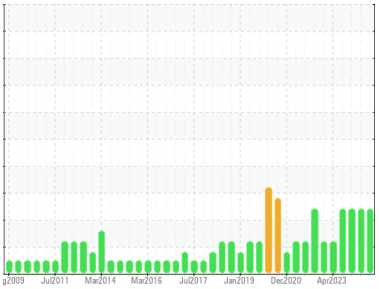
PROBLEM SUMMARY

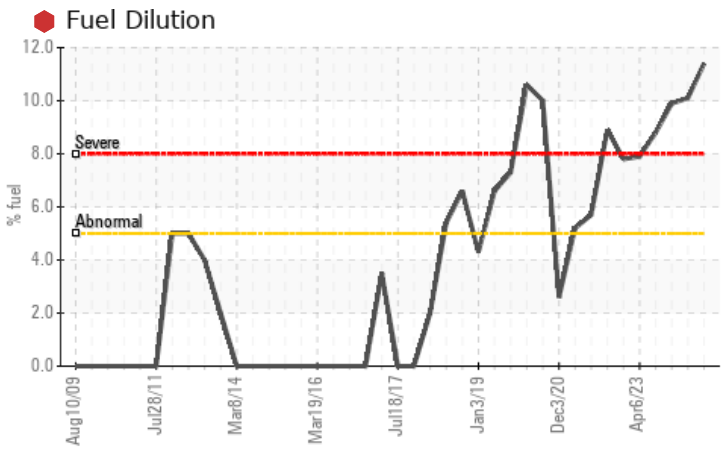
Sample Rating Trend

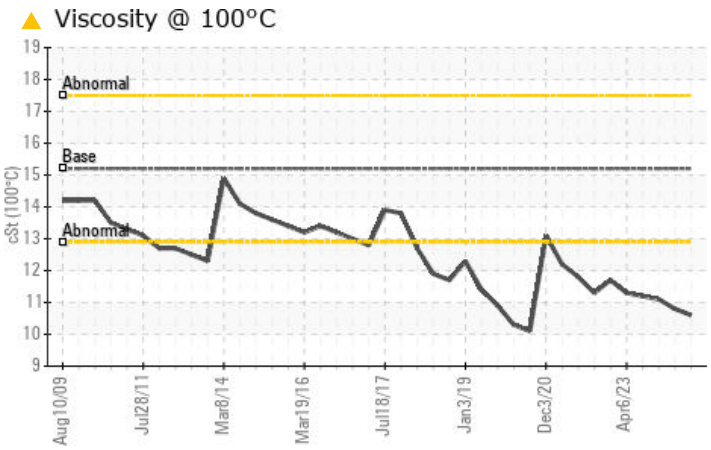


FUEL

Area
System 72 - Essential Power Generation
Machine Id
Z-7201D Essential Power Diesal Engine Lube Oil
Component
Diesel Engine
Fluid
IRVING IDO UNIVERSAL SAE 15W40 (830 LTR)

COMPONENT CONDITION SUMMARY





RECOMMENDATION

We advise that you check the fuel injection system. We recommend that you change the oil at the next available stoppage or outage. We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS

Sample Status				**SEVERE**	SEVERE	SEVERE
Fuel	%	ASTM D7593*	>5	**11.4**	10.1	9.9
Visc @ 100°C	cSt	ASTM D7279(m)	15.2	**10.6**	10.8	11.1

Customer Id: HIBSTJ
Sample No.: PP
Lab Number: 02590885
Test Package: MAR 3

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 Fluid	---	---	?	We recommend that you change the oil at the next available stoppage or outage.
Resample	---	---	?	We recommend an early resample to monitor this condition.
Check Fuel/injector System	---	---	?	We advise that you check the fuel injection system.

