



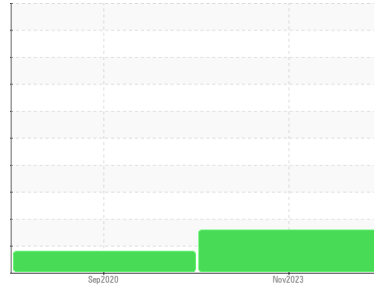
OIL ANALYSIS REPORT

Sample Rating Trend

WATER



Area
GS1
 Machine Id
NORTHERN GS1-T2
 Component
Transformer Oil
 Fluid
MIDEL eN 1204 (4966 LTR)



DIAGNOSIS

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number	Client Info			WC0815867	WC0475700	---
Sample Date	Client Info			30 Nov 2023	04 Sep 2020	---
Machine Age	yrs	Client Info		4	0	---
Oil Age	yrs	Client Info		4	0	---
Oil Changed	Client Info			Not Changed	N/A	---
Sample Status				ABNORMAL	ABNORMAL	---

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184*	>65	0	---	---
Iron	ppm	ASTM D5185(m)	>125	0	---	---
Chromium	ppm	ASTM D5185(m)		0	---	---
Nickel	ppm	ASTM D5185(m)		0	---	---
Titanium	ppm	ASTM D5185(m)		0	---	---
Silver	ppm	ASTM D5185(m)	>2	<1	---	---
Aluminum	ppm	ASTM D5185(m)	>5	0	---	---
Lead	ppm	ASTM D5185(m)	>30	0	---	---
Copper	ppm	ASTM D5185(m)	>10	<1	---	---
Tin	ppm	ASTM D5185(m)	>2	0	---	---
Antimony	ppm	ASTM D5185(m)		0	---	---
Vanadium	ppm	ASTM D5185(m)		0	---	---
Beryllium	ppm	ASTM D5185(m)		0	---	---
Cadmium	ppm	ASTM D5185(m)		0	---	---

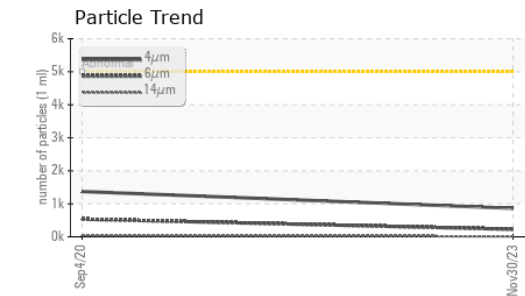
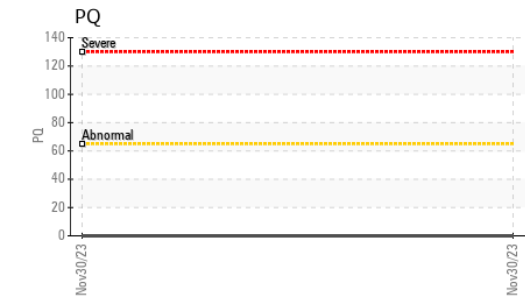
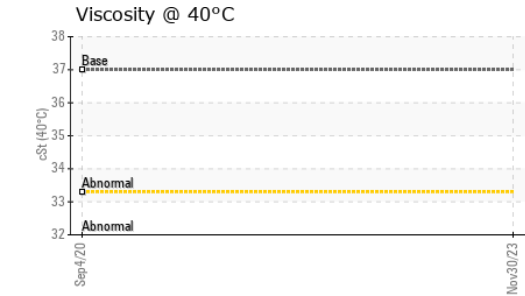
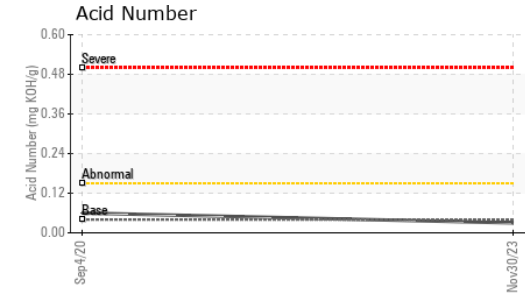
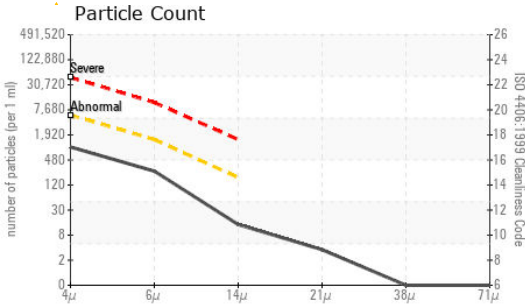
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)		<1	---	---
Barium	ppm	ASTM D5185(m)		<1	---	---
Molybdenum	ppm	ASTM D5185(m)		0	---	---
Manganese	ppm	ASTM D5185(m)		0	---	---
Magnesium	ppm	ASTM D5185(m)		0	---	---
Calcium	ppm	ASTM D5185(m)		0	---	---
Phosphorus	ppm	ASTM D5185(m)		0	---	---
Zinc	ppm	ASTM D5185(m)		<1	---	---
Sulfur	ppm	ASTM D5185(m)		20	---	---
Lithium	ppm	ASTM D5185(m)		<1	---	---

