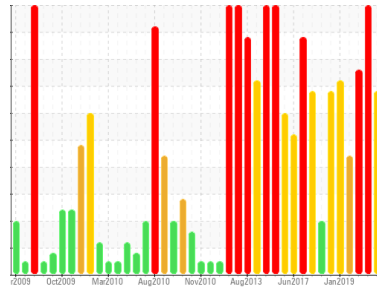


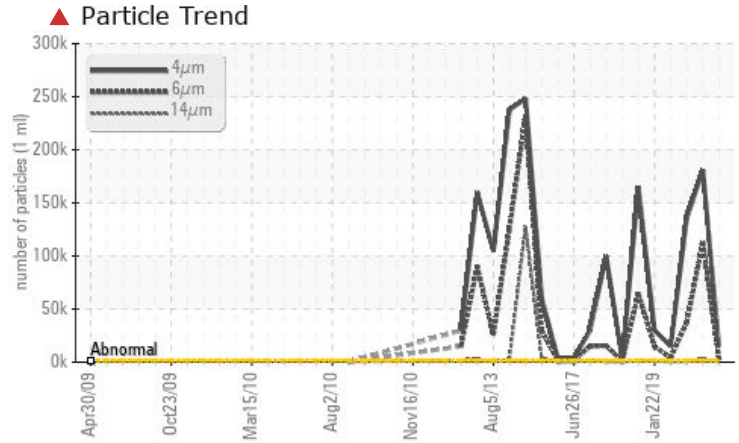
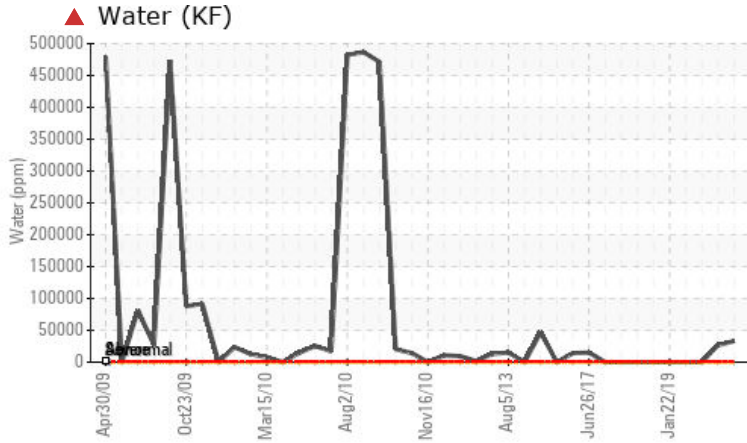
PROBLEM SUMMARY

Area
[71131371]
 Machine Id
WHPU LP Pump A (S/N SAMPLE TAG: PB-58640 (A))
 Component
Oil
 Fluid
CASTROL ALPHASYN PG 150 (--- GAL)

Sample Rating Trend



COMPONENT CONDITION SUMMARY



RECOMMENDATION

Check seals and/or filters for points of contaminant entry. We advise that you check all areas where contaminants can enter the system. We advise that you follow the water drain-off procedure for this component, and use off-line filtration to improve the cleanliness of the system fluid. 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. Resample in 30-45 days to monitor this situation. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

PROBLEMATIC TEST RESULTS

Sample Status			SEVERE	SEVERE	SEVERE
Water	%	ASTM D6304*	▲ 3.317	▲ 2.658	---
ppm Water	ppm	ASTM D6304*	▲ 33171.3	▲ 26580	---
Particles >4µm		ASTM D7647 >1300	▲ 15000	▲ 181145	▲ 135469
Particles >6µm		ASTM D7647 >320	▲ 3750	▲ 112852	▲ 37151
Particles >14µm		ASTM D7647 >40	▲ 240	▲ 3234	▲ 431
Particles >21µm		ASTM D7647 >10	▲ 30	▲ 438	▲ 91
Oil Cleanliness		ISO 4406 (c) >17/15/12	▲ 21/19/15	▲ 25/24/19	▲ 24/22/16
Emulsified Water	scalar	Visual*	▲ .2%	▲ .2%	NEG
PrtFilter					no image

Customer Id: TERHAM
Sample No.: PC0022963
Lab Number: 02345859
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

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, and use off-line filtration to improve the cleanliness of the system fluid.
Resample	---	---	?	Resample in 30-45 days to monitor this situation.
Information Required	---	---	?	NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.
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 Dirt Access	---	---	?	We advise that you check all areas where contaminants can enter the system.
Check Seals	---	---	?	Check seals and/or filters for points of contaminant entry.

