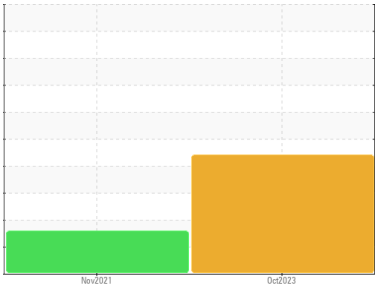
PROBLEM SUMMARY

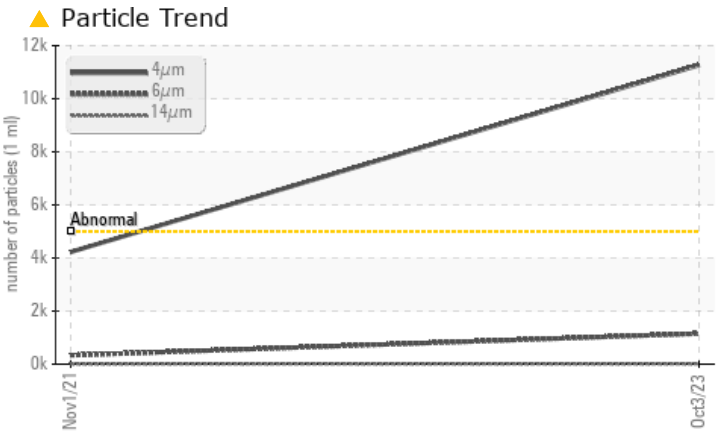
Sample Rating Trend



WATER

Area
[73957]
Machine Id
TINHBASCHPU
Component
Hydraulic System
Fluid
ESSO UNIVIS N 22 (1680 LTR)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

We advise that you check for the source of water entry. Check seals and/or filters for points of contaminant entry. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We advise that you follow the water drain-off procedure for this component. The filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using IND 3 test kits, this testkit includes Analytical Ferrography which provides a detailed morphological analysis of wear particles present in the fluid.

PROBLEMATIC TEST RESULTS

Sample Status				**ABNORMAL**	ABNORMAL	---
Particles >4µm		ASTM D7647	>5000	▲ **11268**	4226	---
Oil Cleanliness		ISO 4406 (c)	>19/17/14	▲ **21/17/10**	19/16/10	---
Precipitate	scalar	Visual*	NONE	▲ **LIGHT**	NONE	---
Appearance	scalar	Visual*	NORML	▲ **HAZY**	NORML	---
Free Water	scalar	Visual*		▲ **1%**	NEG	---

Customer Id: ALGMIS
Sample No.: WC0862798
Lab Number: 02587616
Test Package: IND 2

To manage this report scan the QR code

To discuss the diagnosis or test data:
Kevin Marson +1 (289)291-4644 x4644
Kevin.Marson@wearcheck.com

To change component or sample information:
Gloria Gonzalez +1 (289)291-4643 x4643
gloria.gonzalez@wearcheck.com

RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Water Drain-off	---	---	?	We advise that you follow the water drain-off procedure for this component.
Resample	---	---	?	We recommend an early resample to monitor this condition.
Contact Required	---	---	?	Please contact your representative for information regarding the proper sampling kits for your service.
Alert	---	---	?	NOTE: We recommend using IND 3 test kits,
Check Breathers	---	---	?	The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather.
Check Water Access	---	---	?	We advise that you check for the source of water entry.
Check Seals	---	---	?	Check seals and/or filters for points of contaminant entry.

HISTORICAL DIAGNOSIS

WATER

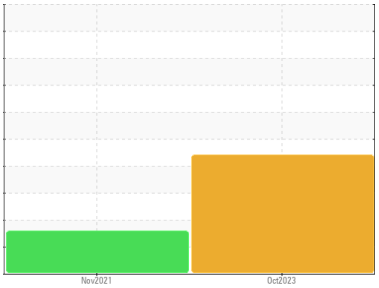
01 Nov 2021 Diag: Kevin Marson

We advise that you check for the source of water entry. Check seals and/or filters for points of contaminant entry. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We advise that you use off-line filtration with water adsorbent filters to attempt to remove the water from this oil. We recommend an early resample to monitor this condition.All component wear rates are normal. There is a moderate concentration of water present in the oil. The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

view report

OIL ANALYSIS REPORT

Sample Rating Trend



WATER

Area
[73957]
Machine Id
TINHBASCHPU
Component
Hydraulic System
Fluid
ESSO UNIVIS N 22 (1680 LTR)

DIAGNOSIS

Recommendation

We advise that you check for the source of water entry. Check seals and/or filters for points of contaminant entry. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We advise that you follow the water drain-off procedure for this component. The filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using IND 3 test kits, this testkit includes Analytical Ferrography which provides a detailed morphological analysis of wear particles present in the fluid.

