

# WearCheck Oil Analysis Service

## New Sample Reports



THE LEADER IN OIL ANALYSIS

**Introducing our new sample reports.** Our new report format includes many new features designed to provide you with the pertinent information you need to make better maintenance decisions. This document provides a description of new features and assistance in getting the most out of these sample reports.



### OIL ANALYSIS REPORT

Normal

Area: **65 POWER GENERATION**

Machine Id: **Turbogenerator**

Component: **Turbine**

Fluid: **TERESSO ISO 32**

Diagnosis

Sample Information

### PROBLEM SUMMARY

Wear

Area: **33880**

Machine Id: **LIEBHERR A934C Swing Drive**

Component: **IRVING HDH SAE 75W90 (6 LTR)**

COMPONENT CONDITION SUMMARY

### PROBLEM SUMMARY

Wear\_Particles

Area: **System 91 - Deck Cranes**

Machine Id: **Q-9101A East Crane Splitter Gearbox**

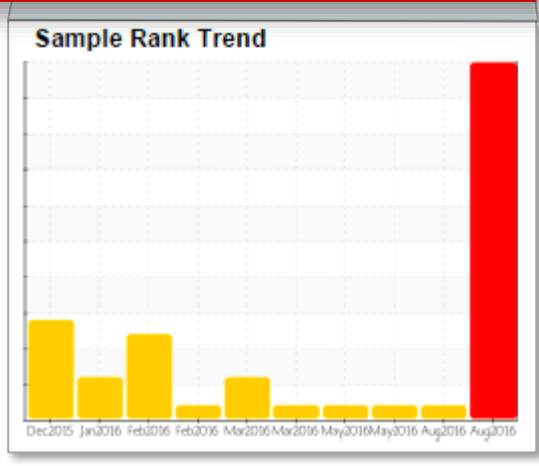
Component: **Gearbox**

Fluid: **IRVING HDH SAE 80W90 (? LTR)**

COMPONENT CONDITION SUMMARY

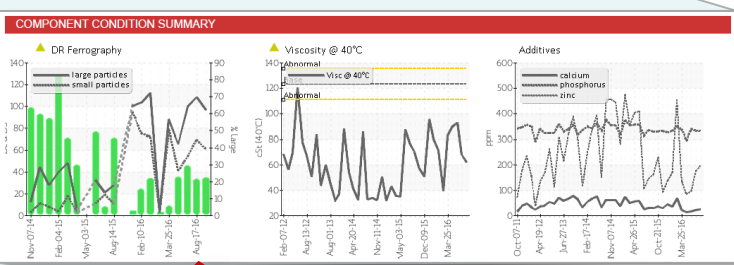
The machine condition is the most obvious aspect of the new sample report. The upper right of the report contains a color coded symbol depicting the machine condition with the overall problem condition noted above the symbol. The entire sample report is color coded to denote the machine condition (red = critical, yellow = alarm, green = normal). If the machine condition is in alarm or critical then the sample report will include a Problem Summary report page.

At the top of each report is the *Sample Rank Trend*. The Sample Rank Trend shows up to the last ten sample rankings for the given machine. This trend allows you to assess if the current machine condition is getting better, getting worse, or remaining the same. An increasing sample rank trend, for instance, can indicate an impending failure. A decreasing sample rank indicates that maintenance actions are effective.





The **Problem Summary Report** page is included when the sample condition is in alarm or critical and provides a detailed assessment of the current fluid and component condition including recommended maintenance actions.



The **Component Condition Summary** contains up to five graphs of the most critical sample test data. These graphs capture the essential condition of the fluid and/or component.

The **Problematic Test Results** summarizes all test data that are in alarm or critical. The test data summary shows the previous historical test data so that you can assess the change in these test data.

