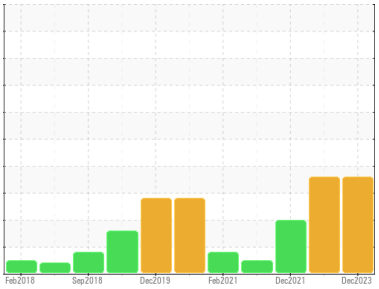
PROBLEM SUMMARY

Sample Rating Trend

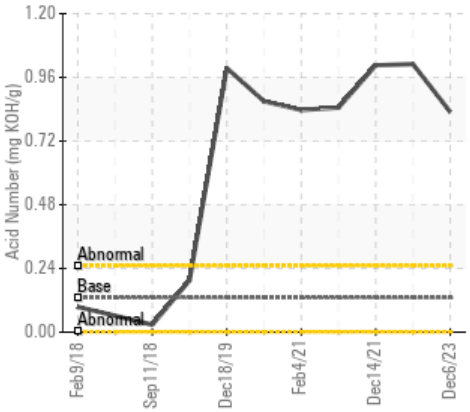


DEGRADATION

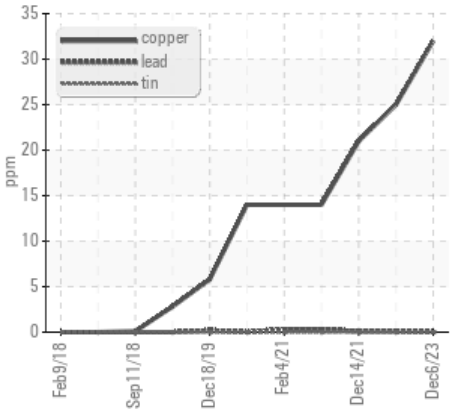
Area
COOLING TOWER
Machine Id
Motor - MIDDLE COOLING TOWER PUMP (S/N P612M)
Component
Bearing
Fluid
TURBINE OIL ISO 32 (6 QTS)

COMPONENT CONDITION SUMMARY

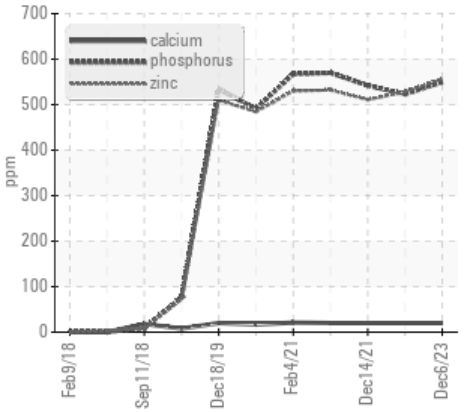
Acid Number



Non-ferrous Metals



Additives



RECOMMENDATION

Oil profile does not match the reference oil on file. Please provide a reference oil sample for the lab to test against. No other action required at this time. Resample at next normal interval.

PROBLEMATIC TEST RESULTS

Sample Status				**ABNORMAL**	ABNORMAL	ABNORMAL
Copper	ppm	ASTM D5185m	>20	▲ **32**	▲ 25	▲ 21
Molybdenum	ppm	ASTM D5185m	5	▲ **235**	▲ 239	240
Phosphorus	ppm	ASTM D5185m	275	▲ **549**	▲ 523	542
Zinc	ppm	ASTM D5185m	7	▲ **556**	▲ 528	511
Sulfur	ppm	ASTM D5185m	400	▲ **1798**	▲ 1899	1621
Acid Number (AN)	mg KOH/g	ASTM D8045	0.13	▲ **0.83**	▲ 1.01	▲ 1.005

Customer Id: HEXDIB
Sample No.: PLS0000652
Lab Number: 06028593
Test Package: IND 2

To manage this report scan the QR code

To discuss the diagnosis or test data:
Mike Johnson +1 (615)771-6030
mike.johnson@amrri.com

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

RECOMMENDED ACTIONS

There are no recommended actions for this sample.

