

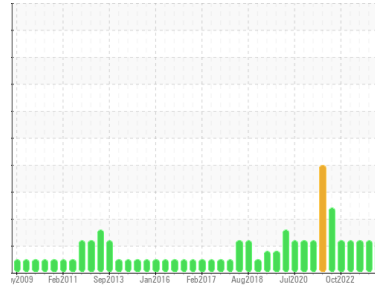


PROBLEM SUMMARY

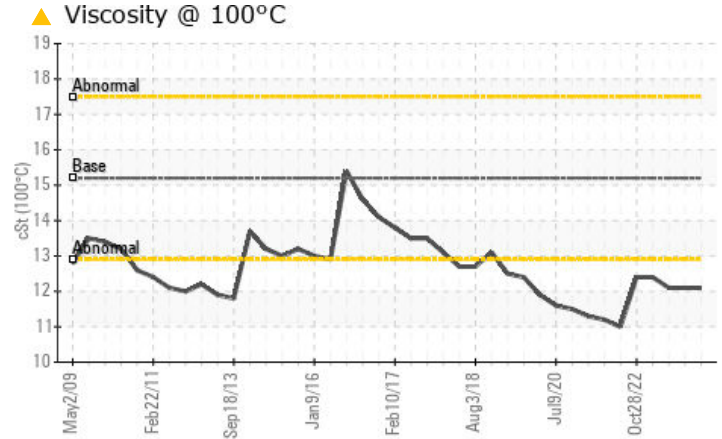
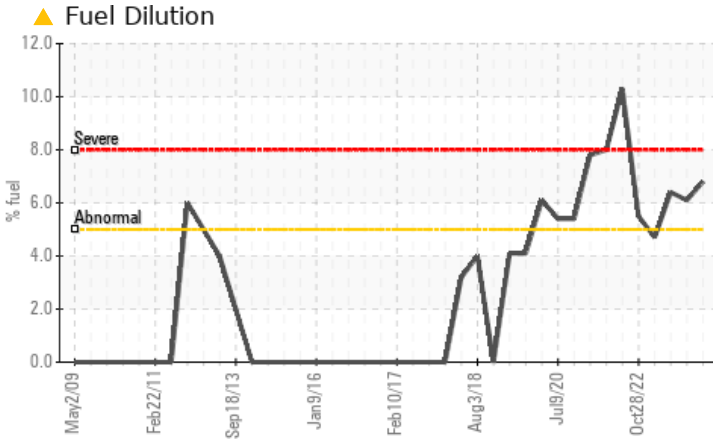
Sample Rating Trend

FUEL

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



COMPONENT CONDITION SUMMARY



RECOMMENDATION

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			ABNORMAL	ABNORMAL	ABNORMAL
Fuel	%	ASTM D7593*	>5	▲ 6.8	▲ 6.1
Visc @ 100°C	cSt	ASTM D7279(m)	15.2	▲ 12.1	▲ 12.1

Customer Id: HIBSTJ
 Sample No.: PP
 Lab Number: 02590884
 Test Package: MAR 3



To manage this report scan the QR code

To discuss the diagnosis or test data:
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Kevin.Marson@wearcheck.com

To change component or sample information:
 Gloria Gonzalez +1 (289)291-4643 x4643
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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.

HISTORICAL DIAGNOSIS

31 Aug 2023 Diag: Bill Quesnel

FUEL



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 moderate 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](#)



01 Jun 2023 Diag: Kevin Marson

FUEL



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 moderate 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](#)



06 Apr 2023 Diag: Kevin Marson

FUEL



No corrective action is recommended at this time. 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. Light fuel dilution occurring. The water content is negligible. No other contaminants were detected 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 condition of the oil is suitable for further service.

