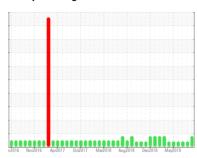


# **OIL ANALYSIS REPORT**

Sample Rating Trend







Machine Id

# Press #3 6561231

Component

**Hydraulic System** 

SHELL TELLUS S2 M 46 (251 GAL)

### DIAGNOSIS

#### Recommendation

We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. The filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

#### Wear

All component wear rates are normal.

#### Contamination

MPC (Membrane Patch Colorimetry) test indicates a high concentration of varnish present. The system cleanliness is acceptable for your target ISO 4406 cleanliness code.

#### **Fluid Condition**

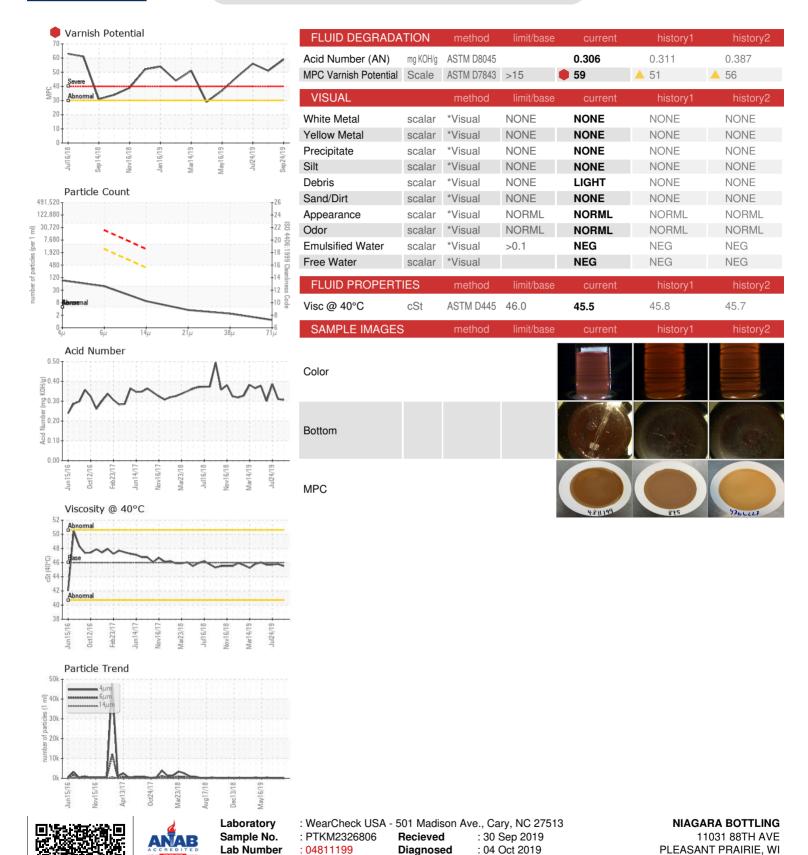
The AN level is acceptable for this fluid. The condition of the oil is acceptable for the time in service.

