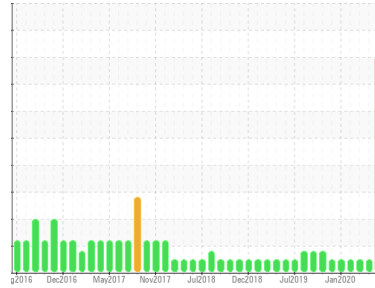


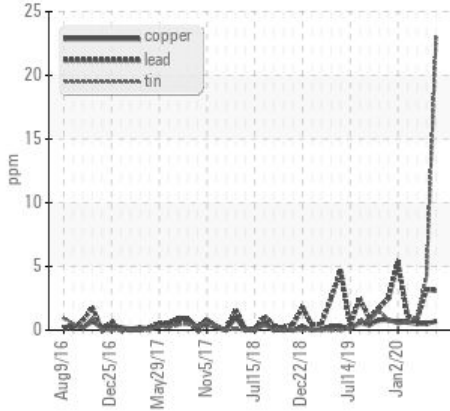


Area  
**Turret [71132252]**  
Machine Id  
**WHPU - LP1 Accumulator Bank/LP Umbilical Supply (S/N Sample Tag XX-58600-MV1/11)**  
Component  
**Hydraulic System**  
Fluid  
**CASTROL TRANSAQUA HT (4500 LTR)**

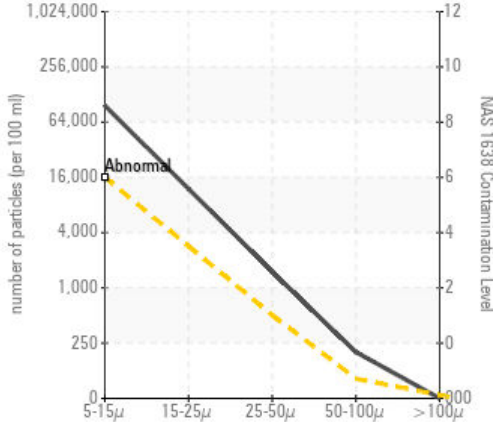


**COMPONENT CONDITION SUMMARY**

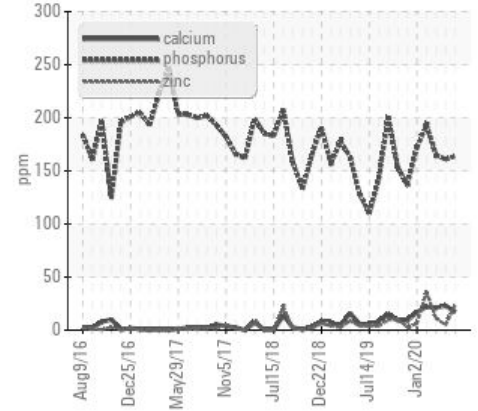
**Non-ferrous Metals**



**Particle Count**



**Additives**



**RECOMMENDATION**

We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. Confirm the source of the lubricant being utilized for top-up/fill. Re-sampling is suggested to confirm test results prior to significant maintenance activities being performed. Please indicate that this is a resample on your Sample Information Form (SIF). 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 MAR 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			SEVERE	NORMAL	NORMAL	
Tin	ppm	ASTM D5185(m)	>10	<b>23</b>	4	1
Zinc	ppm	ASTM D5185(m)		<b>24</b>	5	11
Particles 5-15µm	count	NAS 1638	>15999	<b>97000</b>	6000	6000
Particles 15-25µm	count	NAS 1638	>2849	<b>12000</b>	1500	1500
Particles 25-50µm	count	NAS 1638	>505	<b>1500</b>	200	200
Particles 50-100µm	count	NAS 1638	>89	<b>200</b>	0	0
NAS 1638	Class	NAS 1638	>6	<b>9</b>	6	6
PrtFilter						

Customer Id: TERHAM  
Sample No.: PC  
Lab Number: 02355031  
Test Package: MAR 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](mailto:Kevin.Marson@wearcheck.com)

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

## RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Change Filter	---	---	?	We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid.
Resample	---	---	?	We recommend an early resample to monitor this condition. Re-sampling is suggested to confirm test results prior to significant maintenance activities being performed. Please indicate that this is a resample on your Sample Information Form (SIF).
Contact Required	---	---	?	Please contact your representative for information regarding the proper sampling kits for your service.
Alert	---	---	?	NOTE: We recommend using MAR 3 test kits,
Check Fluid Source	---	---	?	Confirm the source of the lubricant being utilized for top-up/fill.
Filter Fluid	---	---	?	We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid.