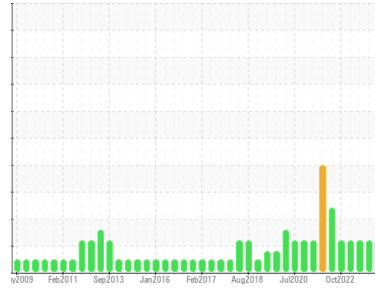
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OIL ANALYSIS REPORT

Sample Rating Trend



FUEL



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

DIAGNOSIS

Recommendation

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 moderate 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	WC0774326
Sample Date	Client Info	06 Oct 2023	31 Aug 2023	01 Jun 2023
Machine Age	hrs	Client Info	0	0
Oil Age	hrs	Client Info	0	0
Oil Changed	Client Info	N/A	N/A	N/A
Sample Status		ABNORMAL	ABNORMAL	ABNORMAL

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	17	17
Chromium	ppm	ASTM D5185(m) >20	0	<1
Nickel	ppm	ASTM D5185(m) >4	0	<1
Titanium	ppm	ASTM D5185(m)	0	0
Silver	ppm	ASTM D5185(m) >3	<1	0
Aluminum	ppm	ASTM D5185(m) >20	1	2
Lead	ppm	ASTM D5185(m) >40	6	6
Copper	ppm	ASTM D5185(m) >330	149	151
Tin	ppm	ASTM D5185(m) >15	1	1
Antimony	ppm	ASTM D5185(m)	0	0
Vanadium	ppm	ASTM D5185(m)	0	0
Beryllium	ppm	ASTM D5185(m)	0	0
Cadmium	ppm	ASTM D5185(m)	0	<1

ADDITIVES

method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	19	18
Barium	ppm	ASTM D5185(m)	<1	0
Molybdenum	ppm	ASTM D5185(m)	4	4
Manganese	ppm	ASTM D5185(m)	0	<1
Magnesium	ppm	ASTM D5185(m)	8	9
Calcium	ppm	ASTM D5185(m)	2242	2240
Phosphorus	ppm	ASTM D5185(m)	897	963
Zinc	ppm	ASTM D5185(m) 1300	1051	1076
Sulfur	ppm	ASTM D5185(m)	2715	2800
Lithium	ppm	ASTM D5185(m)	<1	<1

CONTAMINANTS

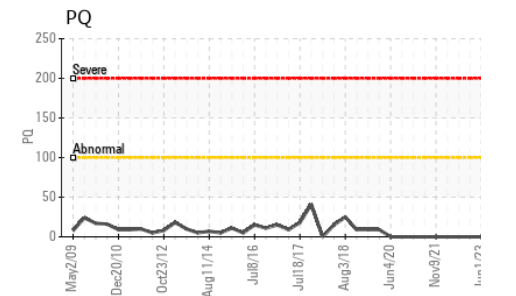
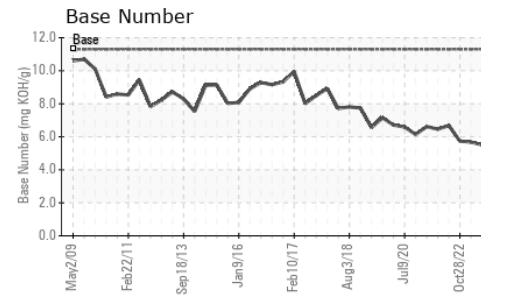
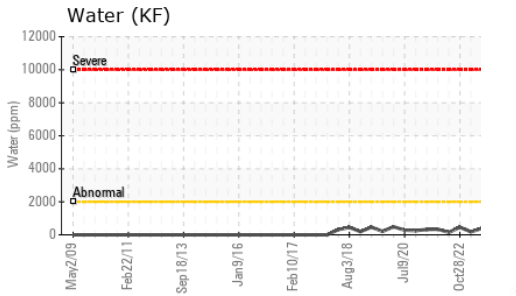
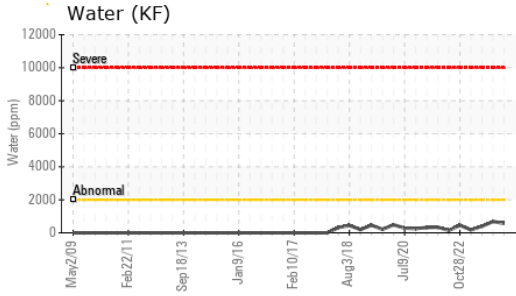
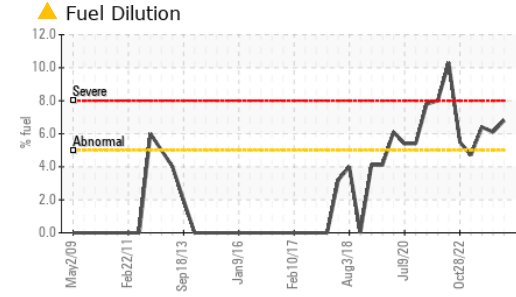
method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m) >25	4	5
Sodium	ppm	ASTM D5185(m)	3	3
Potassium	ppm	ASTM D5185(m) >20	1	1
Fuel	%	ASTM D7593* >5	▲ 6.8	▲ 6.1
Water	%	ASTM D6304* >0.2	0.056	0.068
ppm Water	ppm	ASTM D6304* >2000	569.6	688.8