### PROBLEM SUMMARY

**Area:** System 91 - Deck Cranes  
**Machine Id:** Q-9101A East Crane Splitter Gearbox  
**Component:** Gearbox  
**Fluid:** IRVING HDH SAE 80W90 (2 LTR)

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#### COMPONENT CONDITION SUMMARY

**DR Ferrography**

**Viscosity @ 40°C**

**Additives**

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**RECOMMENDATION**

We recommend that you drain the oil from the component if this has not already been done. Confirm the source of the lubricant being utilized for top-ups. We recommend that you resample to monitor this condition. The fluid was specified as IRVING HDH SAE 80W90, however, a fluid match indicates that this fluid is ISO 68 Gear Oil. Please confirm the oil type and grade on your next sample. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

**PROBLEMATIC TEST RESULTS**

Large Particles	>50	▲ 96.3	108	99.4
Small Particles	>50	▲ 60.8	69.6	54.1
Total Particles	>100	▲ 157.1	177.6	153.5
Severity Index	>10000	▲ 341865	4147	4503
Ferrous Rubbing	Scale 0-10 >3	● 8	2	3
Ferrous Rolling	Scale 0-10 >2	▲ 4	1	1
Visc @ 40°C	cSt 123	▲ 61.6	67.6	92.5

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**Customer Id:** ABCNEW  
**Lab Number:** 01234567  
**Test Package:** ACM 3

To manage this report scan the QR code

To discuss the diagnosis or test data:  
 Bill Quisenberry +1 (905) 569-5600 x6541  
[Bill.Quisenberry@wearcheck.com](mailto:Bill.Quisenberry@wearcheck.com)

To change component or sample information:  
 Gloria Gonzalez +1 (905) 569-5600 x6543  
[gloria.gonzalez@wearcheck.com](mailto:gloria.gonzalez@wearcheck.com)

**RECOMMENDED ACTIONS**

**Change Fluid** We recommend that you drain the oil from the component if this has not already been done.

**Alert** The fluid was specified as IRVING HDH SAE 80W90, however, a fluid match indicates that this fluid is ISO 68 Gear Oil. Please confirm the oil type and grade on your next sample.

**Information Required** NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

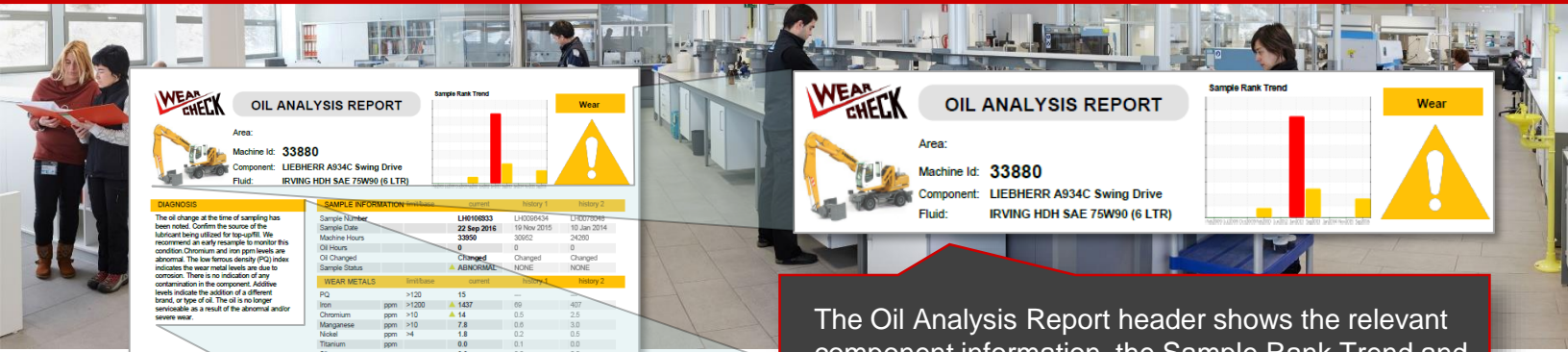
**Check Fluid Source** Confirm the source of the lubricant being utilized for top-ups.

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PROBLEMATIC TEST RESULTS				
Large Particles	>50	▲ 96.3	108	99.4
Small Particles	>50	▲ 60.8	69.6	54.1
Total Particles	>100	▲ 157.1	177.6	153.5
Severity Index	>10000	▲ 341865	4147	4503
Ferrous Rubbing	Scale 0-10 >3	● 8	2	3
Ferrous Rolling	Scale 0-10 >2	▲ 4	1	1
Visc @ 40°C	cSt 123	▲ 61.6	67.6	92.5

The new sample reports list a summary of recommended maintenance actions and/or activities to correct or improve the current problem conditions. These actions integrate on-line with the WebCheck V2.0 (WV2) wherein you can track your fleet or plant equipment maintenance actions. Maintenance actions tracked in WV2 will be captured the next time you generate the sample report.