## HISTORICAL DIAGNOSIS

### 24 Mar 2020 Diag: Kevin Marson

NORMAL



Resample at the next service interval to monitor. All component wear rates are normal. The system cleanliness is acceptable for your target SAE AS4059 (replaces NAS 1638) cleanliness code. There is no indication of any contamination in the oil. The system and fluid cleanliness is acceptable. The AN level is acceptable for this fluid. The pH level of this fluid is within the acceptable limits. The reserve alkalinity of this fluid is acceptable. The water concentration level is acceptable for this fluid. The condition of the oil is suitable for further service.

[view report](#)



### 27 Feb 2020 Diag: Kevin Marson

NORMAL



Resample at the next service interval to monitor. All component wear rates are normal. The system cleanliness is acceptable for your target SAE AS4059 (replaces NAS 1638) cleanliness code. There is no indication of any contamination in the oil. The system and fluid cleanliness is acceptable. The AN level is acceptable for this fluid. The pH level of this fluid is within the acceptable limits. The reserve alkalinity of this fluid is acceptable. The water concentration level is acceptable for this fluid. The condition of the oil is suitable for further service.

[view report](#)



### 23 Feb 2020 Diag: Kevin Marson

NORMAL

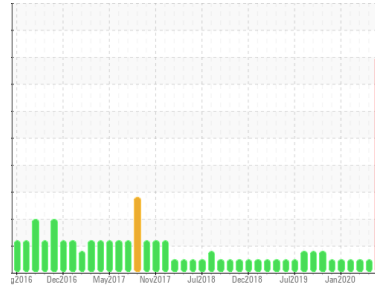


Resample at the next service interval to monitor. All component wear rates are normal. The system cleanliness is acceptable for your target SAE AS4059 (replaces NAS 1638) cleanliness code. There is no indication of any contamination in the oil. The system and fluid cleanliness is acceptable. The AN level is acceptable for this fluid. The pH level of this fluid is within the acceptable limits. The reserve alkalinity of this fluid is acceptable. The water concentration level is acceptable for this fluid. The condition of the oil is suitable for further service.

[view report](#)



Area  
**Turret [71132252]**  
 Machine Id  
**WHPU - LP1 Accumulator Bank/LP Umbilical Supply (S/N Sample Tag XX-58600-MV1/11)**  
 Component  
**Hydraulic System**  
 Fluid  
**CASTROL TRANSAQUA HT (4500 LTR)**



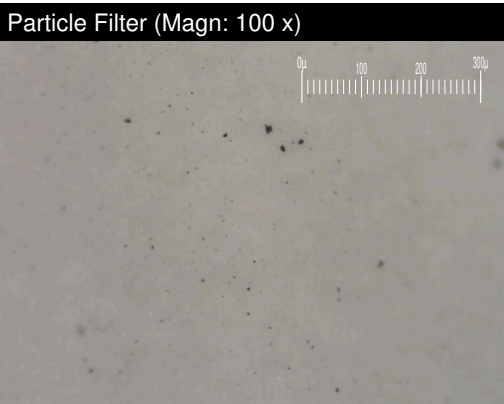
**DIAGNOSIS**

**Recommendation**  
 We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. Confirm the source of the lubricant being utilized for top-up/fill. Re-sampling is suggested to confirm test results prior to significant maintenance activities being performed. Please indicate that this is a resample on your Sample Information Form (SIF). 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 MAR 3 test kits, this testkit includes Analytical Ferrography which provides a detailed morphological analysis of wear particles present in the fluid.

