM D5185m         0         <11         0         0           Antimony         ppm         ASTM D5185m         0         <11         0         0           Barium         ppm         ASTM D5185m         0         <11         0         0           Magnaseium         ppm         ASTM D5185m         0							
Nickel         ppm         ASTM D5185m         >3         0         0	-	ppm					
Titanium         ppm         ASTM D5185m         >3         0         0         <1		ppm			-		
Silver         ppm         ASTM D5185m         >2         0         <1	Nickel	ppm		>3	-		
Aluminum         ppm         ASTM D5185m         >10         <1	Titanium	ppm	ASTM D5185m	>3	0	0	<1
Lead         ppm         ASTM D5185m         >10         0         0         0           Copper         ppm         ASTM D5185m         >50         4         5         10           Tin         ppm         ASTM D5185m         >10         <1         0         0           Antimony         ppm         ASTM D5185m         0         0         0         0           Cadmium         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         0         0         0         0           Magaese         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         0         0         0         0           Calcium         ppm         ASTM D5185m         2         0         0         0           Zinc         ppm         ASTM D5185m         2         0         1         <1	Silver	ppm	ASTM D5185m	>2	0	<1	
Copper         ppm         ASTM D5185m         >50         4         5         10           Tin         ppm         ASTM D5185m         >10         <1	Aluminum	ppm	ASTM D5185m	>10	<1	<1	0
Tin         ppm         ASTM D5185m         >10         <1	Lead	ppm	ASTM D5185m	>10	0	0	0
Antimony         ppm         ASTM D5185m         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         90         0         0         0           Barium         ppm         ASTM D5185m         90         0         0         0           Magaesee         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         0         0         0         0           Calcium         ppm         ASTM D5185m         0         0         0         0           Phosphorus         ppm         ASTM D5185m         2         0         0         0           Silicon         ppm         ASTM D5185m         2         4         1         2           Sodium         ppm         ASTM D5185m         >25         4         1         2           Sodium         pp	Copper	ppm	ASTM D5185m	>50	4	5	10
Vanadium         ppm         ASTM D5185m         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         <1	Tin	ppm	ASTM D5185m	>10	<1	0	0
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1         0           Barium         ppm         ASTM D5185m         90         0         0         0           Molybdenum         ppm         ASTM D5185m         90         0         <1         0           Magnese         ppm         ASTM D5185m         90         0         5         <1           Calcium         ppm         ASTM D5185m         90         0         0         0           Phosphorus         ppm         ASTM D5185m         90         0         2         1           Zinc         ppm         ASTM D5185m         2         0         0         2           Sodium         ppm         ASTM D5185m         25         4         1         2           Sodium         ppm         ASTM D5185m         >20         0         <1         <1           Vater         %         ASTM D6304         >0.05         0.0004         0.016         0.0006	Antimony	ppm	ASTM D5185m		0	0	0
ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1         0           Barium         ppm         ASTM D5185m         0         0         0           Malgnese         ppm         ASTM D5185m         0         0         0           Magnesium         ppm         ASTM D5185m         0         <1         0           Magnesium         ppm         ASTM D5185m         0         <1         0           Phosphorus         ppm         ASTM D5185m         0         0         0           Phosphorus         ppm         ASTM D5185m         4         0         2           Zinc         ppm         ASTM D5185m         7         29         0           CONTAMINANTS         method         limit/base         current         history1         history2           Sodium         ppm         ASTM D5185m         >25         4         1         2           Sodium         ppm         ASTM D5185m         >20         0         <1         <1           Potassium         ppm         ASTM D6304         >0.05         0.0004 <th>Vanadium</th> <th>ppm</th> <th>ASTM D5185m</th> <th></th> <th>0</th> <th>0</th> <th>0</th>	Vanadium	ppm	ASTM D5185m		0	0	0
Boron         ppm         ASTM D5185m         0         <1         0           Barium         ppm         ASTM D5185m         90         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Magnese         ppm         ASTM D5185m         0         0         5         <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         90         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Manganese         ppm         ASTM D5185m         90         0         5         <1           Calcium         ppm         ASTM D5185m         90         0         0         0           Phosphorus         ppm         ASTM D5185m         2         0         0         0           Phosphorus         ppm         ASTM D5185m         2         0         0         2           Zinc         ppm         ASTM D5185m         7         29         0         0           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         0         <1         <1           Potassium         ppm         ASTM D5185m         >20         0         <1         <1           Vater         %         ASTM D6304         >0.05         0.004         0.016         0.006           ppm         ASTM D7647         1527         551	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         0         0         0           Manganese         ppm         ASTM D5185m         90         0         5         <1	Boron	ppm	ASTM D5185m		0	<1	0
Marganese         ppm         ASTM D5185m         0         <1         0           Magnesium         ppm         ASTM D5185m         90         0         5         <1	Barium	ppm	ASTM D5185m	90	0	0	0
Manganese         ppm         ASTM D5185m         0         <1	Molybdenum	ppm	ASTM D5185m		0	0	0
Calcium         ppm         ASTM D5185m         2         0         0         0           Phosphorus         ppm         ASTM D5185m         4         0         2           Zinc         ppm         ASTM D5185m         4         0         2           Zinc         ppm         ASTM D5185m         7         29         0           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         1         2           Sodium         ppm         ASTM D5185m         >20         0         <1         <1           Potassium         ppm         ASTM D5185m         >20         0         <1         <1           Water         %         ASTM D5185m         >20         0         <1         <1           Water         %         ASTM D5185m         >20         0         <1         <1           Water         ppm         ASTM D5185m         >20         0         0.016         0.006           ppm Water         ppm         ASTM D7647         1527         551         606           Particles >4µm	Manganese	ppm	ASTM D5185m		0	<1	0
Phosphorus         ppm         ASTM D5185m         4         0         2           Zinc         ppm         ASTM D5185m         7         29         0           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         1         2           Sodium         ppm         ASTM D5185m         >20         0         <1	Magnesium	ppm	ASTM D5185m	90	0	5	<1
Phosphorus         ppm         ASTM D5185m         4         0         2           Zinc         ppm         ASTM D5185m         7         29         0           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         1         2           Sodium         ppm         ASTM D5185m         >25         4         1         2           Sodium         ppm         ASTM D5185m         >20         0         <1	Calcium	ppm	ASTM D5185m	2	0	0	0
Zinc         ppm         ASTM D5185m         7         29         0           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         1         2           Sodium         ppm         ASTM D5185m         >25         4         1         2           Sodium         ppm         ASTM D5185m         >20         0         <1         <1           Potassium         ppm         ASTM D5185m         >20         0         <1         <1           Water         %         ASTM D6304         >0.05         0.004         0.016         0.006           ppm Water         ppm         ASTM D6304         >500         45.9         164.4         61.2           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4µm         ASTM D7647         1300         243         28         175           Particles >1µm         ASTM D7647         >20         5         0         3           Particles >21µm         ASTM D7647         >3         0         0         0	Phosphorus		ASTM D5185m		4	0	2