INFRA-RED

method	limit/base	current	history1	history2
Soot %	%	ASTM D7844* >3	0.2	0.2
Nitration	Abs/cm	ASTM D7624* >20	10.0	9.2
Sulfation	Abs./1mm	ASTM D7415* >30	22.2	21.1



OIL ANALYSIS REPORT

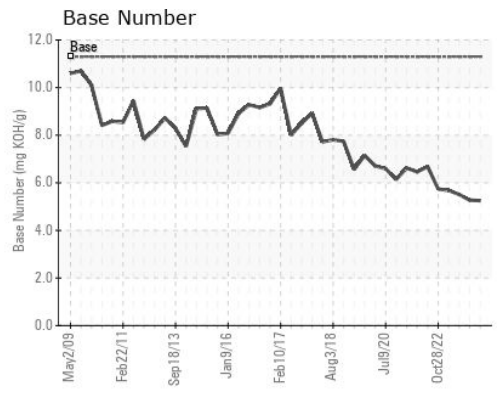
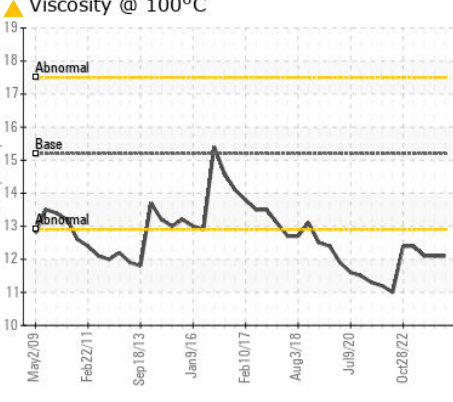
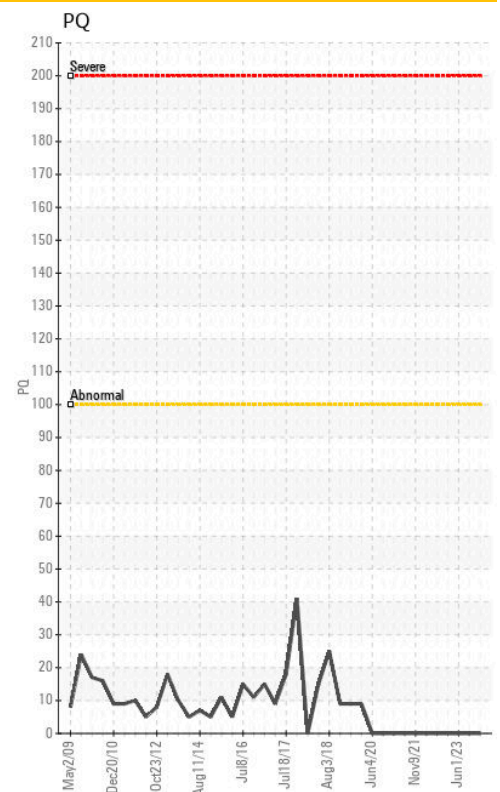
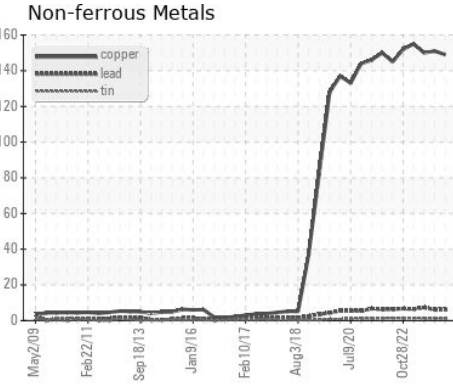
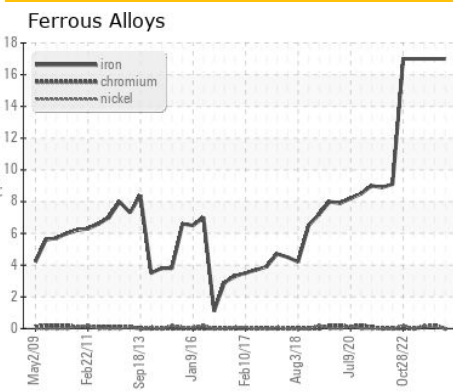