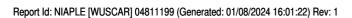
SAMPLE INFORMATION         method         limit/base         current         history1         history2           Sample Number         Client Info         24 Sep 2019         21 Aug 26802         PTKM2326802         PTKM23258802         30096			n2016 Nov20	16 Apr2017 Oct2017	Mar2018 Aug2018 Dec2018 M	ay2019	
Sample Date   Client Info   24 Sep 2019   21 Aug 2019   24 Jul 2019   Machine Age   hrs   Client Info   31550   30758   30096   30016   3006   30758   30096   30758   30096   3016   30758   30096   3016   30758   30096   3016   30758   30096   3016   30758   30096   3016   30758   30096   3016   30758   30096   3016   30758   30096   3016   30758   30096   3016   30758   30096   3016   30758   30096   3016   30758   30096   3016   30758   3016   30758   30096   3016   30758   30096   3016   30758   30096   3016   30758   30096   3016   30758   30096   3016   30758   30096   3016   30758   30096   3016   30758   30096   3016   30758   30096   3016	SAMPLE INFORMA	ATION	method	limit/base	current	history1	history2
Machine Age   hrs   Client Info   31550   30758   30096     Oil Age   hrs   Client Info   3908   3116   2454     Oil Changed   Client Info   Not Changd   Not Changd   ABNORMAL     Sample Status   SEVERE   ABNORMAL   ABNORMAL     CONTAMINATION   method   limit/base   current   history1   history2     Water   WC Method   >0.1   NEG   NEG   NEG     WEAR METALS   method   limit/base   current   history1   history2     Iron   ppm   ASTM D5185m   >20   <1   <1   <1     Chromium   ppm   ASTM D5185m   >20   <1   <1   <1     Chromium   ppm   ASTM D5185m   >10   0   0   0     Nickel   ppm   ASTM D5185m   >10   0   0   0     Silver   ppm   ASTM D5185m   >10   0   0   0     Silver   ppm   ASTM D5185m   >10   0   0   0     Oil Changed   ppm   ASTM D5185m   >10   0   0   0     Aluminum   ppm   ASTM D5185m   >10   0   0   0     Copper   ppm   ASTM D5185m   >10   0   0   0   0     Copper   ppm   ASTM D5185m   >10   0   0   0   0     Antimony   ppm   ASTM D5185m   >10   0   0   0   0     Antimony   ppm   ASTM D5185m   >10   0   0   0   0   0     Antimony   ppm   ASTM D5185m   0   0   0   0   0   0     ADDITIVES   method   limit/base   current   history1   history2     Boron   ppm   ASTM D5185m   0   0   0   0   0     ADDITIVES   method   limit/base   current   history1   history2     Boron   ppm   ASTM D5185m   0   0   0   0   0     Magnesium   ppm   ASTM D5185m   0   0   0   0   0     Magnesium   ppm   ASTM D5185m   0   0   0   0   0     Magnesium   ppm   ASTM D5185m   0   0   0   0   0     ASTM D5185m   0   0   0   0   0   0   0     Magnesium   ppm   ASTM D5185m   0   0   0   0   0   0     ASTM D5185m   0   0   0   0   0   0   0   0     Magnesium   ppm   ASTM D5185m   0   0   0   0   0   0   0   0   0	Sample Number		Client Info		PTKM2326806	PTKM2326802	PTKM2313915
Oil Age         hrs         Client Info         3908         3116         2454           Oil Changed Sample Status         Client Info         Not Changd SEVERE         Not Changd ABNORMAL         Not Changd ABNORMAL           CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >0.1         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5186m         >2.0         <1	Sample Date		Client Info		24 Sep 2019	21 Aug 2019	24 Jul 2019
Oil Changed Sample Status	Machine Age	hrs	Client Info		31550	30758	30096
Sample Status         SEVERE         ABNORMAL         ABNORMAL           CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >0.1         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >20         <1	Oil Age	hrs	Client Info		3908	3116	2454
CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >0.1         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         20         <1         <1         <1           Chromium         ppm         ASTM D5185m         >10         0         0         0           Nickel         ppm         ASTM D5185m         0         0         0         0           Silver         ppm         ASTM D5185m         0         0         0         0           Aluminum         ppm         ASTM D5185m         >10         0         <1         0           Lead         ppm         ASTM D5185m         >10         0         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1<	Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Water         WC Method         >0.1         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >20         <1         <1         <1           Chromium         ppm         ASTM D5185m         0         0         0           Nickel         ppm         ASTM D5185m         0         0         0           Silver         ppm         ASTM D5185m         <1         0         0         0           Aluminum         ppm         ASTM D5185m         >10         0         0         0         0           Lead         ppm         ASTM D5185m         >10         0<	Sample Status				SEVERE	ABNORMAL	ABNORMAL
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >20         <1         <1         <1           Chromium         ppm         ASTM D5185m         10         0         0         0           Nickel         ppm         ASTM D5185m         0         0         0         0           Titanium         ppm         ASTM D5185m         0         0         0         0           Aluminum         ppm         ASTM D5185m         >10         0         <1         0           Lead         ppm         ASTM D5185m         >10         0         <1         0           Lead         ppm         ASTM D5185m         >10         0         0         <1           Lead         ppm         ASTM D5185m         >10         0         0         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	CONTAMINATION		method	limit/base	current	history1	history2
Iron	Water		WC Method	>0.1	NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >10         0         0         0           Nickel         ppm         ASTM D5185m         0         0         0           Titanium         ppm         ASTM D5185m         0         0         0           Silver         ppm         ASTM D5185m         >10         0         <1         0           Aluminum         ppm         ASTM D5185m         >10         0         <1         0           Lead         ppm         ASTM D5185m         >10         0         0         0           Copper         ppm         ASTM D5185m         >10         0         0         <1           Tin         ppm         ASTM D5185m         >10         0         0         <1           Antimony         ppm         ASTM D5185m         0         0         0         0           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           Barium         ppm         ASTM D5185m         0         0         0         0           Malpanesi	WEAR METALS		method	limit/base	current	history1	history2
Nickel         ppm         ASTM D5185m         0         0         0           Titanium         ppm         ASTM D5185m         0         0         0           Silver         ppm         ASTM D5185m         <1	Iron	ppm	ASTM D5185m	>20	<1	<1	<1
Titanium         ppm         ASTM D5185m         0         0         0         0           Silver         ppm         ASTM D5185m         <1	Chromium	ppm	ASTM D5185m	>10	0	0	0
Silver         ppm         ASTM D5185m         <1         0         0           Aluminum         ppm         ASTM D5185m         >10         0         <1	Nickel	ppm	ASTM D5185m		0	0	0
Aluminum         ppm         ASTM D5185m         >10         0         <1         0           Lead         ppm         ASTM D5185m         >10         0         0         0           Copper         ppm         ASTM D5185m         >75         <1	Titanium	ppm	ASTM D5185m		0	0	0
Lead         ppm         ASTM D5185m         >10         0         0         0           Copper         ppm         ASTM D5185m         >75         <1         <1         <1           Tin         ppm         ASTM D5185m         >10         0         0         <1           Antimony         ppm         ASTM D5185m         0         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         <1         0         0           Magnesium         ppm         ASTM D5185m         0         <1         0         0           Zinc         ppm         ASTM D5185m         286         274         302 <tr< td=""><th>Silver</th><td>ppm</td><td>ASTM D5185m</td><td></td><th>&lt;1</th><td>0</td><td>0</td></tr<>	Silver	ppm	ASTM D5185m		<1	0	0
Copper         ppm         ASTM D5185m         >75         <1         <1         <1           Tin         ppm         ASTM D5185m         >10         0         0         <1	Aluminum	ppm	ASTM D5185m	>10	0	<1	0
Tin         ppm         ASTM D5185m         >10         0         0         <1           Antimony         ppm         ASTM D5185m         0         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           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         0         <1         0         0           Calcium         ppm         ASTM D5185m         12         20         24           Phosphorus         ppm         ASTM D5185m         283         260         274           Zinc         ppm         ASTM D5185m         286         274         302           Sulfur	Lead	ppm	ASTM D5185m	>10	0	0	0
Antimony         ppm         ASTM D5185m         0         0         0           Vanadium         ppm         ASTM D5185m         0         0         0           Cadmium         ppm         ASTM D5185m         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           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         0         <1         0         0           Magnesium         ppm         ASTM D5185m         0         <1         0         0           Calcium         ppm         ASTM D5185m         283         260         274         20           Phosphorus         ppm         ASTM D5185m         286         274         302         302           Sulfur         ppm         ASTM D5185m         20         <1         1         <1         <1 <tr< td=""><th>Copper</th><td>ppm</td><td>ASTM D5185m</td><td>&gt;75</td><th>&lt;1</th><td>&lt;1</td><td>&lt;1</td></tr<>	Copper	ppm	ASTM D5185m	>75	<1	<1	<1
Vanadium         ppm         ASTM D5185m         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         <1         0         <1           Barium         ppm         ASTM D5185m         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0           Manganese         ppm         ASTM D5185m         0         <1         0           Magnesium         ppm         ASTM D5185m         0         <1         0           Calcium         ppm         ASTM D5185m         12         20         24           Phosphorus         ppm         ASTM D5185m         286         274         302           Sulfur         ppm         ASTM D5185m         286         274         302           Sulfur         ppm         ASTM D5185m         20         <1         1         <1           Sodium         ppm         ASTM D5185m         >20         <1         1         <1 <th>Tin</th> <td>ppm</td> <td>ASTM D5185m</td> <td>&gt;10</td> <th>0</th> <td>0</td> <td>&lt;1</td>	Tin	ppm	ASTM D5185m	>10	0	0	<1
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         <1	Antimony	ppm	ASTM D5185m		0	0	0
ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         <1	Vanadium	ppm	ASTM D5185m		0	0	0
Boron   ppm   ASTM D5185m   c1   0   c1	Cadmium	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         <1         0           Magnesium         ppm         ASTM D5185m         0         <1         0           Calcium         ppm         ASTM D5185m         12         20         24           Phosphorus         ppm         ASTM D5185m         283         260         274           Zinc         ppm         ASTM D5185m         286         274         302           Sulfur         ppm         ASTM D5185m         625         650         927           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         <1         1         <1           Sodium         ppm         ASTM D5185m         0         0         <1         <1           Potassium         ppm         ASTM D5185m         20         <1         <1         <1           FLUID CLEANLINESS         method         limit/base	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         0         0         0           Manganese         ppm         ASTM D5185m         0         <1         0           Magnesium         ppm         ASTM D5185m         0         <1         0           Calcium         ppm         ASTM D5185m         12         20         24           Phosphorus         ppm         ASTM D5185m         283         260         274           Zinc         ppm         ASTM D5185m         286         274         302           Sulfur         ppm         ASTM D5185m         625         650         927           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         <1         1         <1           Sodium         ppm         ASTM D5185m         >20         <1         1         <1         <1           Sodium         ppm         ASTM D5185m         >20         <1         <1         <1         <1           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4µm	Boron	ppm	ASTM D5185m		<1	0	<1
Manganese         ppm         ASTM D5185m         0         <1         0           Magnesium         ppm         ASTM D5185m         0         <1	Barium	ppm	ASTM D5185m		0	0	0
Magnesium         ppm         ASTM D5185m         0         <1         0           Calcium         ppm         ASTM D5185m         12         20         24           Phosphorus         ppm         ASTM D5185m         283         260         274           Zinc         ppm         ASTM D5185m         286         274         302           Sulfur         ppm         ASTM D5185m         625         650         927           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         <1	Molybdenum	ppm	ASTM D5185m		0	0	0
Calcium         ppm         ASTM D5185m         12         20         24           Phosphorus         ppm         ASTM D5185m         283         260         274           Zinc         ppm         ASTM D5185m         286         274         302           Sulfur         ppm         ASTM D5185m         625         650         927           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         <1	Manganese	ppm	ASTM D5185m		0	<1	0