RECOMMENDED ACTIONS	
Change Filter	We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid.
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.
Filter Fluid	We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. We recommend that you perform vacuum distillation and/or air drying to attempt to remove any residual water and/or entrained gases from this oil that may be contributing to abnormal foaming and/or poor water separability.



## OIL ANALYSIS REPORT

Area: **33880**  
 Machine Id: **LIEBHERR A934C Swing Drive**  
 Fluid: **IRVING HDH SAE 75W90 (6 LTR)**

**DIAGNOSIS**

The oil change at the time of sampling has been noted. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition. Chromium and iron ppm levels are abnormal. The low ferrous density (PQ) index indicates the wear metal levels are due to corrosion. There is no indication of any contamination in the component. Additive levels indicate the addition of a different brand, or type of oil. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

SAMPLE INFORMATION		limit/base	current	history 1	history 2
Sample Number			LH0106933	LH0086434	LH0078048
Sample Date			22 Sep 2016	19 Nov 2015	10 Jan 2014
Machine Hours			33950	30952	24200
Oil Hours			0	0	0
Oil Changed			Changed	Changed	Changed
Sample Status			▲ ABNORMAL	NONE	NONE

WEAR METALS		limit/base	current	history 1	history 2
PQ		>120	15	—	—
Iron	ppm	>1200	▲ 1437	89	407
Chromium	ppm	>10	▲ 14	0.5	2.5
Manganese	ppm	>10	7.8	0.6	3.0
Nickel	ppm	>4	1.8	0.2	0.5
Titanium	ppm		0.0	0.1	0.0
Silver	ppm		0.0	0.0	0.0
Aluminum	ppm	>4	0.0	0.4	1.7
Lead	ppm	>8	2.5	0.1	2.9
Copper	ppm	>325	89	6.4	58
Tin	ppm	>15	2.1	0.4	1.3
Antimony	ppm	>5	3.4	3.8	0.8
Beryllium	ppm		0.0	0.0	0.0
Cadmium	ppm		0.0	0.0	0.0

ADDITIVES		limit/base	current	history 1	history 2
Boron	ppm	45	45	86	29
Barium	ppm	0	0.0	0.0	1.8
Molybdenum	ppm	0	0.6	0.1	4.5
Magnesium	ppm	0	0.1	0.4	2.2
Calcium	ppm	0	9.4	21	147
Phosphorus	ppm	1000	911	1069	431
Zinc	ppm	0	15	24	67
Sulfur	ppm	22000	22230	24559	19339
Lithium	ppm	0	0.1	0.1	1.3

CONTAMINANTS		limit/base	current	history 1	history 2
Silicon	ppm	>10	5.1	3.1	8.0
Sodium	ppm		0.0	0.0	3.7
Potassium	ppm	>20	0.2	1.4	10

VISUAL		limit/base	current	history 1	history 2
White Metal	scalar	NONE	VLITE	VLITE	VLITE
Babbitt	scalar	NONE	NONE	NONE	NONE
Precipitate	scalar	NONE	NONE	NONE	NONE
Silt	scalar	NONE	VLITE	VLITE	VLITE
Debris	scalar	NONE	VLITE	VLITE	VLITE
Sand/Dirt	scalar	NONE	NONE	NONE	NONE
Appearance	scalar	NORML	NORML	NORML	NORML
Odor	scalar	NORML	NORML	NORML	NORML
Emulsified Water	scalar	>0.2	NEG	NEG	.2%
Free Water	scalar		NEG	NEG	

## OIL ANALYSIS REPORT

Area: **33880**  
 Machine Id: **LIEBHERR A934C Swing Drive**  
 Fluid: **IRVING HDH SAE 75W90 (6 LTR)**

The Oil Analysis Report header shows the relevant component information, the Sample Rank Trend and the condition symbol and sample problem code.