Wear

All component wear rates are normal.

Contamination

There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. Free water present.

Fluid Condition

The white residue present in the sample is oil additive precipitate. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0862798**	WC0602580	---
Sample Date		Client Info		**03 Oct 2023**	01 Nov 2021	---
Machine Age	mths	Client Info		**0**	0	---
Oil Age	mths	Client Info		**2**	8	---
Oil Changed		Client Info		**Changed**	Not Changd	---
Sample Status				**ABNORMAL**	ABNORMAL	---

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>20	**3**	3	---
Chromium	ppm	ASTM D5185(m)	>20	**0**	0	---
Nickel	ppm	ASTM D5185(m)	>20	**0**	<1	---
Titanium	ppm	ASTM D5185(m)		**0**	0	---
Silver	ppm	ASTM D5185(m)		**<1**	<1	---
Aluminum	ppm	ASTM D5185(m)	>20	**<1**	<1	---
Lead	ppm	ASTM D5185(m)	>20	**<1**	3	---
Copper	ppm	ASTM D5185(m)	>20	**1**	2	---
Tin	ppm	ASTM D5185(m)	>20	**0**	<1	---
Antimony	ppm	ASTM D5185(m)		**0**	0	---
Vanadium	ppm	ASTM D5185(m)		**0**	0	---
Beryllium	ppm	ASTM D5185(m)		**0**	0	---
Cadmium	ppm	ASTM D5185(m)		**0**	<1	---

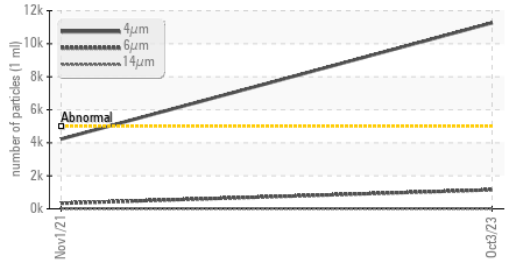
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	.3	**<1**	<1	---
Barium	ppm	ASTM D5185(m)		**<1**	<1	---
Molybdenum	ppm	ASTM D5185(m)	0	**0**	0	---
Manganese	ppm	ASTM D5185(m)		**0**	0	---
Magnesium	ppm	ASTM D5185(m)	0	**0**	<1	---
Calcium	ppm	ASTM D5185(m)	49	**9**	6	---
Phosphorus	ppm	ASTM D5185(m)	192	**311**	302	---
Zinc	ppm	ASTM D5185(m)	237	**393**	374	---
Sulfur	ppm	ASTM D5185(m)		**1952**	1291	---
Lithium	ppm	ASTM D5185(m)		**<1**	<1	---

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>15	**<1**	<1	---
Sodium	ppm	ASTM D5185(m)		**0**	0	---
Potassium	ppm	ASTM D5185(m)	>20	**0**	<1	---
Water	%	ASTM D6304*	>0.05	**0.003**	▲ 0.192	---
ppm Water	ppm	ASTM D6304*	>500	**26.2**	▲ 1927.2	---

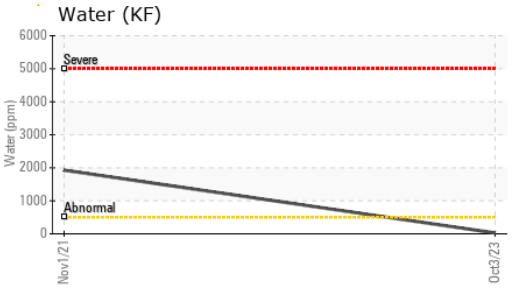
FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>5000	▲ **11268**	4226	---
Particles >6µm		ASTM D7647	>1300	**1150**	333	---
Particles >14µm		ASTM D7647	>160	**10**	7	---
Particles >21µm		ASTM D7647	>40	**2**	0	---
Particles >38µm		ASTM D7647	>10	**0**	0	---
Particles >71µm		ASTM D7647	>3	**0**	0	---
Oil Cleanliness		ISO 4406 (c)	>19/17/14	▲ **21/17/10**	19/16/10	---

