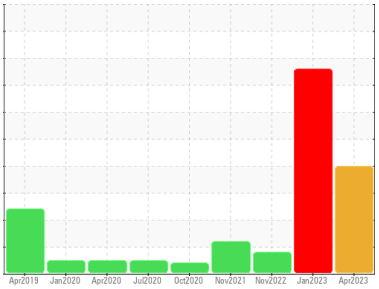
PROBLEM SUMMARY

Sample Rating Trend

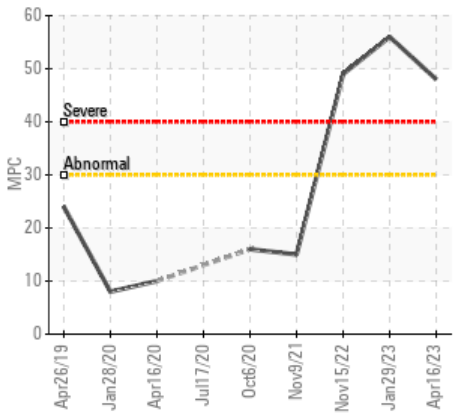


DEGRADATION

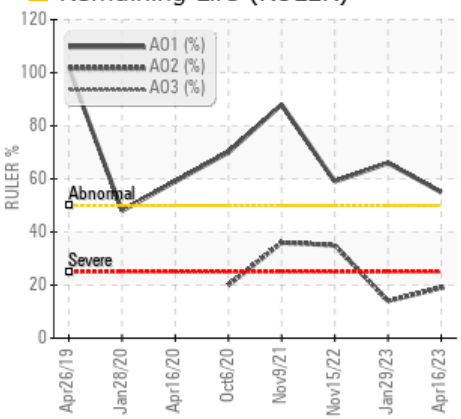
Area
[01565753]
Machine Id
D3310B GAS COMPRESSOR SEAL OIL
Component
Compressor
Fluid
IRVING D & E ISO 32 (--- GAL)

COMPONENT CONDITION SUMMARY

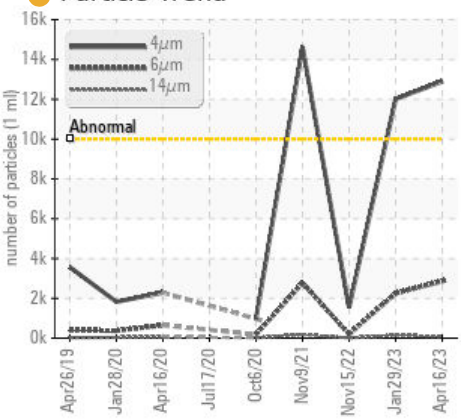
▲ Varnish Potential



▲ Remaining Life (RULER)



● Particle Trend



RECOMMENDATION

We recommend you service the filters on this component. We recommend that you use electrostatic filtration to remove insolubles from the oil and to reduce the levels of varnish in the system. Alternatively draining a percentage of the oil and topping up with fresh oil (sweetening the oil) may provide a reduction in the varnish potential level. We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS

Sample Status				**SEVERE**	SEVERE	SEVERE
Anti-Oxidant 2	%	ASTM D6971*	<25	▲ **19**	▲ 14	35
MPC Varnish Potential	Scale	ASTM D7843(m)*	>15	▲ **48**	▲ 56	▲ 49

Customer Id: HIBSTJ
Sample No.: PP
Lab Number: 02551730
Test Package: AOM 2

To manage this report scan the QR code

To discuss the diagnosis or test data:
Bill Quesnel CLS,OMA II,MLA-III,LLA-I +1 (289)291-4641 x4641
Bill.Quesnel@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 Filter	---	---	?	We recommend you service the filters on this component.
Resample	---	---	?	We recommend an early resample to monitor this condition.
Filter Fluid	---	---	?	We recommend that you use electrostatic filtration to remove insolubles from the oil and to reduce the levels of varnish in the system. Alternatively draining a percentage of the oil and topping up with fresh oil (sweetening the oil) may provide a reduction in the varnish potential level.