The Diagnosis section contains a detailed interpretation of the fluid and component condition based on the oil analysis test results, and includes recommendations for appropriate maintenance activities.

**DIAGNOSIS**  
 The oil change at the time of sampling has been noted. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition. Chromium and iron ppm levels are abnormal. The low ferrous density (PQ) index indicates the wear metal levels are due to corrosion. There is no indication of any contamination in the component. Additive levels indicate the addition of a different brand, or type of oil. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

Page 1 of the Oil Analysis Report contains the diagnosis, and sample & test result information.

The Sample and Test Information section shows all relevant sample related information, all test results and any baseline and alarm limits in an easy to read format. The sample and test information includes two sample histories so that you can review trends. In the limit/base section any value with a +/-, >, < signifies an alarm limit (i.e. Iron : >1200), while any value signifies baseline data (i.e. Sulfur : 22000). Any test data in alarm or critical status is highlighted with the relevant symbol to draw attention to this data.

SAMPLE INFORMATION		limit/base	current	history 1	history 2
Sample Number			LH0106933	LH0086434	LH0078048
Sample Date			22 Sep 2016	19 Nov 2015	10 Jan 2014
Machine Hours			33950	30952	24200
Oil Hours			0	0	0
Oil Changed			Changed	Changed	Changed
Sample Status			▲ ABNORMAL	NONE	NONE

WEAR METALS		limit/base	current	history 1	history 2
PQ		>120	15	—	—
Iron	ppm	>1200	▲ 1437	89	407
Chromium	ppm	>10	▲ 14	0.5	2.5
Manganese	ppm	>10	7.8	0.6	3.0
Nickel	ppm	>4	1.8	0.2	0.5
Titanium	ppm		0.0	0.1	0.0
Silver	ppm		0.0	0.0	0.0
Aluminum	ppm	>4	0.0	0.4	1.7
Lead	ppm	>8	2.5	0.1	2.9
Copper	ppm	>325	89	6.4	58
Tin	ppm	>15	2.1	0.4	1.3
Antimony	ppm	>5	3.4	3.8	0.8
Beryllium	ppm		0.0	0.0	0.0
Cadmium	ppm		0.0	0.0	0.0

ADDITIVES		limit/base	current	history 1	history 2
Boron	ppm	50	45	86	29
Barium	ppm	0	0.0	0.0	1.8
Molybdenum	ppm	0	0.6	0.1	4.5
Magnesium	ppm	0	0.1	0.4	2.2
Calcium	ppm	0	9.4	21	147
Phosphorus	ppm	1000	911	1069	431
Zinc	ppm	0	15	24	67
Sulfur	ppm	22000	22230	24559	19339
Lithium	ppm	0	0.1	0.1	1.3

CONTAMINANTS		limit/base	current	history 1	history 2
Silicon	ppm	>10	5.1	3.1	8.0
Sodium	ppm		0.0	0.0	3.7
Potassium	ppm	>20	0.2	1.4	10

VISUAL		limit/base	current	history 1	history 2
White Metal	scalar	NONE	VLITE	VLITE	VLITE
Babbitt	scalar	NONE	NONE	NONE	NONE
Precipitate	scalar	NONE	NONE	NONE	NONE
Silt	scalar	NONE	VLITE	VLITE	VLITE
Debris	scalar	NONE	VLITE	VLITE	VLITE
Sand/Dirt	scalar	NONE	NONE	NONE	NONE
Appearance	scalar	NORML	NORML	NORML	NORML
Odor	scalar	NORML	NORML	NORML	NORML
Emulsified Water	scalar	>0.2	NEG	NEG	.2%