Phosphorus         ppm         ASTM D5185m         283         260         274           Zinc         ppm         ASTM D5185m         286         274         302           Sulfur         ppm         ASTM D5185m         625         650         927           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         <1	Magnesium	ppm	ASTM D5185m		0	<1	0
Zinc         ppm         ASTM D5185m         286         274         302           Sulfur         ppm         ASTM D5185m         625         650         927           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         <1	Calcium	ppm	ASTM D5185m		12	20	24
Sulfur         ppm         ASTM D5185m         625         650         927           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         <1	Phosphorus	ppm	ASTM D5185m		283	260	274
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         <1	Zinc	ppm	ASTM D5185m		286	274	302
Silicon         ppm         ASTM D5185m         >20         <1	Sulfur	ppm	ASTM D5185m		625	650	927
Sodium         ppm         ASTM D5185m         0         0         <1	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         <1         <1         <1           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         78         169         140           Particles >6μm         ASTM D7647         >2500         41         42         41           Particles >14μm         ASTM D7647         >320         8         5         4           Particles >21μm         ASTM D7647         >80         3         3         1           Particles >38μm         ASTM D7647         >20         2         2         0           Particles >71μm         ASTM D7647         >4         1         2         0	Silicon	ppm	ASTM D5185m	>20	<1	1	<1
FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         78         169         140           Particles >6μm         ASTM D7647         >2500         41         42         41           Particles >14μm         ASTM D7647         >320         8         5         4           Particles >21μm         ASTM D7647         >80         3         3         1           Particles >38μm         ASTM D7647         >20         2         2         0           Particles >71μm         ASTM D7647         >4         1         2         0	Sodium	ppm	ASTM D5185m		0	0	<1
Particles >4μm       ASTM D7647       78       169       140         Particles >6μm       ASTM D7647       >2500       41       42       41         Particles >14μm       ASTM D7647       >320       8       5       4         Particles >21μm       ASTM D7647       >80       3       3       1         Particles >38μm       ASTM D7647       >20       2       2       0         Particles >71μm       ASTM D7647       >4       1       2       0	Potassium	ppm	ASTM D5185m	>20	<1	<1	<1
Particles >6μm       ASTM D7647       >2500       41       42       41         Particles >14μm       ASTM D7647       >320       8       5       4         Particles >21μm       ASTM D7647       >80       3       3       1         Particles >38μm       ASTM D7647       >20       2       2       0         Particles >71μm       ASTM D7647       >4       1       2       0	FLUID CLEANLINE	ESS	method	limit/base	current	history1	history2
Particles >14μm       ASTM D7647       >320       8       5       4         Particles >21μm       ASTM D7647       >80       3       3       1         Particles >38μm       ASTM D7647       >20       2       2       0         Particles >71μm       ASTM D7647       >4       1       2       0	Particles >4µm		ASTM D7647		78	169	140
Particles >21μm       ASTM D7647       >80       3       1         Particles >38μm       ASTM D7647       >20       2       2       0         Particles >71μm       ASTM D7647       >4       1       2       0	Particles >6μm		ASTM D7647	>2500	41	42	41
Particles >38μm       ASTM D7647       >20       2       2       0         Particles >71μm       ASTM D7647       >4       1       2       0	Particles >14μm		ASTM D7647	>320	8	5	4
Particles >71μm ASTM D7647 >4 <b>1</b> 2 0	Particles >21µm		ASTM D7647	>80	3	3	1
	Particles >38µm		ASTM D7647	>20	2	2	0
Oil Cleanliness ISO 4406 (c) >18/15 <b>13/13/10</b> 15/13/10 14/13/9	5 5.		A OTA A D70 47	. 1		0	0
	Particles >/1µm		ASTM D/64/	>4	1	2	U

Contact/Location: AJ ? - NIAPLE



### **OIL ANALYSIS REPORT**





Certificate L2367

**Unique Number** 

: 8761071

To discuss this sample report, contact Customer Service at 1-800-237-1369.

\* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Test Package : MOB 2 ( Additional Tests: MPC )

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Diagnostician : Doug Bogart

Contact/Location: AJ ? - NIAPLE

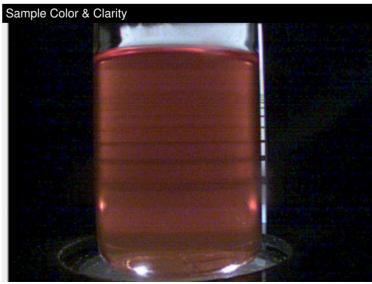
US 53158

F:

Contact: AJ

T: (909)239-7599





Report Id: NIAPLE [WUSCAR] 04811199 (Generated: 01/08/2024 16:01:28) Rev: 1

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