HISTORICAL DIAGNOSIS

31 Aug 2023 Diag: Kevin Marson

FUEL

We advise that you check the fuel injection system. We recommend that you change the oil at the next available stoppage or outage. We recommend an early resample to monitor this condition.All component wear rates are normal. The direct-reading & analytical ferrographic results are normal indicating no abnormal wear in the system. There is a high amount of fuel present in the oil. The water content is negligible. Tests confirm the presence of fuel in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable due to the presence of contaminants.

view report

01 Jun 2023 Diag: Kevin Marson

FUEL

We advise that you check the fuel injection system. We recommend that you change the oil at the next available stoppage or outage. We recommend an early resample to monitor this condition.All component wear rates are normal. The direct-reading & analytical ferrographic results are normal indicating no abnormal wear in the system. There is a high amount of fuel present in the oil. The water content is negligible. Tests confirm the presence of fuel in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. Viscosity of sample indicates oil is within SAE 30 range, advise investigate. The oil is no longer serviceable due to the presence of contaminants.

view report

29 Apr 2023 Diag: Kevin Marson

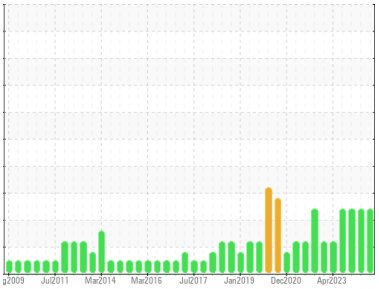
FUEL

We advise that you check the fuel injection system. We recommend that you change the oil at the next available stoppage or outage. We recommend an early resample to monitor this condition.All component wear rates are normal. The direct-reading & analytical ferrographic results are normal indicating no abnormal wear in the system. There is a high amount of fuel present in the oil. Tests confirm the presence of fuel in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. Viscosity of sample indicates oil is within SAE 30 range, advise investigate. The oil is no longer serviceable due to the presence of contaminants.

view report

OIL ANALYSIS REPORT

Sample Rating Trend



FUEL

Area
System 72 - Essential Power Generation
Machine Id
Z-7201D Essential Power Diesal Engine Lube Oil
Component
Diesel Engine
Fluid
IRVING IDO UNIVERSAL SAE 15W40 (830 LTR)

DIAGNOSIS

Recommendation

We advise that you check the fuel injection system. We recommend that you change the oil at the next available stoppage or outage. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal. The ferrography results are normal indicating no abnormal wear in the system.

Contaminants

There is a high amount of fuel present in the oil. The water content is negligible. Tests confirm the presence of fuel in the oil.

Oil Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. Viscosity of sample indicates oil is within SAE 30 range, advise investigate. The oil is no longer serviceable due to the presence of contaminants.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**PP**	PP	WC0774325
Sample Date		Client Info		**06 Oct 2023**	31 Aug 2023	01 Jun 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
Sample Status				**SEVERE**	SEVERE	SEVERE

CONTAMINATION	method	limit/base	current	history1	history2
Glycol	WC Method		**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184*		**0**	0	0
Iron	ppm	ASTM D5185(m)	>100	**7**	7	7
Chromium	ppm	ASTM D5185(m)	>20	**0**	0	0
Nickel	ppm	ASTM D5185(m)	>4	**0**	<1	0
Titanium	ppm	ASTM D5185(m)		**0**	0	0
Silver	ppm	ASTM D5185(m)	>3	**<1**	0	0
Aluminum	ppm	ASTM D5185(m)	>20	**1**	<1	1
Lead	ppm	ASTM D5185(m)	>40	**2**	2	2
Copper	ppm	ASTM D5185(m)	>330	**10**	9	9
Tin	ppm	ASTM D5185(m)	>15	**<1**	<1	<1
Antimony	ppm	ASTM D5185(m)		**0**	0	0
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)		**42**	42	44
Barium	ppm	ASTM D5185(m)		**<1**	0	0
Molybdenum	ppm	ASTM D5185(m)		**2**	2	2
Manganese	ppm	ASTM D5185(m)		**0**	<1	<1
Magnesium	ppm	ASTM D5185(m)		**10**	10	11
Calcium	ppm	ASTM D5185(m)		**1985**	1976	1993
Phosphorus	ppm	ASTM D5185(m)		**884**	944	934
Zinc	ppm	ASTM D5185(m)	1300	**1021**	1037	1042
Sulfur	ppm	ASTM D5185(m)		**2831**	2895	2882
Lithium	ppm	ASTM D5185(m)		**<1**	<1	<1

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>25	**2**	2	2
Sodium	ppm	ASTM D5185(m)		**2**	2	2
Potassium	ppm	ASTM D5185(m)	>20	**<1**	<1	<1
Fuel	%	ASTM D7593*	>5	**11.4**	10.1	9.9
Water	%	ASTM D6304*	>0.2	**0.045**	0.055	0.039
ppm Water	ppm	ASTM D6304*	>2000	**452.8**	556.1	395.4

