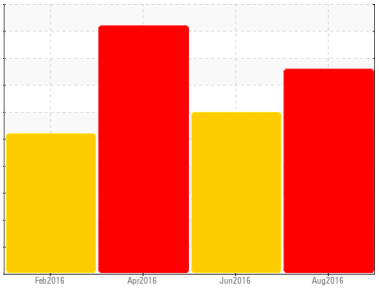
PROBLEM SUMMARY

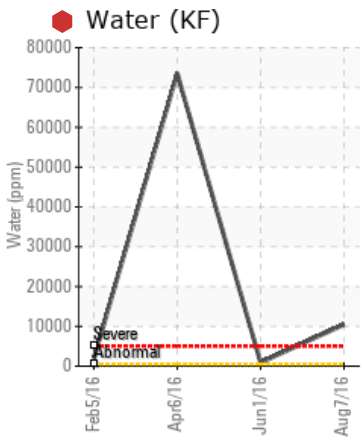
Sample Rating Trend

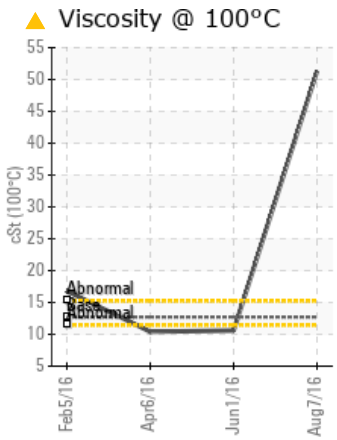


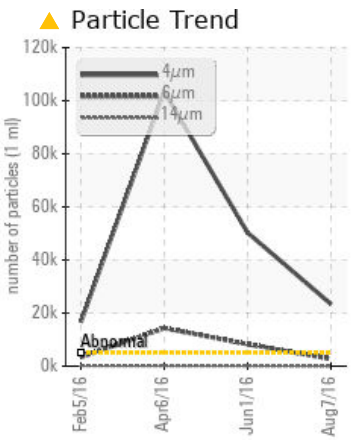
WATER

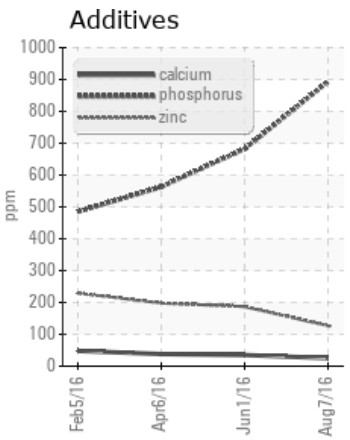
Area
CATERPILLAR TUNNELING [27100]
Machine Id
12-ST1 SEALS TANK
Component
Circulating Hydraulic System
Fluid
CONDAT D 68 (200 LTR)

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. We advise that you follow the water drain-off procedure for this component. We recommend you service the filters on this component. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS

Sample Status				**SEVERE**	SEVERE	SEVERE
Water	%	ASTM D6304*	>0.05	**1.046**	0.088	7.355
ppm Water	ppm	ASTM D6304*	>500	**10460.0**	887.3	73553.3
Particles >4µm		ASTM D7647	>5000	**23356**	50268	103443
Particles >6µm		ASTM D7647	>1300	**2697**	8250	14321
Oil Cleanliness		ISO 4406 (c)	>19/17/14	**22/19/14**	23/20/15	24/21/15
Appearance	scalar	Visual*	NORML	**LAYRD**	LAYRD	LAYRD
Emulsified Water	scalar	Visual*	>0.05	**.2%**	.2%	.2%
Free Water	scalar	Visual*		**>10%**	5%	>10%
Visc @ 100°C	cSt	ASTM D7279(m)	12.7	**51.3**	10.6	10.4
Viscosity Index (VI)	Scale	ASTM D2270*	186	**615**	145	141

Customer Id: CUSANY
Sample No.: WC1234567
Lab Number: 01234567
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
Change Filter	---	---	?	We recommend you service the filters on this component.
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.
Check Fluid Source	---	---	?	Confirm the source of the lubricant being utilized for top-up/fill.
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 Jun 2016 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 you service the filters on this component. Confirm the source of the lubricant being utilized for top-up/fill. Resample in 30-45 days to monitor this situation.All component wear rates are normal. Particles >4µm are severely high. Particles >4µm are severely high.. ppm Water and water and water and water contamination levels are abnormal. Particles >6µm are abnormally high. Particles >14µm are notably high. There is a moderate concentration of water present in the oil. Free water present. The sample contained a visible layer of foreign fluid contaminant, the origin and/or type of fluid is unknown. Additive levels indicate the addition of a different brand, or type of oil. 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