HISTORICAL DIAGNOSIS

WATER



19 Nov 2019 Diag: Kevin Marson

Check seals and/or filters for points of contaminant entry. We advise that you check all areas where contaminants can enter the system. We advise that you follow the water drain-off procedure for this component, and use off-line filtration to improve the cleanliness of the system fluid. 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. Resample in 30-45 days to monitor this situation. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. All component wear rates are normal. Water contamination levels are severely high. Water contamination levels are severely high.. ppm Water contamination levels are severely high. Particles >14µm are severely high. Particles >21µm are severely high. Particles >6µm are severely high. Particles >4µm are severely high. Particles >38µm are abnormally high. There is a high concentration of water present in the oil. The system cleanliness code is much higher than the acceptable limit for the 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](#)



ISO



26 Aug 2019 Diag: Kevin Marson

We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. 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. Confirm the source of the lubricant being utilized for top-up/fill. Resample in 30-45 days to monitor this situation. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. All component wear rates are normal. Particles >14µm are severely high. Particles >21µm are severely high. Particles >6µm are severely high. Particles >4µm are severely high. The system cleanliness code is much higher than the acceptable limit for the target ISO 4406 cleanliness code. Additive levels indicate the addition of a different brand, or type of oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

[view report](#)



ISO



17 Apr 2019 Diag: Bill Quesnel

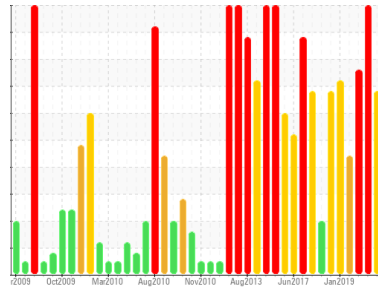
We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. Confirm the source of the lubricant being utilized for top-up/fill. Resample in 30-45 days to monitor this situation. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. NOTE: The current sample results do not match this units historical trend, indicating the sample may not be from this component/unit. All component wear rates are normal. Particles >6µm are severely high. Particles >4µm are severely high. Particles >14µm are abnormally high. Particles >21µm are abnormally high. The system cleanliness code is much higher than the acceptable limit for the target ISO 4406 cleanliness code. Additive levels indicate the addition of a different brand, or type of oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

[view report](#)



OIL ANALYSIS REPORT

Sample Rating Trend



WATER



Area

[71131371]

Machine Id

WHPU LP Pump A (S/N SAMPLE TAG: PB-58640 (A))

Component

Oil

Fluid

CASTROL ALPHASYN PG 150 (--- GAL)

DIAGNOSIS

Recommendation

Check seals and/or filters for points of contaminant entry. We advise that you check all areas where contaminants can enter the system. We advise that you follow the water drain-off procedure for this component, and use off-line filtration to improve the cleanliness of the system fluid. 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. Resample in 30-45 days to monitor this situation. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

Wear

All component wear rates are normal.

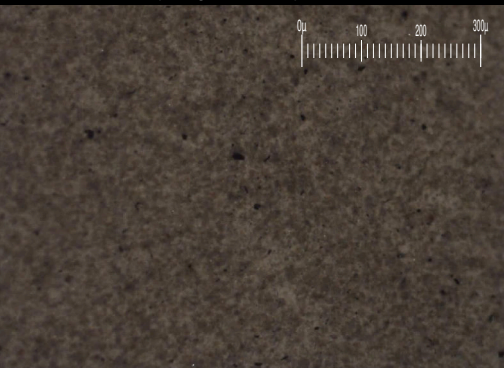
Contamination

Water contamination levels are severely high. Water contamination levels are severely high.. ppm Water contamination levels are severely high. Particles >6µm are severely high. Particles >4µm are severely high. Particles >14µm are abnormally high. Particles >21µm are abnormally high. There is a high concentration of water present in the oil. The system cleanliness code is much higher than the acceptable limit for the target ISO 4406 cleanliness code.

Fluid Condition

The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

Particle Filter (Magn: 100 x)



SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	PC0022963	PC0009394	PC
Sample Date	Client Info	21 Mar 2020	19 Nov 2019	26 Aug 2019
Machine Age	hrs	Client Info	0	0
Oil Age	hrs	Client Info	0	0
Oil Changed	Client Info	N/A	N/A	N/A
Sample Status		SEVERE	SEVERE	SEVERE

WEAR METALS

method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185(m)	22	0	0
Chromium	ppm	ASTM D5185(m)	<1	0	0
Nickel	ppm	ASTM D5185(m)	<1	<1	<1
Titanium	ppm	ASTM D5185(m)	<1	0	0
Silver	ppm	ASTM D5185(m)	0	<1	0
Aluminum	ppm	ASTM D5185(m)	<1	0	0
Lead	ppm	ASTM D5185(m)	<1	<1	0
Copper	ppm	ASTM D5185(m)	4	5	0
Tin	ppm	ASTM D5185(m)	<1	0	0
Antimony	ppm	ASTM D5185(m)	<1	<1	<1
Vanadium	ppm	ASTM D5185(m)	<1	0	0
Beryllium	ppm	ASTM D5185(m)	0	0	0
Cadmium	ppm	ASTM D5185(m)	<1	0	0