HISTORICAL DIAGNOSIS

DEGRADATION

29 Jan 2023 Diag: Bill Quesnel

We recommend that you sweeten the oil by draining off half the system oil (50%) and replacing with new oil. We recommend you service the filters on this component. We recommend that you use electrostatic filtration to remove insolubles from the oil and to reduce the levels of varnish in the system. Alternatively draining a percentage of the oil and topping up with fresh oil (sweetening the oil) may provide a reduction in the varnish potential level. 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 light amount of silt (particulates < 14 microns in size) present in the oil. MPC (Membrane Patch Colorimetry) test indicates a high concentration of varnish present. The water content is negligible. Linear Sweep Voltammetry (RULER– ASTM D6971) testing indicates one of the anti-oxidants present in the oil will soon be depleted. The AN level is acceptable for this fluid.

view report

INSOLUBLES

15 Nov 2022 Diag: Bill Quesnel

We recommend that you use electrostatic filtration to remove insolubles from the oil and to reduce the levels of varnish in the system. Alternatively draining a percentage of the oil and topping up with fresh oil (sweetening the oil) may provide a reduction in the varnish potential level. 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. MPC (Membrane Patch Colorimetry) test indicates a high concentration of varnish present. The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The water content is negligible. The AN level is acceptable for this fluid.

view report

INSOLUBLES

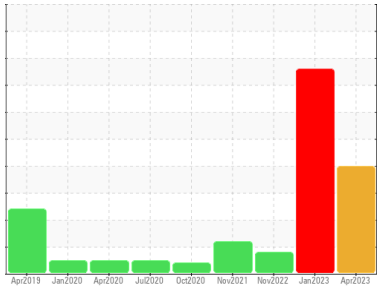
09 Nov 2021 Diag: Bill Quesnel

We recommend you service the filters on this component. We recommend an early resample to monitor this condition. No other corrective action is recommended at this time. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.All component wear rates are normal. The direct-reading & analytical ferrographic results are normal indicating no abnormal wear in the system. There is a light amount of silt (particulates < 14 microns in size) present in the oil. MPC (Membrane Patch Colorimetry) test indicates a light concentration of varnish present. The water content is negligible. Linear Sweep Voltammetry (RULER – ASTM D6971) testing indicates normal levels of anti-oxidants present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report

OIL ANALYSIS REPORT

Sample Rating Trend



DEGRADATION

Area
[01565753]
Machine Id
D3310B GAS COMPRESSOR SEAL OIL
Component
Compressor
Fluid
IRVING D & E ISO 32 (--- GAL)

DIAGNOSIS

Recommendation

We recommend you service the filters on this component. We recommend that you use electrostatic filtration to remove insolubles from the oil and to reduce the levels of varnish in the system. Alternatively draining a percentage of the oil and topping up with fresh oil (sweetening the oil) may provide a reduction in the varnish potential level. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal. The direct-reading & analytical ferrographic results are normal indicating no abnormal wear in the system.

Contaminants

There is a light amount of silt (particulates < 14 microns in size) present in the oil. MPC (Membrane Patch Colorimetry) test indicates a high concentration of varnish present. The water content is negligible.

Oil Condition

Linear Sweep Voltammetry (RULER– ASTM D6971) testing indicates a low amount of one of the anti-oxidants present in the oil, however, the other anti-oxidant(s) are still performing adequately. The AN level is acceptable for this fluid.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**PP**	PP	PP
Sample Date		Client Info		**16 Apr 2023**	29 Jan 2023	15 Nov 2022
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

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184*		**0**	0	0
Iron	ppm	ASTM D5185(m)	>50	**2**	2	2
Chromium	ppm	ASTM D5185(m)	>5	**0**	0	0
Nickel	ppm	ASTM D5185(m)		**<1**	0	<1
Titanium	ppm	ASTM D5185(m)		**0**	0	0
Silver	ppm	ASTM D5185(m)		**0**	0	0
Aluminum	ppm	ASTM D5185(m)	>15	**<1**	0	0
Lead	ppm	ASTM D5185(m)	>65	**0**	0	0
Copper	ppm	ASTM D5185(m)	>65	**0**	0	0
Tin	ppm	ASTM D5185(m)	>10	**0**	<1	0
Antimony	ppm	ASTM D5185(m)		**<1**	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