**Wear**  
 Tin ppm levels are severe.

**Contamination**  
 Particles 15-25µm are abnormally high. Particles 25-50µm are abnormally high. Particles 50-100µm are abnormally high. Particles 5-15µm are abnormally high. The system cleanliness is above the acceptable limit for the target SAE AS4059 (replaces NAS 1638) cleanliness code.

**Fluid Condition**  
 Additive levels indicate the addition of a different brand, or type of oil. The AN level is acceptable for this fluid. The pH level of this fluid is within the acceptable limits. The reserve alkalinity of this fluid is acceptable. The water concentration level is acceptable for this fluid.



SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number	Client Info			<b>PC</b>	PC	PC
Sample Date	Client Info			<b>15 May 2020</b>	24 Mar 2020	27 Feb 2020
Machine Age	hrs Client Info			<b>0</b>	0	0
Oil Age	hrs Client Info			<b>0</b>	0	0
Oil Changed	Client Info			<b>N/A</b>	N/A	N/A
Sample Status				<b>SEVERE</b>	NORMAL	NORMAL

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>20	<b>7</b>	11	6
Chromium	ppm	ASTM D5185(m)	>10	<b>&lt;1</b>	<1	<1
Nickel	ppm	ASTM D5185(m)	>10	<b>0</b>	<1	<1
Titanium	ppm	ASTM D5185(m)		<b>&lt;1</b>	<1	<1
Silver	ppm	ASTM D5185(m)		<b>3</b>	4	<1
Aluminum	ppm	ASTM D5185(m)	>10	<b>&lt;1</b>	<1	<1
Lead	ppm	ASTM D5185(m)	>20	<b>3</b>	3	<1
Copper	ppm	ASTM D5185(m)	>20	<b>&lt;1</b>	<1	<1
Tin	ppm	ASTM D5185(m)	>10	<b>23</b>	4	1
Antimony	ppm	ASTM D5185(m)		<b>0</b>	<1	<1
Vanadium	ppm	ASTM D5185(m)		<b>&lt;1</b>	<1	<1
Beryllium	ppm	ASTM D5185(m)		<b>0</b>	0	0
Cadmium	ppm	ASTM D5185(m)		<b>&lt;1</b>	<1	<1

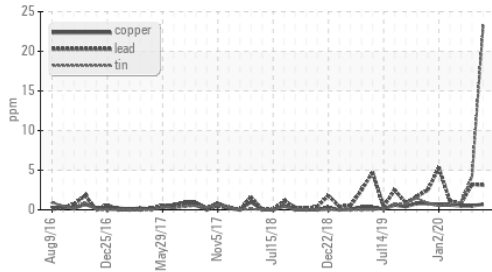
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)		<b>173</b>	177	189
Barium	ppm	ASTM D5185(m)		<b>&lt;1</b>	<1	<1
Molybdenum	ppm	ASTM D5185(m)		<b>&lt;1</b>	<1	<1
Manganese	ppm	ASTM D5185(m)		<b>&lt;1</b>	<1	<1
Magnesium	ppm	ASTM D5185(m)		<b>2</b>	2	2
Calcium	ppm	ASTM D5185(m)		<b>17</b>	23	21
Phosphorus	ppm	ASTM D5185(m)	145	<b>164</b>	161	165
Zinc	ppm	ASTM D5185(m)		<b>24</b>	5	11
Sulfur	ppm	ASTM D5185(m)		<b>29</b>	36	26
Lithium	ppm	ASTM D5185(m)		<b>&lt;1</b>	<1	<1

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>15	<b>3</b>	4	3
Sodium	ppm	ASTM D5185(m)	>650	<b>637</b>	623	718
Potassium	ppm	ASTM D5185(m)	>20	<b>0</b>	3	4
Water	%	ASTM D6304*	>60	<b>47.5</b>	49.7	51.1
ppm Water	ppm	ASTM D6304*	>600000	<b>475000</b>	497000	511000