ADDITIVES

method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185(m)	9	2	<1
Barium	ppm	ASTM D5185(m)	<1	<1	0
Molybdenum	ppm	ASTM D5185(m)	<1	0	0
Manganese	ppm	ASTM D5185(m)	<1	0	0
Magnesium	ppm	ASTM D5185(m)	<1	<1	0
Calcium	ppm	ASTM D5185(m)	<1	<1	<1
Phosphorus	ppm	ASTM D5185(m)	1821	1913	0
Zinc	ppm	ASTM D5185(m)	0	<1	<1
Sulfur	ppm	ASTM D5185(m)	2183	3142	96
Lithium	ppm	ASTM D5185(m)	<1	<1	<1

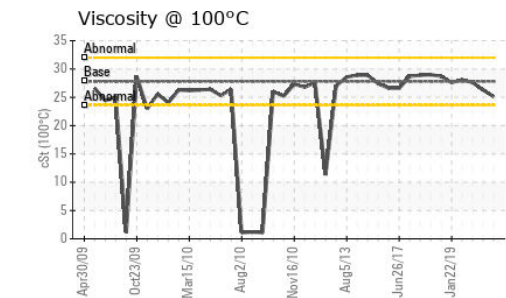
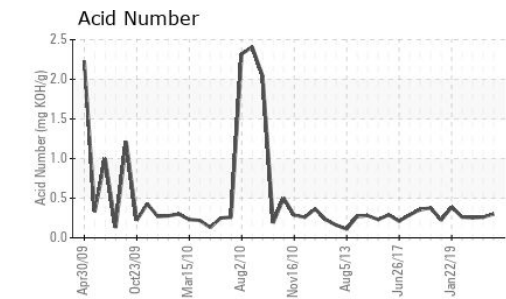
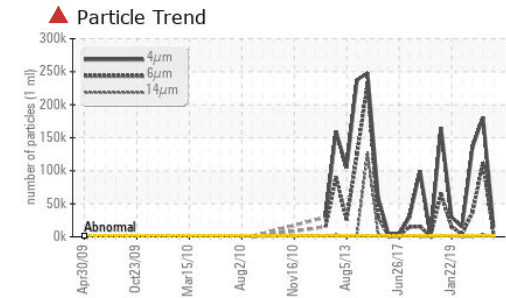
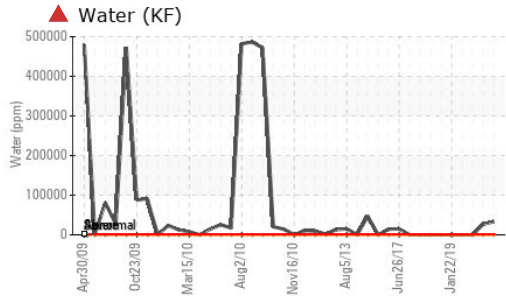
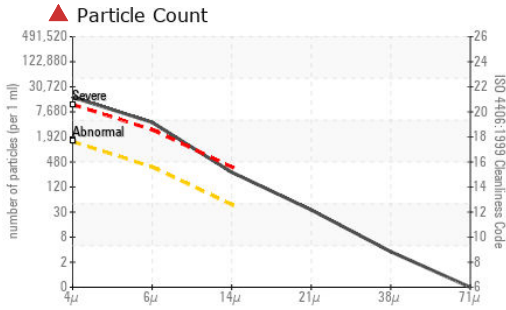
CONTAMINANTS

method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185(m)	1	<1	0
Sodium	ppm	ASTM D5185(m)	35	0	2
Potassium	ppm	ASTM D5185(m)	>20	<1	0
Water	%	ASTM D6304*	▲ 3.317	▲ 2.658	---
ppm Water	ppm	ASTM D6304*	▲ 33171.3	▲ 26580	---

FLUID CLEANLINESS

method	limit/base	current	history1	history2	
Particles >4µm	ASTM D7647	>1300	▲ 15000	▲ 181145	▲ 135469
Particles >6µm	ASTM D7647	>320	▲ 3750	▲ 112852	▲ 37151
Particles >14µm	ASTM D7647	>40	▲ 240	▲ 3234	▲ 431
Particles >21µm	ASTM D7647	>10	▲ 30	▲ 438	▲ 91
Particles >38µm	ASTM D7647	>3	3	▲ 7	2
Particles >71µm	ASTM D7647	>3	0	1	0
Oil Cleanliness	ISO 4406 (c)	>17/15/12	▲ 21/19/15	▲ 25/24/19	▲ 24/22/16

OIL ANALYSIS REPORT



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : PC0022963
Lab Number : 02345859
Unique Number : 5029288
Test Package : MAR 2 (Additional Tests: KF, KV100, PrtCount, PrtFilter, PrtFilterPrep, TAN Man, Viscosity Index)

Suncor - Terra Nova Projects
 Scotia Centre, 235 Water Street
 St. John's, NL
 CA A1C 1B6
 Contact: Josh Hynes
 joshynes@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.

FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*		0.30	0.261	0.253

VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	NONE	VLITE	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	VLITE	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%	▲.2%	NEG
Free Water	scalar	Visual*		NEG	NEG	NEG

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	150	151	155	158
Visc @ 100°C	cSt	ASTM D7279(m)	27.8	25.1	26.3	27.6
Viscosity Index (VI)	Scale	ASTM D2270*	225	200	206	213

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