Silicon         ppm         ASTM D5185m         >25         4         1         2           Sodium         ppm         ASTM D5185m         >20         0         1         <1           Potassium         ppm         ASTM D5185m         >20         0         <1         <1           Water         %         ASTM D6304         >0.05         0.004         0.016         0.006           ppm Water         ppm         ASTM D6304         >500         45.9         164.4         61.2           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4µm         ASTM D7647         >1300         243         28         175           Particles >6µm         ASTM D7647         >80         15         1         11           Particles >14µm         ASTM D7647         >80         15         0         3           Particles >21µm         ASTM D7647         >20         5         0         3           Particles >38µm         ASTM D7647         >3         0         0         0           Particles >71µm         ASTM D7647         >3         0         0         0           O			ASTM D5185m		7	29	
Silicon         ppm         ASTM D5185m         >25         4         1         2           Sodium         ppm         ASTM D5185m         >20         0         1         <1           Potassium         ppm         ASTM D5185m         >20         0         <1         <1           Water         %         ASTM D6304         >0.05         0.004         0.016         0.006           ppm Water         ppm         ASTM D6304         >500         45.9         164.4         61.2           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4µm         ASTM D7647         >1300         243         28         175           Particles >6µm         ASTM D7647         >80         15         1         11           Particles >14µm         ASTM D7647         >80         15         0         3           Particles >21µm         ASTM D7647         >20         5         0         3           Particles >38µm         ASTM D7647         >3         0         0         0           Particles >71µm         ASTM D7647         >3         0         0         0           O	CONTAMINANTS		method	limit/base	current	history1	history2
Sodium         ppm         ASTM D5185m         0         1         <1           Potassium         ppm         ASTM D5185m         >20         0         <1	Silicon	nom	ASTM D5185m	>25	4		2
Potassium         ppm         ASTM D5185m         >20         0         <1					0		
Water         %         ASTM D6304         >0.05         0.004         0.016         0.006           ppm Water         ppm         ASTM D6304         >500         45.9         164.4         61.2           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4µm         ASTM D7647         1527         551         606           Particles >6µm         ASTM D7647         >1300         243         28         175           Particles >14µm         ASTM D7647         >80         15         1         11           Particles >21µm         ASTM D7647         >20         5         0         3           Particles >38µm         ASTM D7647         >4         1         0         0           Particles >71µm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/13         15/11         12/7         15/11           FLUID DEGRADATION         method         limit/base         current         history1         history2				>20	-	<1	
ppm Water         ppm         ASTM D6304         >500         45.9         164.4         61.2           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4µm         ASTM D7647         1527         551         606           Particles >6µm         ASTM D7647         >1300         243         28         175           Particles >14µm         ASTM D7647         >80         15         1         11           Particles >21µm         ASTM D7647         >20         5         0         3           Particles >21µm         ASTM D7647         >4         1         0         0           Particles >38µm         ASTM D7647         >3         0         0         0           Particles >71µm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)        /17/13         15/11         12/7         15/11           FLUID DEGRADATION         method         limit/base         current         history1         history2					-		
Particles >4μm         ASTM D7647         1527         551         606           Particles >6μm         ASTM D7647         >1300         243         28         175           Particles >14μm         ASTM D7647         >80         15         1         11           Particles >21μm         ASTM D7647         >20         5         0         3           Particles >21μm         ASTM D7647         >20         5         0         3           Particles >21μm         ASTM D7647         >4         1         0         0           Particles >38μm         ASTM D7647         >4         1         0         0           Particles >71μm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/13         15/11         12/7         15/11           FLUID DEGRADATION         method         limit/base         current         history1         history2							
Particles >6µm         ASTM D7647         >1300         243         28         175           Particles >14µm         ASTM D7647         >80         15         1         11           Particles >21µm         ASTM D7647         >20         5         0         3           Particles >38µm         ASTM D7647         >4         1         0         0           Particles >38µm         ASTM D7647         >4         1         0         0           Particles >71µm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/13         15/11         12/7         15/11           FLUID DEGRADATION         method         limit/base         current         history1         history2	FLUID CLEANLIN	IESS	method	limit/base	current	history1	history2
Particles >6µm         ASTM D7647         >1300         243         28         175           Particles >14µm         ASTM D7647         >80         15         1         11           Particles >21µm         ASTM D7647         >20         5         0         3           Particles >38µm         ASTM D7647         >4         1         0         0           Particles >38µm         ASTM D7647         >4         1         0         0           Particles >71µm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/13         15/11         12/7         15/11           FLUID DEGRADATION         method         limit/base         current         history1         history2	Particles >4µm		ASTM D7647		1527	551	606
Particles >14µm         ASTM D7647         >80         15         1         11           Particles >21µm         ASTM D7647         >20         5         0         3           Particles >38µm         ASTM D7647         >4         1         0         0           Particles >38µm         ASTM D7647         >4         1         0         0           Particles >71µm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/13         15/11         12/7         15/11           FLUID DEGRADATION         method         limit/base         current         history1         history2				>1300			
Particles >21µm         ASTM D7647         >20         5         0         3           Particles >38µm         ASTM D7647         >4         1         0         0           Particles >38µm         ASTM D7647         >4         1         0         0           Particles >71µm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/13         15/11         12/7         15/11           FLUID DEGRADATION         method         limit/base         current         history1         history2							
Particles >38μm         ASTM D7647         >4         1         0         0           Particles >71μm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/13         15/11         12/7         15/11           FLUID DEGRADATION         method         limit/base         current         history1         history2	•						
Particles >71μm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/13         15/11         12/7         15/11           FLUID DEGRADATION         method         limit/base         current         history1         history2							
Oil CleanlinessISO 4406 (c) >/17/1315/1112/715/11FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2							
	FLUID DEGRADA		method	limit/base	current	history1	history2
	Acid Number (AN)	mg KOH/g			0.64	0.389	0.606