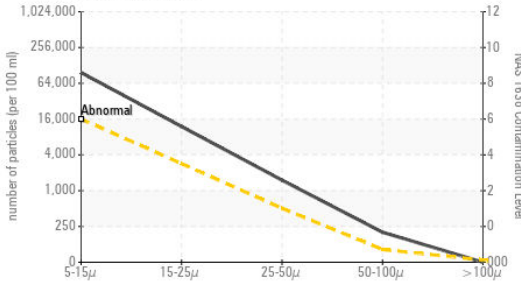
FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles 5-15µm	count	NAS 1638	>15999	<b>97000</b>	6000	6000
Particles 15-25µm	count	NAS 1638	>2849	<b>12000</b>	1500	1500
Particles 25-50µm	count	NAS 1638	>505	<b>1500</b>	200	200
Particles 50-100µm	count	NAS 1638	>89	<b>200</b>	0	0
Particles >100µm	count	NAS 1638	>15	<b>0</b>	0	0
NAS 1638	Class	NAS 1638	>6	<b>9</b>	6	6

# OIL ANALYSIS REPORT

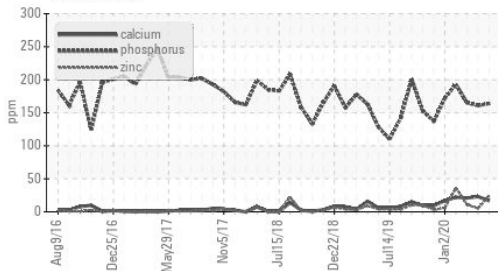
## Non-ferrous Metals



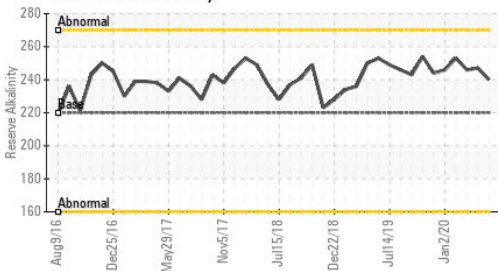
## Particle Count



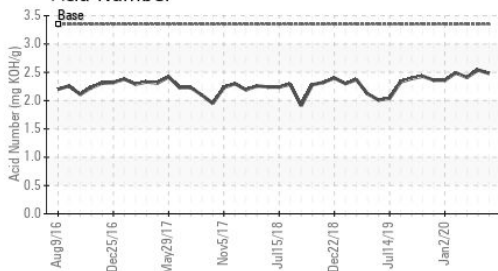
## Additives



## Reserve Alkalinity



## Acid Number






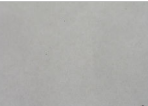


FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	3.35	<b>2.48</b>	2.54	2.41
Alkaline Reserve (Oils)	ml KOH/g	ASTM D1121*	220	<b>240</b>	247	246

VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Precipitate	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Silt	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Debris	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Sand/Dirt	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Appearance	scalar	Visual*	NORML	<b>NORML</b>	NORML	NORML
Odor	scalar	Visual*	NORML	<b>NORML</b>	NORML	NORML
Emulsified Water	scalar	Visual*	>60	<b>&gt;10%</b>	>10%	>10%
Free Water	scalar	Visual*		<b>NEG</b>	NEG	NEG

FLUID PROPERTIES		method	limit/base	current	history1	history2
pH	Scale 0-14	ASTM D1287*		<b>8.56</b>	8.72	8.52
Visc @ 40°C	cSt	ASTM D7279(m)	2.3	<b>2.2</b>	2.4	2.4
Visc @ 100°C	cSt	ASTM D7279(m)		<b>---</b>	---	1.8

## SAMPLE IMAGES

	method	limit/base	current	history1	history2
Color			no image		
Bottom			no image		
PrtFilter					



**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : PC  
**Lab Number** : **02355031** **Received** : 20 May 2020  
**Unique Number** : 5046463 **Diagnosed** : 22 May 2020  
**Test Package** : MAR 2 ( Additional Tests: KF, KV100, pH, PrtCountNAS, PrtFilter, PrtFilterPrep, ReserveAlk, TAN Man **Diagnostician** : Kevin Marson

**Suncor - Terra Nova Projects**  
 Scotia Centre, 235 Water Street  
 St. John's, NL  
 CA A1C 1B6  
 Contact: Josh Hynes  
 joshhynes@suncor.com  
 T: (709)778-3575  
 F: (709)724-2835

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.