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*	>3	**0.1**	0.1	0.1
Nitration	Abs/cm	ASTM D7624*	>20	**9.1**	8.5	9.0
Sulfation	Abs/.1mm	ASTM D7415*	>30	**18.5**	17.7	18.4

OIL ANALYSIS REPORT

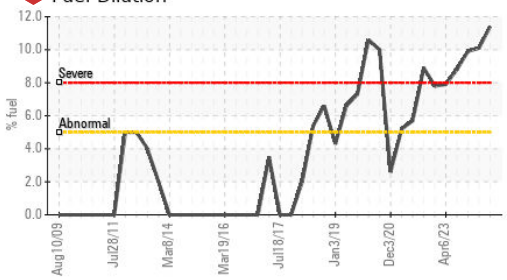
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	ASTM D7414*	>25	**14.2**	13.1	14.3
Base Number (BN)	mg KOH/g	ASTM D2896*	11.3	**5.89**	6.07	6.04

VISUAL		method	limit/base	current	history1	history2
Emulsified Water	scalar	Visual*	>0.2	**NEG**	NEG	NEG
Free Water	scalar	Visual*		**NEG**	NEG	NEG

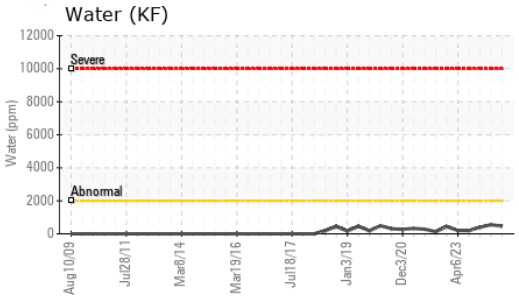
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D7279(m)	15.2	▲ **10.6**	▲ 10.8	▲ 11.1

GRAPHS

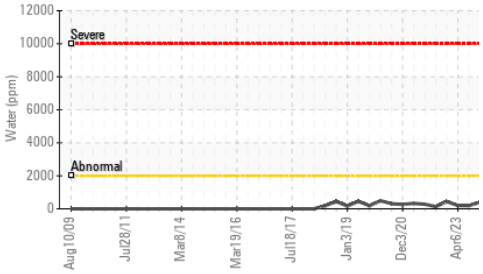
Fuel Dilution



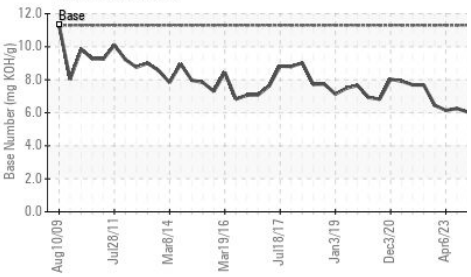
Water (KF)



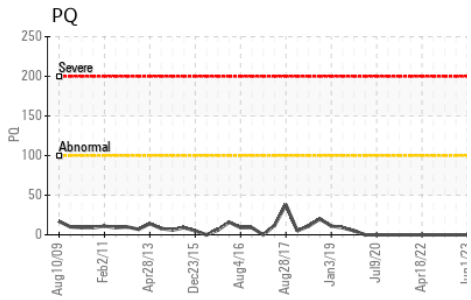
Water (KF)