OIL ANALYSIS REPORT

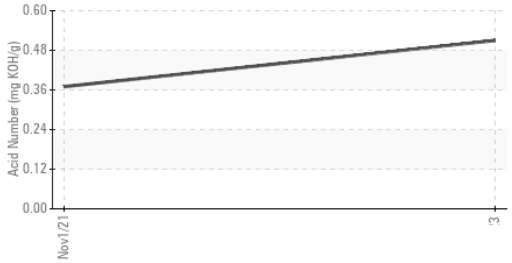
Particle Trend



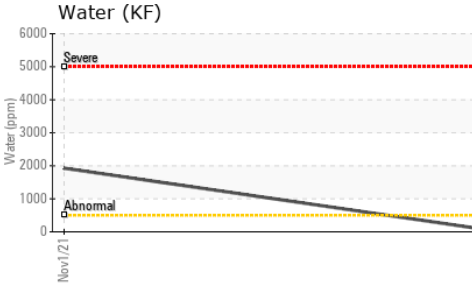
Water (KF)



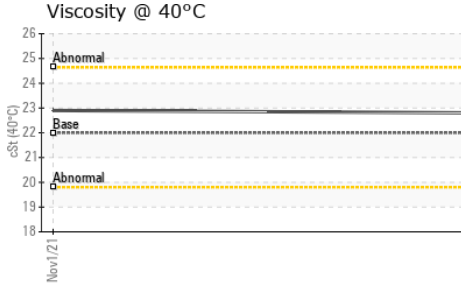
Acid Number



Water (KF)



Viscosity @ 40°C



FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*		**0.51**	0.37	---

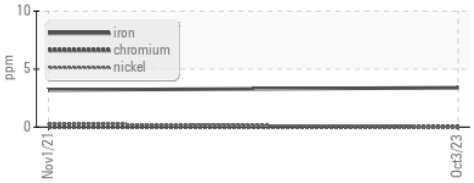
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	**NONE**	NONE	---
Yellow Metal	scalar	Visual*	NONE	**NONE**	NONE	---
Precipitate	scalar	Visual*	NONE	▲ **LIGHT**	NONE	---
Silt	scalar	Visual*	NONE	**NONE**	NONE	---
Debris	scalar	Visual*	NONE	**NONE**	NONE	---
Sand/Dirt	scalar	Visual*	NONE	**NONE**	NONE	---
Appearance	scalar	Visual*	NORML	▲ **HAZY**	NORML	---
Odor	scalar	Visual*	NORML	**NORML**	NORML	---
Emulsified Water	scalar	Visual*	>0.05	**.2%**	▲ .5%	---
Free Water	scalar	Visual*		▲ **1%**	NEG	---

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	22	**22.8**	22.9	---

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					*no image*
Bottom					*no image*

GRAPHS

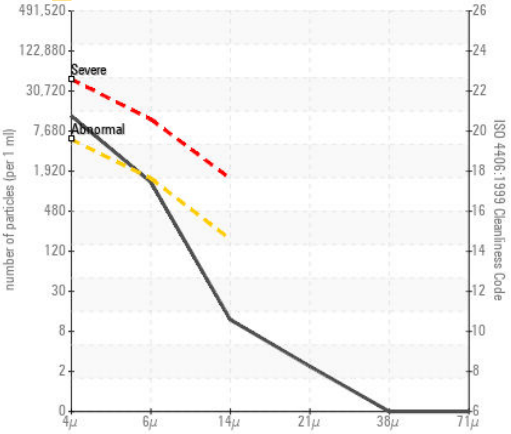
Ferrous Alloys



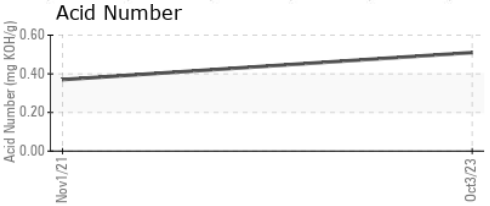
Non-ferrous Metals

Viscosity @ 40°C

Particle Count



Acid Number



ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 **ALGONQUIN POWER SYSTEMS INC.**
Sample No. : WC0862798 **Received** : 06 Oct 2023 354 DAVIS ROAD
Lab Number : 02587616 **Diagnosed** : 10 Oct 2023 OAKVILLE, ON
Unique Number : 5656682 **Diagnostician** : Kevin Marson CA L6J 2X1
Test Package : IND 2 (Additional Tests: Bottom, KF, TAN Man) Contact: Antonino Champ Fernando

To discuss this sample report, contact Customer Service at 1-800-268-2131. antoninoChamp.fernando@algonquinpower.com
Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab. T: (905)465-7065
Validity of results and interpretation are based on the sample and information as supplied. F: x: