

## **OIL ANALYSIS REPORT**

### Area HOTLINE/PUSHER FURNACES #2 AUX HYD SYSTEM 1406-B10-0090

Hydraulic System

BENZ OIL ULTRA GUARD 552 (--- GAL)

#### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

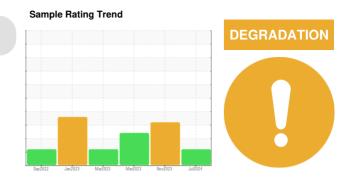
All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil. The amount and size of particulates present in the system are acceptable.

#### Fluid Condition

The AN level is above the recommended limit.

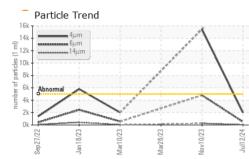


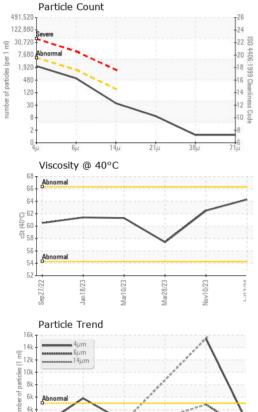
Sample Number   Client Info   KFS0004512   KFS001451   KFS00151   KFS00151   KFS005155	SAMPLE INFORM	1ATI <u>ON</u>	method	limit/base	current	history1	history2
Sample Date   Client Info   12 Jul 2024   10 Nov 2023   28 Mar 2023     Machine Age   hrs   Client Info   0   0   0     Oil Age   hrs   Client Info   0   0   0     Oil Changed   Client Info   N/A   N/A   N/A   AMA     Sample Status   Mathins   ATTENTION   ABNORMAL   ABNORMAL   ABNORMAL     CONTAMINATION   method   Imit/base   current   history1   History2     Water   WC Method   >0.05   NEG   NEG   NEG     WEAR METALS   method   Imit/base   current   history1   History2     Iron   ppm   ASTM 05155m   >20   0   0   0     Nickel   ppm   ASTM 05155m   20   0   0   11   1     Lead   ppm   ASTM 05155m   20   0   0   0   0     Arandum   ppm   ASTM 05155m   20   0   0   0   0 <td></td> <td></td> <td></td> <td></td> <th></th> <td></td> <td>KFS0003718</td>							KFS0003718
Machine Age   hrs   Client Info   0   0   0     Oil Age   hrs   Client Info   0   0   0     Oil Age   hrs   Client Info   N/A   N/A   N/A   N/A     Sample Status   ATTENTION   ABNORMAL   ABNORMAL   ABNORMAL   ABNORMAL     CONTAMINATION   method   limit/base   current   history1   history2     Water   WC Method   >0.05   NEG   NEG   NEG     Tron   ppm   ASTM 05185m   >20   <1							28 Mar 2023
Oil Age   hrs   Client Info   0   0   0     Oil Changed   Client Info   N/A   N/A   N/A   N/A     Sample Status   Client Info   N/A   ATTENTION   ABNORMAL   ABNORMAL     CONTAMINATION   method   Imit/base   current   history1   history1     Water   WC Method   >0.05   NEG   NEG   NEG     Wear   WC Method   >0.05   NEG   NEG   NEG     Vinckel   ppm   ASTM D5185m   >20   2   <1		hrs					
Oil Changed   Client Info   N/A   N/A   N/A   N/A     Sample Status   Image: Contramined Status   Image: Contramined Status   ABNORMAL   ABNORMAL     CONTAMINATION   method   Imit/base   current   history1   history2     Water   WC Method   >0.05   NEG   NEG   NEG     WEAR METALS   method   Imit/base   current   history1   history2     Iron   ppm   ASTM D5185n   >20   2   <1	-				-		
Sample Status   ATTENTION   ABNORMAL   ABNORMAL   ABNORMAL     CONTAMINATION   method   imit/base   current   history1   history2     Water   WC Method   >0.05   NEG   NEG   NEG     Wear METALS   method   limit/base   current   history1   history2     Iron   ppm   ASTM D5185m   >20   <1	-					N/A	N/A
Water   WC Method   >0.05   NEG   NEG   NEG   NEG     Wear   With Method   >0.05   NEG   NEG   NEG   NEG     Water   Mistory2   current   history1   history2     Iron   ppm   ASTM D5185m   >20   2   <1   4     Chromium   ppm   ASTM D5185m   >20   0   0   0   0     Nickel   ppm   ASTM D5185m   >20   0   0   0   1     Silver   ppm   ASTM D5185m   >20   0   0   0   0     Aduminum   ppm   ASTM D5185m   >20   2   9   & 8   83     Vanadium   ppm   ASTM D5185m   >20   0   0   0   0     Abard   ppm   ASTM D5185m   0   0   0   0   0     Abard   ppm   ASTM D5185m   0   0   0   0   0     Barium   <	Sample Status						ABNORMAL
WEAR METALS   method   limit/base   current   history1   history2     Iron   ppm   ASTM D5185m   >20   2   <1	CONTAMINATION	١	method	limit/base	current	history1	history2
Iron   ppm   ASTM D5185m   >20   2   <1   4     Chromium   ppm   ASTM D5185m   >20   <1	Water		WC Method	>0.05	NEG	NEG	NEG
Dromium   ppm   ASTM D5185m   >20   <1   <1   2     Nickel   ppm   ASTM D5185m   >20   0   0   0     Silver   ppm   ASTM D5185m   0   0   0   0     Auminum   ppm   ASTM D5185m   >20   0   0   0     Lead   ppm   ASTM D5185m   >20   0   0   0   0     Copper   ppm   ASTM D5185m   >20   2   9   ▲ 83     Vanadium   ppm   ASTM D5185m   0   0   0   0     Cadmium   ppm   ASTM D5185m   0   0   0   0     Cadmium   ppm   ASTM D5185m   0   0   0   0     Barium   ppm   ASTM D5185m   0   0   0   0     Magnesium   ppm   ASTM D5185m   0   0   0   0     Magnesium   ppm   ASTM D5185m   0   0   0	WEAR METALS		method	limit/base	current	history1	history2
Nickel   ppm   ASTM D5185m   >20   0   0   0     Titanium   ppm   ASTM D5185m   0   0   <1	Iron	ppm	ASTM D5185m	>20	2	<1	4
Titanium   ppm   ASTM D5185m   0   0   <1     Silver   ppm   ASTM D5185m   0   0   0   0     Aluminum   ppm   ASTM D5185m   >20   0   0   0   <1	Chromium	ppm	ASTM D5185m	>20	<1	<1	2
Silver   ppm   ASTM D5185m   0   0   0   0     Aluminum   ppm   ASTM D5185m   >20   0   0   <1	Nickel	ppm	ASTM D5185m	>20	0	0	0
Aluminum   ppm   ASTM D5185m   >20   0   0   <1     Lead   ppm   ASTM D5185m   >20   0   0   0   0     Copper   ppm   ASTM D5185m   >20   <1	Titanium	ppm	ASTM D5185m		0	0	<1
Lead   ppm   ASTM D5185m   >20   0   0   0     Copper   ppm   ASTM D5185m   >20   <1	Silver	ppm	ASTM D5185m		0	0	0
Lead   ppm   ASTM D5185m   >20   0   0   0     Copper   ppm   ASTM D5185m   >20   <1	Aluminum	ppm	ASTM D5185m	>20	0	0	<1
Tin   ppm   ASTM D5185m   >20   2   9   ▲ 83     Vanadium   ppm   ASTM D5185m   >20   2   9   ▲ 83     Vanadium   ppm   ASTM D5185m   0   0   0   0     Cadmium   ppm   ASTM D5185m   0   0   0   0     ADDITIVES   method   limit/base   current   history1   history2     Boron   ppm   ASTM D5185m   0   0   0   0     Barium   ppm   ASTM D5185m   0   0   0   0     Magnesium   ppm   ASTM D5185m   0   0   0   <11   3     Calcium   ppm   ASTM D5185m   16   1   4   <1   3     Calcium   ppm   ASTM D5185m   358   326   196   358     Sulfur   ppm   ASTM D5185m   15   3   2   2   2     Sodium   ppm   ASTM D5185m	Lead		ASTM D5185m	>20	0	0	0
Vanadium   ppm   ASTM D5185m   0   0   0   0     Cadmium   ppm   ASTM D5185m   0   0   0   0     ADDITIVES   method   limit/base   current   history1   history2     Boron   ppm   ASTM D5185m   0   0   0   0     Barium   ppm   ASTM D5185m   0   0   0   0     Manganese   ppm   ASTM D5185m   0   0   0   0     Magnesium   ppm   ASTM D5185m   4   <1	Copper	ppm	ASTM D5185m	>20	<1	<1	1
Cadmium   ppm   ASTM D5185m   0   0   0   0     ADDITIVES   method   limit/base   current   history1   history2     Boron   ppm   ASTM D5185m   0   0   0   0     Barium   ppm   ASTM D5185m   0   0   0   0     Manganese   ppm   ASTM D5185m   0   0   0   0     Magnesium   ppm   ASTM D5185m   4   <1   3     Calcium   ppm   ASTM D5185m   4   <1   3     Calcium   ppm   ASTM D5185m   16   1   4     Phosphorus   ppm   ASTM D5185m   358   326   196     Zinc   ppm   ASTM D5185m   15   3   2   2     Sulfur   ppm   ASTM D5185m   15   3   2   2     Sodium   ppm   ASTM D5185m   >10   1   1   1     Potassium   ppm	Tin	ppm	ASTM D5185m	>20	2	9	▲ 83
ADDITIVES   method   limit/base   current   history1   history2     Boron   ppm   ASTM D5185m   0   0   0   0     Barium   ppm   ASTM D5185m   0   0   0   0     Malganese   ppm   ASTM D5185m   0   0   0   0     Magnesium   ppm   ASTM D5185m   0   0   0   <1	Vanadium	ppm	ASTM D5185m		0	0	0
Boron   ppm   ASTM D5185m   0   0   0     Barium   ppm   ASTM D5185m   0   0   0     Molybdenum   ppm   ASTM D5185m   0   0   0     Manganese   ppm   ASTM D5185m   0   0   <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium   ppm   ASTM D5185m   0   0   0   0     Molybdenum   ppm   ASTM D5185m   0   0   0   0     Magnesee   ppm   ASTM D5185m   0   0   <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum   ppm   ASTM D5185m   0   0   0     Magnesium   ppm   ASTM D5185m   4   <1   3     Calcium   ppm   ASTM D5185m   4   <1   3     Calcium   ppm   ASTM D5185m   4   <1   3     Calcium   ppm   ASTM D5185m   16   1   4     Phosphorus   ppm   ASTM D5185m   358   326   196     Zinc   ppm   ASTM D5185m   15   9   7     Sulfur   ppm   ASTM D5185m   1363   1118   1525     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m<>11   <1   1   <1   1     Potassium   ppm   ASTM D5185m   >20   <1   2   1     FLUID CLEANLINESS   method   limit/base   current   history1   history2     Particles >4µm   ASTM D7647   >5000	Boron	ppm	ASTM D5185m		0	0	0
Manganese   ppm   ASTM D5185m   0   0   <1     Magnesium   ppm   ASTM D5185m   4   <1	Barium	ppm	ASTM D5185m		0	0	0
Magnesium   ppm   ASTM D5185m   4   <1   3     Calcium   ppm   ASTM D5185m   16   1   4     Phosphorus   ppm   ASTM D5185m   358   326   196     Zinc   ppm   ASTM D5185m   15   9   7     Sulfur   ppm   ASTM D5185m   1363   1118   1525     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >15   3   2   2     Sodium   ppm   ASTM D5185m   >1   <1	Molybdenum	ppm	ASTM D5185m		0	0	0
Calcium   ppm   ASTM D5185m   16   1   4     Phosphorus   ppm   ASTM D5185m   358   326   196     Zinc   ppm   ASTM D5185m   15   9   7     Sulfur   ppm   ASTM D5185m   1363   1118   1525     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >15   3   2   2     Sodium   ppm   ASTM D5185m   >15   3   2   2     Sodium   ppm   ASTM D5185m   >20   <1	Manganese	ppm	ASTM D5185m		0	0	<1
Phosphorus   ppm   ASTM D5185m   358   326   196     Zinc   ppm   ASTM D5185m   15   9   7     Sulfur   ppm   ASTM D5185m   1363   1118   1525     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >15   3   2   2     Sodium   ppm   ASTM D5185m   >15   3   2   2     Sodium   ppm   ASTM D5185m   >1   <1	Magnesium	ppm	ASTM D5185m		4	<1	3
Zinc   ppm   ASTM D5185m   15   9   7     Sulfur   ppm   ASTM D5185m   1363   1118   1525     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >15   3   2   2     Sodium   ppm   ASTM D5185m   >11   <1	Calcium	ppm	ASTM D5185m		16	1	4
Sulfur   ppm   ASTM D5185m   1363   1118   1525     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >15   3   2   2     Sodium   ppm   ASTM D5185m   >15   3   2   2     Sodium   ppm   ASTM D5185m   >10   -11   <11   11     Potassium   ppm   ASTM D5185m   >20   <11   2   1     FLUID CLEANLINESS   method   limit/base   current   history1   history2     Particles >4µm   ASTM D7647   >5000   1997   15469      Particles >6µm   ASTM D7647   >1300   514   4812      Particles >1µm   ASTM D7647   >10   3   267      Particles >21µm   ASTM D7647   >40   8   52      Particles >38µm   ASTM D7647   >10   1   2	Phosphorus	ppm	ASTM D5185m		358	326	196
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m<>15322SodiumppmASTM D5185m1<1	Zinc	ppm	ASTM D5185m		15	9	7
Silicon   ppm   ASTM D5185m   >15   3   2   2     Sodium   ppm   ASTM D5185m   1   <1	Sulfur	ppm	ASTM D5185m		1363	1118	1525
Sodium   ppm   ASTM D5185m   1   <1   1     Potassium   ppm   ASTM D5185m   >20   <1	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium   ppm   ASTM D5185m   >20   <1   2   1     FLUID CLEANLINESS   method   limit/base   current   history1   history2     Particles >4µm   ASTM D7647   >5000   1997   15469      Particles >6µm   ASTM D7647   >100   514   4812      Particles >14µm   ASTM D7647   >160   33   267      Particles >14µm   ASTM D7647   >40   8   52      Particles >21µm   ASTM D7647   >10   1   2      Particles >38µm   ASTM D7647   >3   1   0      Particles >71µm   ASTM D7647   >3   1   0      Oil Cleanliness   ISO 4406 (c)   >19/17/14   18/16/12   21/19/15      FLUID DEGRADATION   method   limit/base   current   history1   history2	Silicon	ppm	ASTM D5185m	>15	3	2	2
FLUID CLEANLINESS method limit/base current history1 history2   Particles >4µm ASTM D7647 >5000 1997 ▲ 15469    Particles >6µm ASTM D7647 >1300 514 ▲ 4812    Particles >6µm ASTM D7647 >160 33 ▲ 267    Particles >14µm ASTM D7647 >40 8 ▲ 52    Particles >21µm ASTM D7647 >40 8 ▲ 52    Particles >38µm ASTM D7647 >10 1 2    Particles >71µm ASTM D7647 >3 1 0    Oil Cleanliness ISO 4406 (c) >19/17/14 18/16/12 21/19/15    FLUID DEGRADATION method limit/base current history1 history2	Sodium	ppm	ASTM D5185m		1	<1	1
Particles >4µm ASTM D7647 >5000 1997 15469    Particles >6µm ASTM D7647 >1300 514 4812    Particles >14µm ASTM D7647 >160 33 267    Particles >21µm ASTM D7647 >40 8 52    Particles >21µm ASTM D7647 >10 1 2    Particles >38µm ASTM D7647 >3 1 0    Particles >71µm ASTM D7647 >3 1 0    Oil Cleanliness ISO 4406 (c) >19/17/14 18/16/12 21/19/15    FLUID DEGRADATION method limit/base current history1 history2	Potassium	ppm	ASTM D5185m	>20	<1	2	1
Particles >6µm   ASTM D7647   >1300   514   4812      Particles >14µm   ASTM D7647   >160   33   267      Particles >21µm   ASTM D7647   >40   8   52      Particles >21µm   ASTM D7647   >10   1   2      Particles >38µm   ASTM D7647   >10   1   2      Particles >71µm   ASTM D7647   >3   1   0      Oil Cleanliness   ISO 4406 (c)   >19/17/14   18/16/12   21/19/15      FLUID DEGRADATION   method   limit/base   current   history1   history2	FLUID CLEANLIN	ESS	method	limit/base	current	history1	history2
Particles >14µm ASTM D7647 >160 33 ▲ 267    Particles >21µm ASTM D7647 >40 8 ▲ 52    Particles >38µm ASTM D7647 >10 1 2    Particles >38µm ASTM D7647 >3 1 0    Particles >71µm ASTM D7647 >3 1 0    Oil Cleanliness ISO 4406 (c) >19/17/14 18/16/12 ▲ 21/19/15    FLUID DEGRADATION method limit/base current history1 history2	Particles >4µm				1997		
Particles >21μm   ASTM D7647   >40   8   52      Particles >38μm   ASTM D7647   >10   1   2      Particles >38μm   ASTM D7647   >30   1   0      Particles >71μm   ASTM D7647   >3   1   0      Oil Cleanliness   ISO 4406 (c)   >19/17/14   18/16/12   21/19/15      FLUID DEGRADATION   method   limit/base   current   history1   history2	Particles >6µm		ASTM D7647	>1300	514	<u> </u>	
Particles >38μm   ASTM D7647   >10   1   2      Particles >71μm   ASTM D7647   >3   1   0      Oil Cleanliness   ISO 4406 (c)   >19/17/14   18/16/12   21/19/15      FLUID DEGRADATION   method   limit/base   current   history1   history2	Particles >14µm						
Particles >71μm   ASTM D7647   >3   1   0      Oil Cleanliness   ISO 4406 (c)   >19/17/14   18/16/12   ▲ 21/19/15      FLUID DEGRADATION   method   limit/base   current   history1   history2				>40			
Oil Cleanliness ISO 4406 (c) >19/17/14 18/16/12 21/19/15    FLUID DEGRADATION method limit/base current history1 history2							
FLUID DEGRADATION method limit/base current history1 history2	Particles >71µm				1		
	Oil Cleanliness		ISO 4406 (c)	>19/17/14	18/16/12	<b>a</b> 21/19/15	
Acid Number (AN) mg KOH/g ASTM D8045 — 7.539 — 4.89 — 4.009	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
	Acid Number (AN)	mg KOH/g	ASTM D8045		<b>e</b> 7.539	4.89	4.009

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# **OIL ANALYSIS REPORT**





2

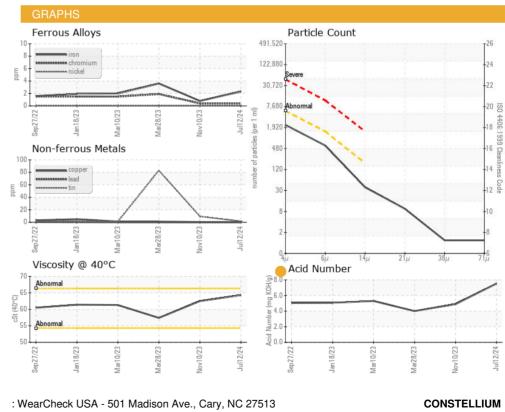
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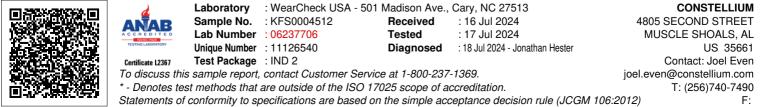
Sep27/22

Jan 18/23

Aar10/2:

VISUAL		method	limit/base	ourropt	history1	history2
VISUAL		methou	IIIIII/Dase	current	nistory i	TIIStory2
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	🔺 MODER
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	>0.05	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	IES	method	limit/base	current	history1	history2
			in invoase			
Visc @ 40°C	cSt	ASTM D445		64.3	62.5	57.4
SAMPLE IMAGES	3	method	limit/base	current	history1	history2
Color						
Bottom						





/lar28/23

Vov10/23

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