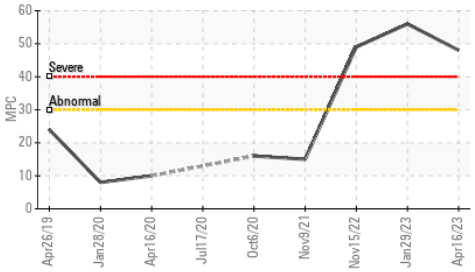
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	0.0	**0**	<1	0
Barium	ppm	ASTM D5185(m)	0.2	**0**	0	0
Molybdenum	ppm	ASTM D5185(m)	0.0	**0**	0	0
Manganese	ppm	ASTM D5185(m)		**0**	0	0
Magnesium	ppm	ASTM D5185(m)	0.3	**0**	0	0
Calcium	ppm	ASTM D5185(m)	2.0	**0**	0	0
Phosphorus	ppm	ASTM D5185(m)	4.6	**<1**	<1	2
Zinc	ppm	ASTM D5185(m)	7.4	**1**	1	2
Sulfur	ppm	ASTM D5185(m)		**300**	305	306
Lithium	ppm	ASTM D5185(m)		**<1**	<1	<1

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>35	**<1**	<1	<1
Sodium	ppm	ASTM D5185(m)		**<1**	<1	0
Potassium	ppm	ASTM D5185(m)	>20	**0**	0	0
Water	%	ASTM D6304*	>0.1	**0.001**	0.003	0.001
ppm Water	ppm	ASTM D6304*	>1000	**12.3**	27.9	8.2

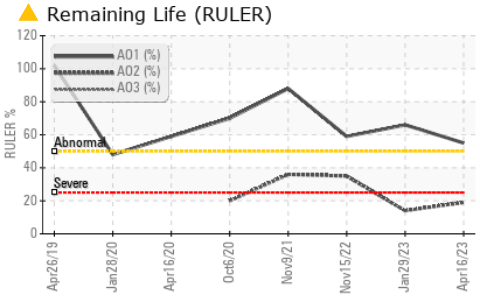
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*		**0**	0	0
Nitration	Abs/cm	ASTM D7624*		**2.1**	2.2	2.2
Sulfation	Abs/.1mm	ASTM D7415*		**11.4**	12.1	12.1

OIL ANALYSIS REPORT

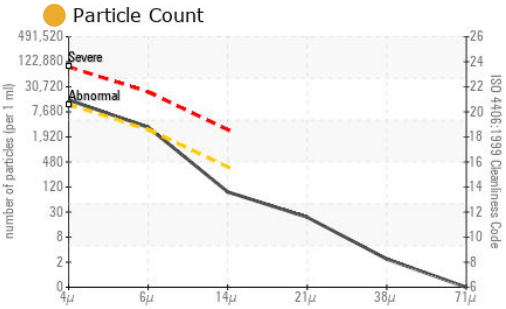
Varnish Potential



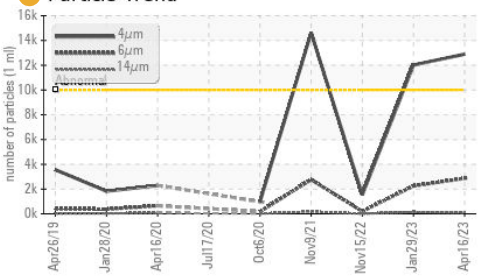
Remaining Life (RULER)