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>25	0	---	---
Sodium	ppm	ASTM D5185(m)		<1	---	---
Potassium	ppm	ASTM D5185(m)	>20	0	---	---
Water	%	ASTM D6304*	>0.0035	▲ 0.023	0.007	---
ppm Water	ppm	ASTM D6304*	>35	▲ 235	0	---

FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>5000	862	1373	---
Particles >6µm		ASTM D7647	>1300	228	535	---
Particles >14µm		ASTM D7647	>160	12	44	---
Particles >21µm		ASTM D7647	>40	3	14	---
Particles >38µm		ASTM D7647	>10	0	1	---
Particles >71µm		ASTM D7647	>3	0	0	---
Oil Cleanliness		ISO 4406 (c)	>19/17/14	17/15/11	18/16/13	---



OIL ANALYSIS REPORT

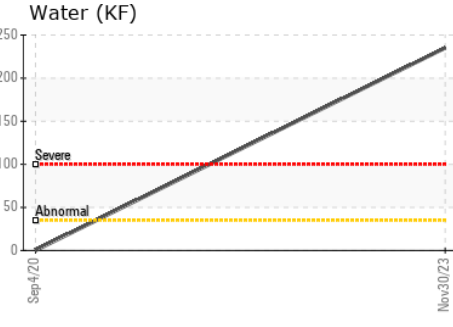
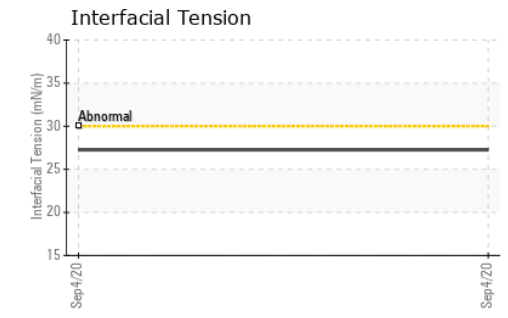
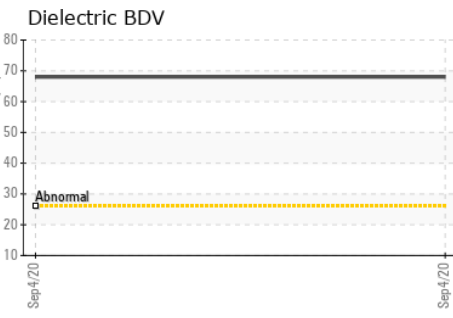


FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	0.04	0.03	0.06	---
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	NONE	NONE	---
Yellow Metal	scalar	Visual*	NONE	NONE	NONE	---
Precipitate	scalar	Visual*	NONE	NONE	NONE	---
Silt	scalar	Visual*	NONE	NONE	NONE	---
Debris	scalar	Visual*	NONE	NONE	NONE	---
Sand/Dirt	scalar	Visual*	NONE	NONE	NONE	---
Appearance	scalar	Visual*	NORML	NORML	NORML	---
Odor	scalar	Visual*	NORML	NORML	NORML	---
Emulsified Water	scalar	Visual*	>0.0035	NEG	---	---
Free Water	scalar	Visual*		NEG	---	---

FLUID PROPERTIES		method	limit/base	current	history1	history2
Specific Gravity		ASTM D4052(e)	0.920	0.918	0.928	---
Visc @ 40°C	cSt	ASTM D7279(m)	37	36.5	---	---