HISTORICAL DIAGNOSIS

20 Dec 2022 Diag: Mike Johnson

DEGRADATION

Oil profile does not match the reference oil on file. Please provide a reference oil sample for the lab to test against. No other action required at this time. Resample at next normal interval.Copper wear particles are steadily rising. Investigate possible sources of copper wear. Contamination is low and acceptable. Fluid health indicators are steady when compared with previous samples, but can be verified with a reference sample on file.

view report

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14 Dec 2021 Diag: Mike Johnson

DEGRADATION

Confirm that reference oil is correct. The additive profile does not match the oil on file, but are consistent with previous samples. Resample at next normal interval and indicate exact oil used on label. Investigate possible copper sources for wear.Copper levels are indicating a slight increase from previous samples. Other wear indicators are low and acceptable. Particle contamination is low and acceptable. Fluid additives are not consistent with reference oil on file. Additives are consistent with previous sampling. Acid number is marginally increased from previous sample.

view report

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05 Feb 2021 Diag: Mike Johnson

NORMAL

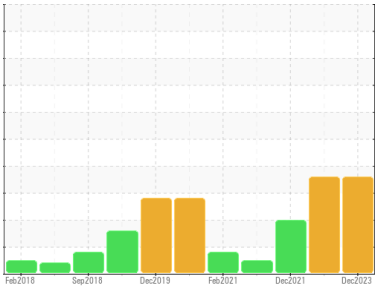
No further action required. This was the second sample pulled on the pump. The only notable difference is the Particle Count, which is substantially lower than the other sample.

Wear debris was collected for photographs from the sample containing the higher particle count.No change in status. No change in status. No change in status.

view report

OIL ANALYSIS REPORT

Sample Rating Trend



DEGRADATION

Area
COOLING TOWER
Machine Id
Motor - MIDDLE COOLING TOWER PUMP (S/N P612M)
Component
Bearing
Fluid
TURBINE OIL ISO 32 (6 QTS)

DIAGNOSIS

Recommendation
Oil profile does not match the reference oil on file. Please provide a reference oil sample for the lab to test against. No other action required at this time. Resample at next normal interval.

Wear
Copper wear particles are steadily rising. Investigate possible sources of copper wear.

Contamination
Contamination is low and acceptable.

Fluid Condition
Fluid health indicators are steady when compared with previous samples, but can be verified with a reference sample on file.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**PLS0000652**	PLS0000425	PLS0000234
Sample Date		Client Info		**06 Dec 2023**	20 Dec 2022	14 Dec 2021
Machine Age	yrs	Client Info		**0**	9	8
Oil Age	yrs	Client Info		**0**	5	4
Oil Changed		Client Info		**N/A**	N/A	N/A
Sample Status				**ABNORMAL**	ABNORMAL	ABNORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Water		WC Method	>2	**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184		**16**	11	17
Iron	ppm	ASTM D5185m	>20	**0**	3	2
Chromium	ppm	ASTM D5185m	>20	**0**	0	0
Nickel	ppm	ASTM D5185m	>20	**0**	0	0
Titanium	ppm	ASTM D5185m		**0**	0	0
Silver	ppm	ASTM D5185m		**0**	0	0
Aluminum	ppm	ASTM D5185m	>20	**2**	0	0
Lead	ppm	ASTM D5185m	>20	**0**	<1	<1
Copper	ppm	ASTM D5185m	>20	▲ **32**	▲ 25	▲ 21
Tin	ppm	ASTM D5185m	>20	**0**	0	0
Antimony	ppm	ASTM D5185m		**---**	---	0
Vanadium	ppm	ASTM D5185m		**0**	0	0
Cadmium	ppm	ASTM D5185m		**0**	0	0

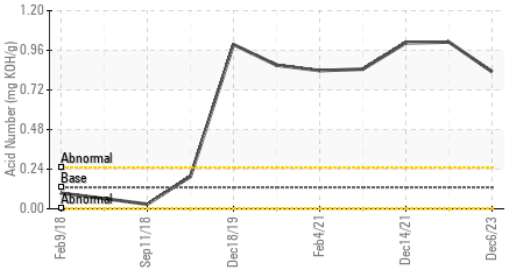
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	5	**6**	0	2
Barium	ppm	ASTM D5185m	5	**0**	0	0
Molybdenum	ppm	ASTM D5185m	5	▲ **235**	▲ 239	240
Manganese	ppm	ASTM D5185m		**<1**	<1	<1
Magnesium	ppm	ASTM D5185m	5	**<1**	<1	0
Calcium	ppm	ASTM D5185m	10	**20**	20	20
Phosphorus	ppm	ASTM D5185m	275	▲ **549**	▲ 523	542
Zinc	ppm	ASTM D5185m	7	▲ **556**	▲ 528	511
Sulfur	ppm	ASTM D5185m	400	▲ **1798**	▲ 1899	1621