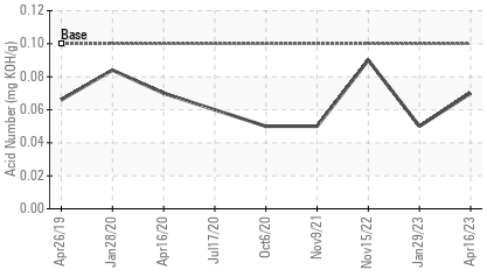
Particle Count



Particle Trend



Acid Number

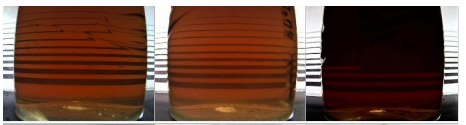


FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>10000	**12891**	12015	1537
Particles >6µm		ASTM D7647	>2500	**2863**	2250	200
Particles >14µm		ASTM D7647	>320	**81**	145	10
Particles >21µm		ASTM D7647	>80	**20**	46	2
Particles >38µm		ASTM D7647	>20	**2**	4	0
Particles >71µm		ASTM D7647	>4	**0**	1	0
Oil Cleanliness		ISO 4406 (c)	>20/18/15	**21/19/14**	21/18/14	18/15/10

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	ASTM D7414*		**3.4**	3.3	3.4
Acid Number (AN)	mg KOH/g	ASTM D974*	0.10	**0.07**	0.05	0.09
Anti-Oxidant 1	%	ASTM D6971*	<25	**55**	66	59
Anti-Oxidant 2	%	ASTM D6971*	<25	**19**	14	35
MPC Varnish Potential	Scale	ASTM D7843(m)*	>15	**48**	56	49

VISUAL		method	limit/base	current	history1	history2
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	**VLITE**	NONE	NONE
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*	>0.1	**.2%**	NEG	NEG
Free Water	scalar	Visual*		**NEG**	NEG	NEG

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	32.5	**30.8**	31.8	38.1
Visc @ 100°C	cSt	ASTM D7279(m)	5.4	**5.6**	5.7	5.9
Viscosity Index (VI)	Scale	ASTM D2270*	99	**121**	120	95

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					
MPC					

ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : PP
Lab Number : 02551730
Unique Number : 5564745
Test Package : AOM 2

Received : 17 Apr 2023
Tested : 18 Apr 2023
Diagnosed : 21 Apr 2023 - Bill Quesnel

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

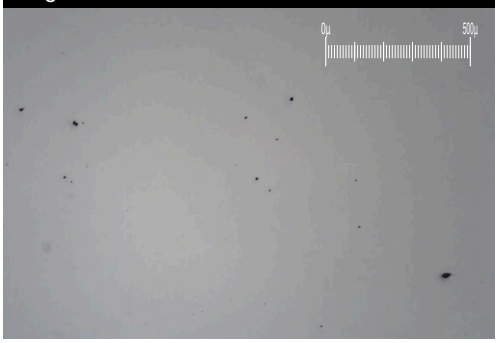
To discuss this sample report, contact Customer Service at 1-800-268-2131.
Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
Validity of results and interpretation are based on the sample and information as supplied.

FERROGRAPHY REPORT

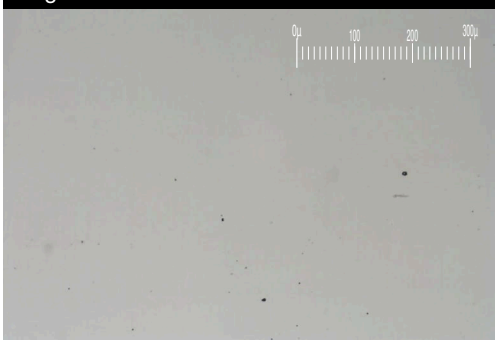
Area
[01565753]
Machine Id
D3310B GAS COMPRESSOR SEAL OIL
Component
Compressor
Fluid
IRVING D & E ISO 32 (--- GAL)