WATER

06 Apr 2016 Diag: Kevin Marson

We advise that you check for the source of water entry. Check seals and/or filters for points of contaminant entry. We advise that you follow the water drain-off procedure for this component. 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 recommend you service the filters on this component. Confirm the source of the lubricant being utilized for top-up/fill. Resample in 30-45 days to monitor this situation.All component wear rates are normal. Water and ppm water contamination levels are severe. Particles >6µm are severely high. Particles >4µm are severely high. Particles >4µm are severely high.. Particles >4µm are severely high... Particles >4µm are severely high.... Particles >14µm are notably high. There is a high concentration of water present in the oil. Free water present. The sample contained a visible layer of foreign fluid contaminant, the origin and/or type of fluid is unknown. Additive levels indicate the addition of a different brand, or type of oil. The AN level is acceptable for this fluid. The oil is no longer serviceable due to the presence of contaminants.

view report

WATER

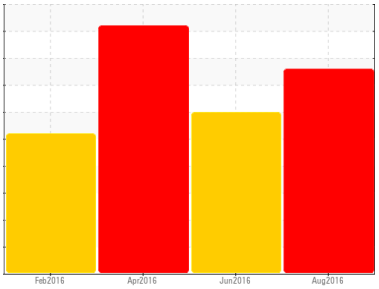
05 Feb 2016 Diag: Kevin Marson

The component was not specified so we have determined that this is a hydraulic system based on the fluid type in use. Please specify the correct component type on your next sample. 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 you service the filters on this component. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.All component wear rates are normal. ppm Water and water and water contamination levels are abnormal. Particles >4µm are abnormally high. Particles >6µm are abnormally high. Particles >14µm are notably high. There is a moderate concentration of water present in the oil. Free water present. Additive levels indicate the addition of a different brand, or type of oil. 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
CATERPILLAR TUNNELING [27100]
Machine Id
12-ST1 SEALS TANK
Component
Circulating Hydraulic System
Fluid
CONDAT D 68 (200 LTR)

DIAGNOSIS

Recommendation

We advise that you check for the source of water entry. Check seals and/or filters for points of contaminant entry. We advise that you follow the water drain-off procedure for this component. We recommend you service the filters on this component. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

Water and ppm water and ppm water and ppm water contamination levels are severe. Particles >4µm are abnormally high. Particles >6µm are abnormally high. Oil Cleanliness is abnormal. There is a high concentration of water present in the oil. Free water present. The sample contained a visible layer of foreign fluid contaminant, the origin and/or type of fluid is unknown.

Fluid Condition

The viscosity of the oil is higher than normal, possibly indicating the addition of a heavier grade of oil. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. The AN level is acceptable for this fluid. The oil is no longer serviceable due to the presence of contaminants. 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		**WC**	WC963049	WC942372
Sample Date		Client Info		**07 Aug 2016**	01 Jun 2016	06 Apr 2016
Machine Age	hrs	Client Info		**0**	980	710
Oil Age	hrs	Client Info		**0**	980	0
Oil Changed		Client Info		**N/A**	N/A	N/A
Sample Status				**SEVERE**	SEVERE	SEVERE

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184*		**19**	---	---
Iron	ppm	ASTM D5185(m)	>20	**20**	19	19
Chromium	ppm	ASTM D5185(m)	>20	**0**	0	0
Nickel	ppm	ASTM D5185(m)	>20	**<1**	0	<1
Titanium	ppm	ASTM D5185(m)		**0**	0	0
Silver	ppm	ASTM D5185(m)		**0**	0	0
Aluminum	ppm	ASTM D5185(m)	>20	**0**	<1	<1
Lead	ppm	ASTM D5185(m)	>20	**2**	4	2
Copper	ppm	ASTM D5185(m)	>20	**9**	7	7
Tin	ppm	ASTM D5185(m)	>20	**1**	<1	<1
Antimony	ppm	ASTM D5185(m)		**0**	<1	<1
Vanadium	ppm	ASTM D5185(m)		**0**	0	0
Beryllium	ppm	ASTM D5185(m)		**0**	0	0
Cadmium	ppm	ASTM D5185(m)		**0**	0	0