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>15	**11**	9	7
Sodium	ppm	ASTM D5185m		**4**	<1	3
Potassium	ppm	ASTM D5185m	>20	**<1**	1	0

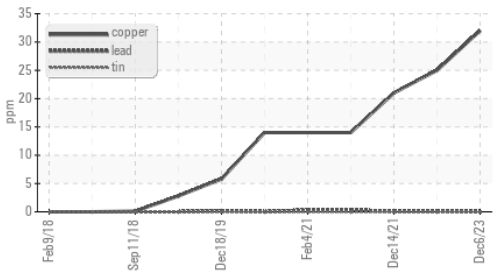
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844		**0**	0	0
Nitration	Abs/cm	*ASTM D7624		**2.0**	2.3	2.2
Sulfation	Abs/.1mm	*ASTM D7415		**11.1**	11.1	11.4

OIL ANALYSIS REPORT

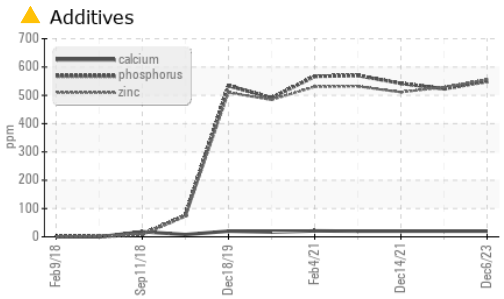
Acid Number



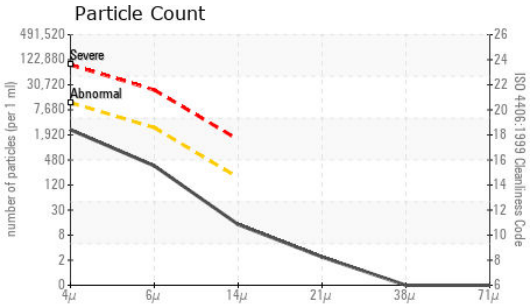
Non-ferrous Metals



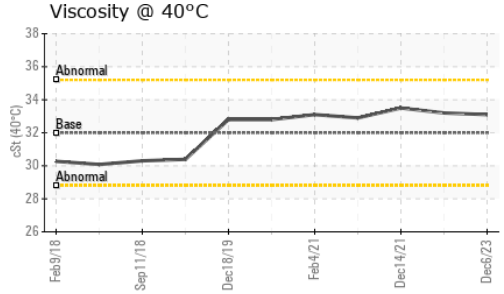
Additives



Particle Count



Viscosity @ 40°C

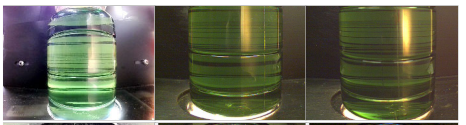
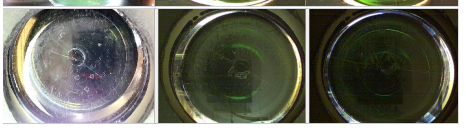


FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>10000	**2234**	2534	1274
Particles >6µm		ASTM D7647	>2500	**305**	196	153
Particles >14µm		ASTM D7647	>160	**12**	7	9
Particles >21µm		ASTM D7647	>40	**2**	1	0
Particles >38µm		ASTM D7647	>10	**0**	0	0
Particles >71µm		ASTM D7647	>3	**0**	0	0
Oil Cleanliness		ISO 4406 (c)	>20/18/14	**18/15/11**	19/15/10	17/14/10

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414		**2.3**	2.3	2.2
Acid Number (AN)	mg KOH/g	ASTM D8045	0.13	▲ **0.83**	▲ 1.01	▲ 1.005

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	**NONE**	NONE	NONE
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	>2	**NEG**	NEG	NEG
Free Water	scalar	*Visual		**NEG**	NEG	NEG

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	32	**33.1**	33.2	33.5

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					

Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PLS0000652 **Recieved** : 07 Dec 2023
Lab Number : 06028593 **Diagnosed** : 15 Dec 2023
Unique Number : 10778384 **Diagnostician** : Mike Johnson
Test Package : IND 2 (Additional Tests: FT-IR, PQ, 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.*
Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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