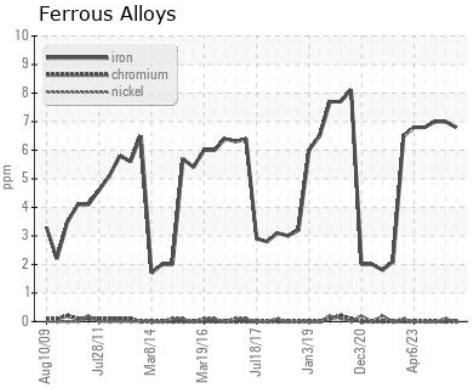
Base Number



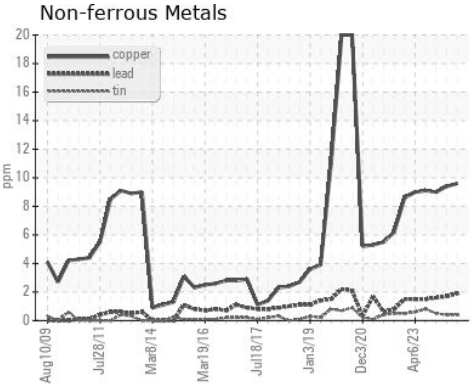
PQ



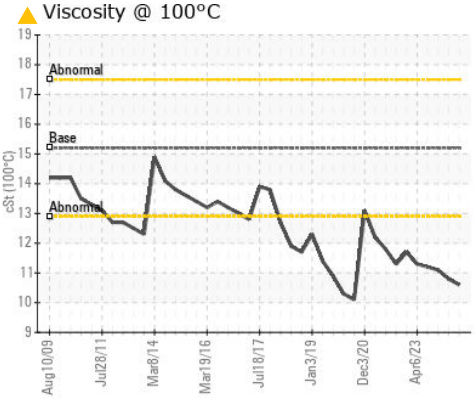
Ferrous Alloys



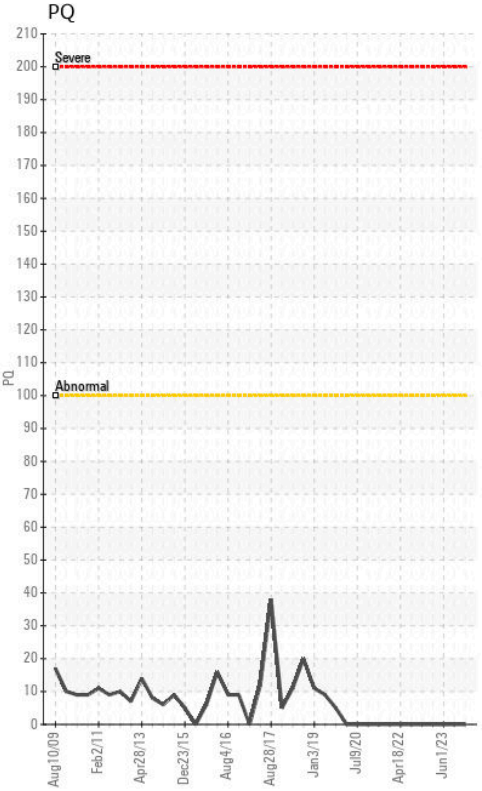
Non-ferrous Metals



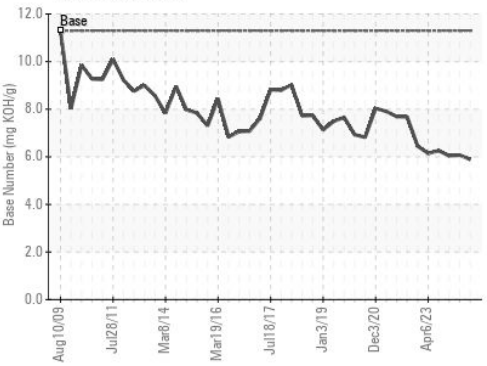
▲ Viscosity @ 100°C



PQ



Base Number



ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : PP
Lab Number : 02590885
Unique Number : 5667964
Test Package : MAR 3 (Additional Tests: KF, PercentFuel)

Received : 23 Oct 2023
Diagnosed : 27 Oct 2023
Diagnostician : Kevin Marson

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.

HIBERNIA MGMT & DEVELOPMENT CO. LTD
SUITE 1000,, 100 NEW GOWER STREET
ST.JOHNS, NL
CA A1C 6K3
Contact: Christopher Michelau
christopher.j.michelau@exxonmobil.com
T:
F: (709)722-3766

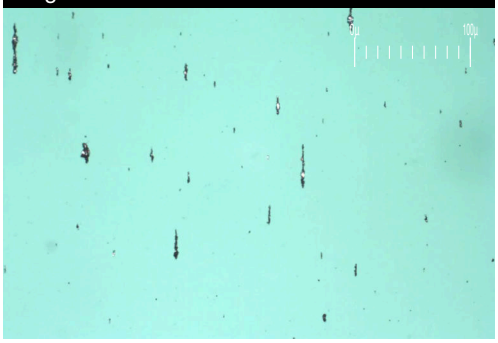
Report Id: HIBSTJ [WCAMIS] 02590885 (Generated: 10/27/2023 08:27:50) Rev: 1

Submitted By: ?