FLUID DEGRADATION	method	limit/base	current	history1	history2	
Oxidation	Abs./1mm	ASTM D7414*	>25	18.8	17.2	18.5
Base Number (BN)	mg KOH/g	ASTM D2896*	11.3	5.25	5.27	5.51

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	▲ 12.1	▲ 12.1	▲ 12.1

GRAPHS



ISO 17025:2017
Accredited
Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 **HIBERNIA MGMT & DEVELOPMENT CO. LTD**
Sample No. : PP **Received** : 23 Oct 2023 **SUITE 1000,, 100 NEW GOWER STREET**
Lab Number : 02590884 **Diagnosed** : 27 Oct 2023 **ST.JOHNS, NL**
Unique Number : 5667963 **Diagnostician** : Kevin Marson **CA A1C 6K3**
Test Package : MAR 3 (Additional Tests: KF, PercentFuel) **Contact: Christopher Michelau**
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.
christopher.j.michelau@exxonmobil.com
T:
F: (709)722-3766



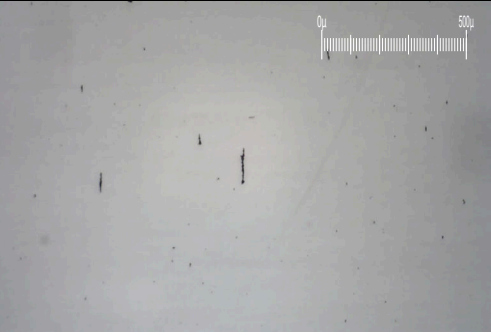
FERROGRAPHY REPORT

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

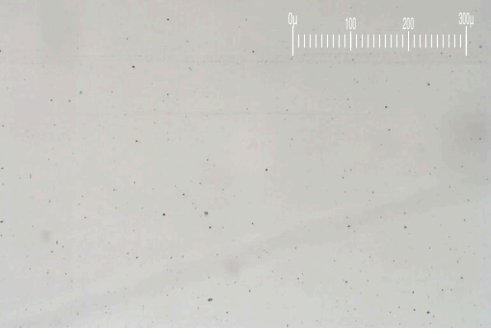
Magn: 200x Illum: BC



Magn: 50x Illum: RW



Magn: 100x Illum: RW

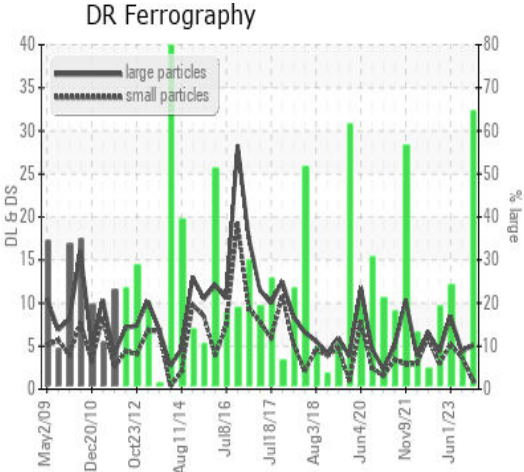


DR-FERROGRAPHY		method	limit/base	current	history1	history2
Large Particles		DR-Ferr*		5.1	4.4	8.5
Small Particles		DR-Ferr*		1.1	3.7	5.2
Total Particles		DR-Ferr*	>---	6.2	8.1	13.7
Large Particles Percentage	%	DR-Ferr*		64.5	8.6	24.1
Severity Index		DR-Ferr*		20	3	28

FERROGRAPHY		method	limit/base	current	history1	history2
Ferrous Rubbing	Scale 0-10	ASTM D7684*		2	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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