Customer Id: ABCNEW  
 Lab Number: 01234567  
 Test Package: MOB 2

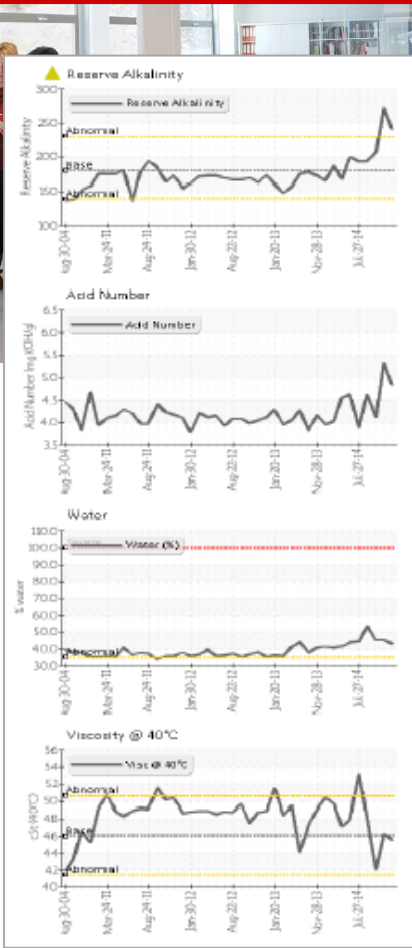
To manage this report scan the QR code

To discuss the diagnosis or test data:  
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To change component or sample information:  
 Gloria Gonzalez +1 (905)569-8600 x4643  
[gloria.gonzalez@wearcheck.com](mailto:gloria.gonzalez@wearcheck.com)

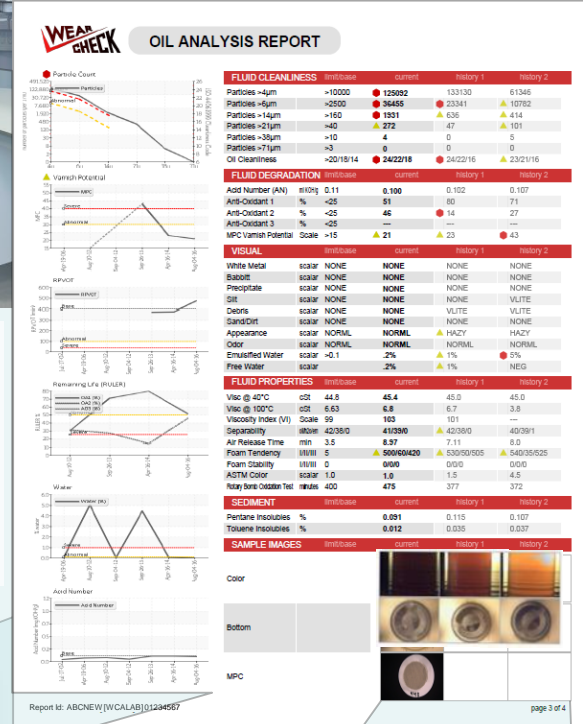
The report footer includes pertinent sample & contact information. The QR code provides you with access to on-line report management features.

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**Page 2 of the Oil Analysis Report** contains any additional tests data as well as a range of trend graphs and sample pictures and images.

Up to six of the most relevant graphs are displayed to show trends for the sample test data.



The new report layout allows for multiple pages, so all test data is shown and continues to scroll onto additional pages as required.

Previously sample color and bottom images were only available on-line through WebCheck. Now the sample reports includes sample images, as well as any other relevant images, such as particle debris patches, ferrography and MPC patches.

FLUID CLEANLINESS	limit/base	current	history 1	history 2
Particles >4µm	>10000	125092	133130	61346
Particles >6µm	>2500	36455	23341	10782
Particles >14µm	>160	1931	636	414
Particles >21µm	>40	272	47	101
Particles >38µm	>10	4	0	5
Particles >71µm	>3	0	0	0
Oil Cleanliness	>20/18/14	24/22/18	24/22/16	23/21/16

FLUID DEGRADATION	limit/base	current	history 1	history 2	
Acid Number (AN)	ni/KOh/g	0.11	0.100	0.102	0.107
Anti-Oxidant 1	%	<25	51	80	71
Anti-Oxidant 2	%	<25	46	14	27
Anti-Oxidant 3	%	<25	---	---	---
MPC Varnish Potential	Scale	>15	21	23	43