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

GRAPHS



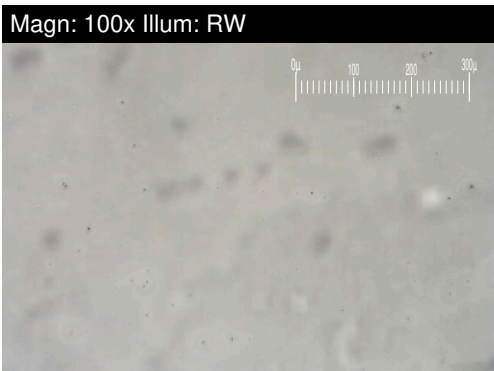
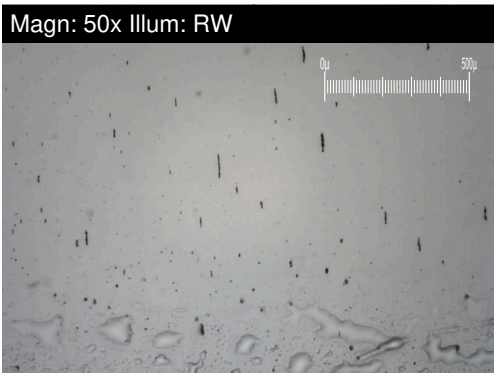
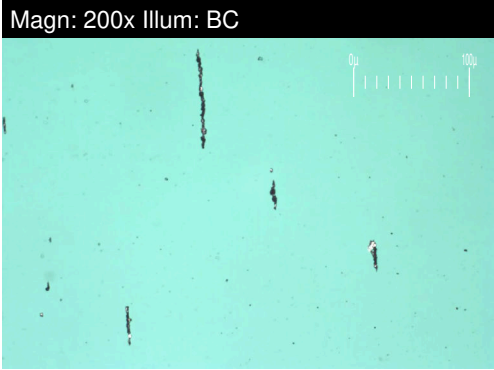
Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 **Chaudiere Hydro LP - Energy Ottawa**
Sample No. : WC0815867 **Received** : 14 Dec 2023 **4 Booth Street**
Lab Number : **02603205** **Diagnosed** : 22 Dec 2023 **Ottawa, ON**
Unique Number : 5696290 **Diagnostician** : Bill Quesnel **CA K1R 6K8**
Test Package : IND 3 (Additional Tests: KF, SPECGRAVITY) **Contact: Cheryl Gharib**
info@portagepower.com

To discuss this sample report, contact Customer Service at 1-800-268-2131.
 Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
 Validity of results and interpretation are based on the sample and information as supplied.

T:
 F: x:

FERROGRAPHY REPORT

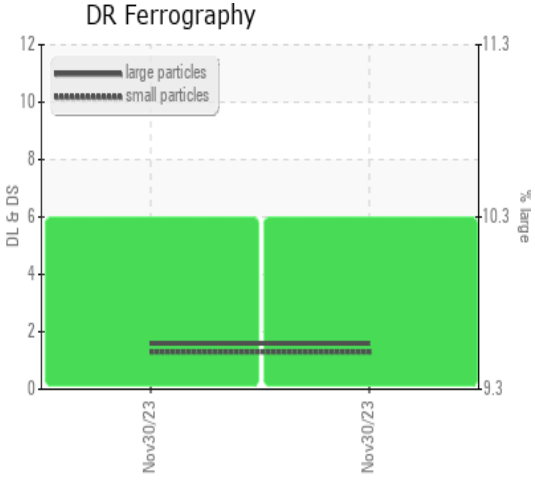
Area
GS1
 Machine Id
NORTHERN GS1-T2
 Component
Transformer Oil
 Fluid
MIDEL eN 1204 (4966 LTR)



DR-FERROGRAPHY		method	limit/base	current	history1	history2
Large Particles		DR-Ferr*		1.6	---	---
Small Particles		DR-Ferr*		1.3	---	---
Total Particles		DR-Ferr*	>---	2.9	---	---
Large Particles Percentage	%	DR-Ferr*		10.3	---	---
Severity Index		DR-Ferr*		0	---	---

FERROGRAPHY		method	limit/base	current	history1	history2
Ferrous Rubbing	Scale 0-10	ASTM D7684*				
Ferrous Sliding	Scale 0-10	ASTM D7684*				
Ferrous Cutting	Scale 0-10	ASTM D7684*				
Ferrous Rolling	Scale 0-10	ASTM D7684*				
Ferrous Break-in	Scale 0-10	ASTM D7684*				
Ferrous Spheres	Scale 0-10	ASTM D7684*				
Ferrous Black Oxides	Scale 0-10	ASTM D7684*				
Ferrous Red Oxides	Scale 0-10	ASTM D7684*				
Ferrous Corrosive	Scale 0-10	ASTM D7684*				
Ferrous Other	Scale 0-10	ASTM D7684*				
Nonferrous Rubbing	Scale 0-10	ASTM D7684*				
Nonferrous Sliding	Scale 0-10	ASTM D7684*				
Nonferrous Cutting	Scale 0-10	ASTM D7684*				
Nonferrous Rolling	Scale 0-10	ASTM D7684*				
Nonferrous Other	Scale 0-10	ASTM D7684*				
Carbonaceous Material	Scale 0-10	ASTM D7684*				
Lubricant Degradation	Scale 0-10	ASTM D7684*				
Sand/Dirt	Scale 0-10	ASTM D7684*				
Fibres	Scale 0-10	ASTM D7684*				
Spheres	Scale 0-10	ASTM D7684*				
Other	Scale 0-10	ASTM D7684*				

WEAR



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