# **OIL ANALYSIS REPORT**

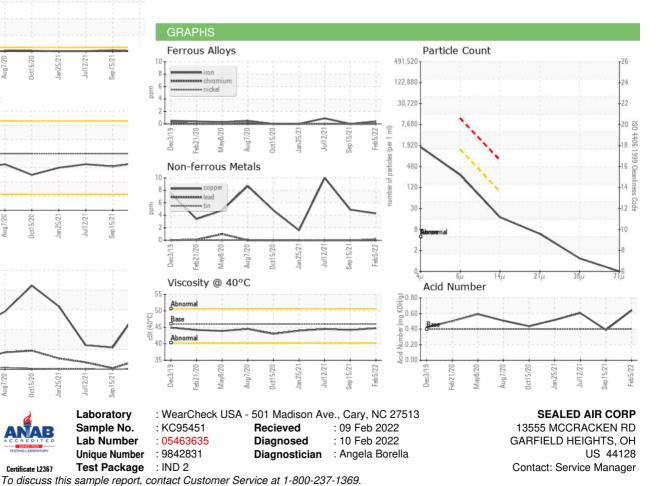






VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	LIGHT	NONE	LIGHT
Sand/Dirt	scalar	*Visual	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	46	44.7	44.2	44.5
SAMPLE IMAGES	S	method	limit/base	current	history1	history2
Color						





\* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

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

Certificate L2367

Contact/Location: Service Manager - AUTGAROH