VISUAL	limit/base	current	history 1	history 2	
White Metal	scalar	NONE	NONE	NONE	NONE
Babbitt	scalar	NONE	NONE	NONE	NONE
Precipitate	scalar	NONE	NONE	NONE	NONE
Silt	scalar	NONE	NONE	NONE	VLITE
Debris	scalar	NONE	NONE	NONE	VLITE
Sand/Dirt	scalar	NONE	NONE	NONE	NONE
Appearance	scalar	NORML	NORML	HAZY	HAZY
Odor	scalar	NORML	NORML	NORML	NORML
Emulsified Water	scalar	>0.1	.2%	1%	5%
Free Water	scalar		.2%	1%	NEG

FLUID PROPERTIES	limit/base	current	history 1	history 2	
Visc @ 40°C	cSt	44.8	45.4	45.0	45.0
Visc @ 100°C	cSt	6.63	6.8	6.7	3.8
Viscosity Index (VI)	Scale	99	103	101	---
Separability	oil/water	42/38/0	41/39/0	42/38/0	40/39/1
Air Release Time	min	3.5	8.97	7.11	8.0
Foam Tendency	I/II/III	5	500/60/420	530/50/505	540/35/525
Foam Stability	I/II/III	0	0/0/0	0/0/0	0/0/0
ASTM Color	scalar	1.0	1.0	1.5	4.5
Rotary Bomb Oxidation Test	minutes	400	475	377	372

SEDIMENT	limit/base	current	history 1	history 2
Pentane Insolubles	%	0.091	0.115	0.107
Toluene Insolubles	%	0.012	0.035	0.037

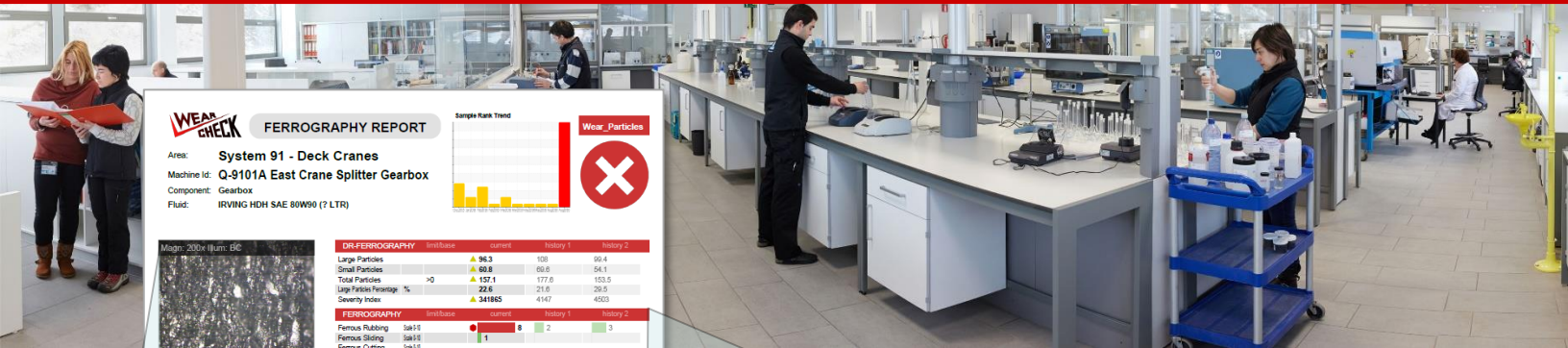
### Sample Images

Color

Bottom

PrntFilter





## FERROGRAPHY REPORT

Area: **System 91 - Deck Cranes**  
 Machine Id: **Q-9101A East Crane Splitter Gearbox**  
 Component: **Gearbox**  
 Fluid: **IRVING HDH SAE 80W90 (? LTR)**

**Wear\_Particles**

Magn: 200x Illum: BC

Magn: 50x Illum: RW

Magn: 100x Illum: RW

DR-FERROGRAPHY	limit/base	current	history 1	history 2
Large Particles	▲ 95.3	100	99.4	99.4
Small Particles	▲ 68.8	69.6	54.1	54.1
Total Particles	▲ 157.1	177.6	153.5	153.5
Large Particle Percentage %	▲ 22.6	21.6	28.5	28.5
Severity Index	▲ 341865	4147	4503	4503