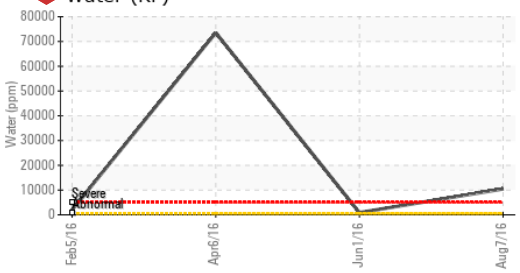
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)		**1**	1	2
Barium	ppm	ASTM D5185(m)		**<1**	<1	<1
Molybdenum	ppm	ASTM D5185(m)		**0**	0	0
Manganese	ppm	ASTM D5185(m)		**<1**	<1	<1
Magnesium	ppm	ASTM D5185(m)		**<1**	4	5
Calcium	ppm	ASTM D5185(m)		**25**	35	38
Phosphorus	ppm	ASTM D5185(m)		**893**	682	563
Zinc	ppm	ASTM D5185(m)		**127**	187	198
Sulfur	ppm	ASTM D5185(m)		**3159**	3413	3390
Lithium	ppm	ASTM D5185(m)		**<1**	<1	<1

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>15	**3**	3	3
Sodium	ppm	ASTM D5185(m)		**5**	5	5
Potassium	ppm	ASTM D5185(m)	>20	**0**	1	2
Water	%	ASTM D6304*	>0.05	**1.046**	0.088	7.355
ppm Water	ppm	ASTM D6304*	>500	**10460.0**	887.3	73553.3

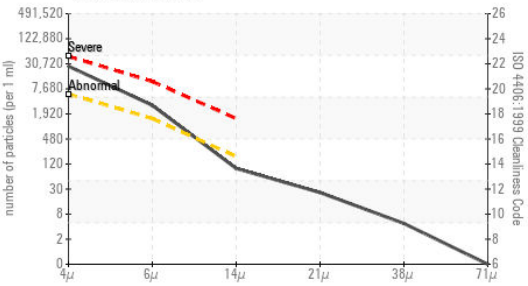
FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>5000	**23356**	50268	103443
Particles >6µm		ASTM D7647	>1300	**2697**	8250	14321
Particles >14µm		ASTM D7647	>160	**83**	168	187
Particles >21µm		ASTM D7647	>40	**22**	35	27
Particles >38µm		ASTM D7647	>10	**4**	4	1
Particles >71µm		ASTM D7647	>3	**0**	0	0
Oil Cleanliness		ISO 4406 (c)	>19/17/14	**22/19/14**	23/20/15	24/21/15

OIL ANALYSIS REPORT

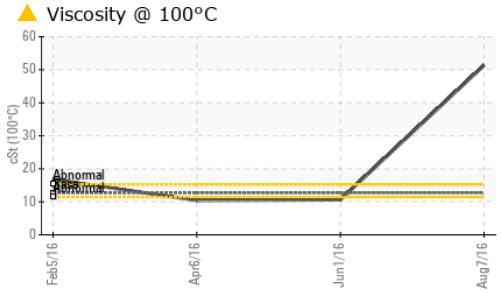
Water (KF)



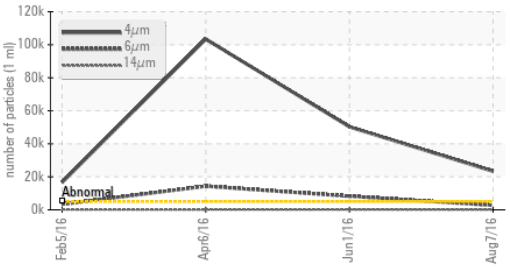
Particle Count



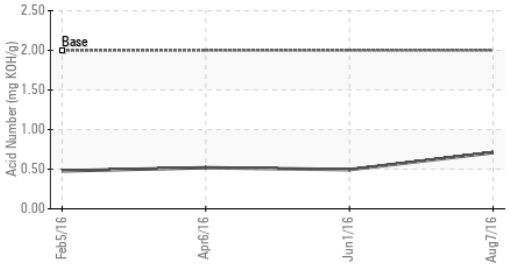
Viscosity @ 100°C



Particle Trend



Acid Number



FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	2.0	**0.710**	0.494	0.519

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	▲ **LAYRD**	▲ LAYRD	▲ LAYRD
Odor	scalar	Visual*	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	Visual*	>0.05	▲ **.2%**	▲ .2%	▲ .2%
Free Water	scalar	Visual*		▲ **>10%**	▲ 5%	▲ >10%

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	69.3	**68.2**	67.4	67.3
Visc @ 100°C	cSt	ASTM D7279(m)	12.7	▲ **51.3**	10.6	10.4
Viscosity Index (VI)	Scale	ASTM D2270*	186	▲ **615**	▲ 145	▲ 141

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					

ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC1234567 **Received** : 08 Aug 2016
Lab Number : 01234567 **Diagnosed** : 10 Aug 2016
Unique Number : 12345678 **Diagnostician** : Kevin Marson
Test Package : IND 2 (Additional Tests: Centrifuge(Ward), KF, KV100, PQ, TAN Man, VI)

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.

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