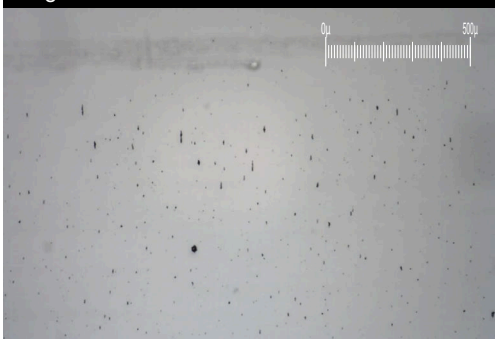
FERROGRAPHY REPORT

Area
System 72 - Essential Power Generation
Machine Id
Z-7201D Essential Power Diesal Engine Lube Oil
Component
Diesel Engine
Fluid
IRVING IDO UNIVERSAL SAE 15W40 (830 LTR)

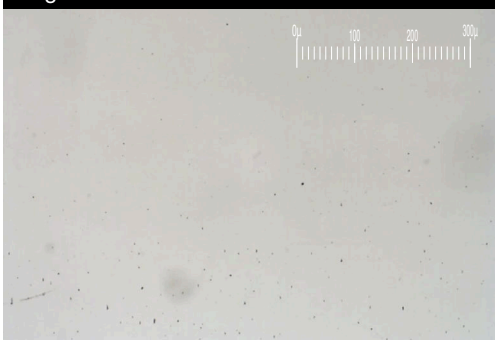
Magn: 200x Illum: BC



Magn: 50x Illum: RW



Magn: 100x Illum: RW

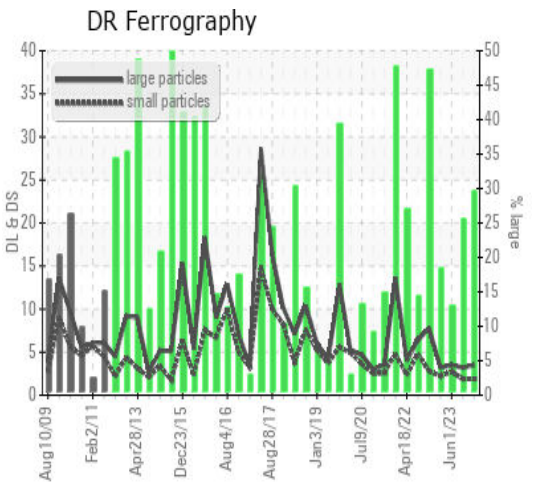


DR-FERROGRAPHY		method	limit/base	current	history1	history2
Large Particles		DR-Ferr*		**3.5**	3.2	3.5
Small Particles		DR-Ferr*		**1.9**	1.9	2.7
Total Particles		DR-Ferr*	>---	**5.4**	5.1	6.2
Large Particles Percentage	%	DR-Ferr*		**29.6**	25.5	12.9
Severity Index		DR-Ferr*		**6**	4	3

FERROGRAPHY		method	limit/base	current	history1	history2
Ferrous Rubbing	Scale 0-10	ASTM D7684*		**3**	3	3
Ferrous Sliding	Scale 0-10	ASTM D7684*				
Ferrous Cutting	Scale 0-10	ASTM D7684*				
Ferrous Rolling	Scale 0-10	ASTM D7684*		**1**	1	1
Ferrous Break-in	Scale 0-10	ASTM D7684*				
Ferrous Spheres	Scale 0-10	ASTM D7684*				
Ferrous Black Oxides	Scale 0-10	ASTM D7684*		**1**	1	1
Ferrous Red Oxides	Scale 0-10	ASTM D7684*				
Ferrous Corrosive	Scale 0-10	ASTM D7684*				
Ferrous Other	Scale 0-10	ASTM D7684*				
Nonferrous Rubbing	Scale 0-10	ASTM D7684*				
Nonferrous Sliding	Scale 0-10	ASTM D7684*				
Nonferrous Cutting	Scale 0-10	ASTM D7684*				
Nonferrous Rolling	Scale 0-10	ASTM D7684*				
Nonferrous Other	Scale 0-10	ASTM D7684*				
Carbonaceous Material	Scale 0-10	ASTM D7684*				
Lubricant Degradation	Scale 0-10	ASTM D7684*				
Sand/Dirt	Scale 0-10	ASTM D7684*		**1**	1	1
Fibres	Scale 0-10	ASTM D7684*				
Spheres	Scale 0-10	ASTM D7684*				
Other	Scale 0-10	ASTM D7684*		**1**	1	1

WEAR

All component wear rates are normal. The ferrography results are normal indicating no abnormal wear in the system.



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