FERROGRAPHY	limit/base	current	history 1	history 2
Ferrous Rubbing	Scale 1-10	● 8	■ 2	■ 3
Ferrous Sliding	Scale 1-10	■ 1		
Ferrous Cutting	Scale 1-10	▲ 4	■ 1	■ 1
Ferrous Rolling	Scale 1-10			
Ferrous Spheres	Scale 1-10			
Ferrous Black Oxides	Scale 1-10			
Ferrous Corrosive	Scale 1-10	■ 2	■ 1	
Ferrous Other	Scale 1-10			
Nonferrous Rubbing	Scale 1-10			
Nonferrous Sliding	Scale 1-10			
Nonferrous Cutting	Scale 1-10			
Nonferrous Rolling	Scale 1-10			
Nonferrous Other	Scale 1-10			
Carbonaceous Material	Scale 1-10			
Lubricant Degradation	Scale 1-10	■ 1	■ 2	■ 1
Sand/Dirt	Scale 1-10			
Fibres	Scale 1-10			
Silica	Scale 1-10			
Other	Scale 1-10	■ 2	■ 1	■ 1

**WEAR**

Wear particle analysis indicates that the ferrous rubbing particles are severe. Wear particle analysis indicates that the ferrous rolling particles are abnormal. Severity Index, total particles, large particles and small particles levels are abnormal.

DR Ferrography

The **Ferrography Report** is included if your sample test package includes analytical ferrography. The ferrography report includes up to four relevant photo micrographs, ferrography test data an interpretation of the wear condition of the component and a direct-reading ferrograph trend chart.

FERROGRAPHY	limit/base	current	history 1	history 2
Ferrous Rubbing	Scale 1-10	● 8	■ 2	■ 3
Ferrous Sliding	Scale 1-10	■ 1		
Ferrous Cutting	Scale 1-10	▲ 4	■ 1	■ 1
Ferrous Rolling	Scale 1-10			

Up to four ferrogram photo micrographs are included in the report including the photograph magnification and lighting conditions.

The qualitative ferrography test data is shown on a relative scale bar with a test severity symbol and with the actual test scalar value and includes the trend from the previous two ferrographic test results.

A detailed interpretation of the wear particle analysis is provided.

**WEAR**  
 Wear particle analysis indicates that the ferrous rubbing particles are severe. Wear particle analysis indicates that the ferrous rolling particles are abnormal. Severity Index, total particles, large particles and small particles levels are abnormal.

A direct-reading ferrography trend chart highlights changes in small and large ferrous wear debris particles and trends the change in the percentage of large ferrous particles.

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## Get Started Today

Contact us now to maximize the value from your oil analysis program. Our service representative will recommend the appropriate sample kits and get you signed up to our on-line WebCheck system to ensure that you get the most value from your investment in oil analysis. Don't delay, start today.

**PROBLEM SUMMARY**

Area: System 91 - Deck Cranes  
 Machine Id: Q-9101A East Crane Splitter Gearbox  
 Component: Gearbox  
 Fluid: IRVING HDH SAE 80W90 (7 LTR)

**Wear Particles**

**COMPONENT CONDITION SUMMARY**

**PROBLEMATIC TEST RESULTS**

Parameter	Value	Unit	Limit
Large Particles	95.3	100	99.6
Small Particles	60.8	69.0	64.1
Total Particles	>0	177.6	163.5
Severity Index	141.6	41.7	42.0
Ferrous Rubbing	3816	8	2
Ferrous Noting	3816	1	3
Visc @ 42°C	123	61.8	67.5
			92.5

**RECOMMENDED ACTIONS**

**Change Fluid** We recommend that you drain the oil from the component if this has not already been done.

**Alert** The fluid was analyzed as IRVING HDH SAE 80W90. However, a fluid analysis indicates that this fluid is ISO 68 Clear Oil. Please confirm the oil type and grade on your next sample.

**Information Required** NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

**Check Fluid Source** Confirm the source of the lubricant being utilized for top-ups.

## Contact Info

For assistance in USA.....  
 For assistance in Canada.....

Phone 1-800-237-1369  
 Phone 1-800-268-2131

You can also e-mail us at [info.sales@wearcheck.com](mailto:info.sales@wearcheck.com)

WC-NEW-SAMPLE-REPORTS (2016.11)