Magn: 200x Illum: BC

Magn: 50x Illum: RW



Magn: 100x Illum: RW

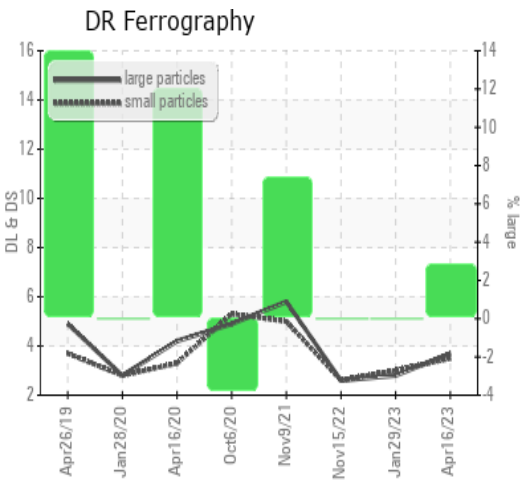


DR-FERROGRAPHY		method	limit/base	current	history1	history2
Large Particles		DR-Ferr*		**3.7**	2.8	2.6
Small Particles		DR-Ferr*		**3.5**	3.0	2.6
Total Particles		DR-Ferr*	>---	**7.2**	5.8	5.2
Large Particles Percentage	%	DR-Ferr*		**2.8**	0	0
Severity Index		DR-Ferr*		**1**	1	0

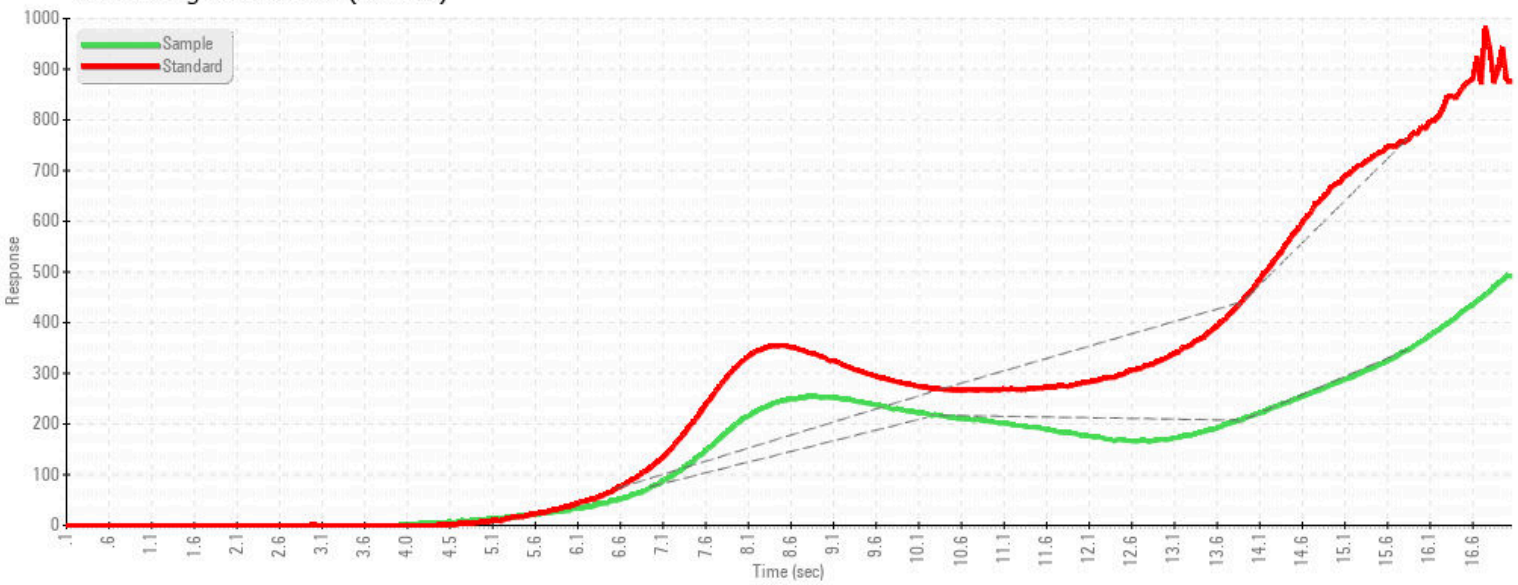
FERROGRAPHY		method	limit/base	current	history1	history2
Ferrous Rubbing	Scale 0-10	ASTM D7684*		**1**	1	2
Ferrous Sliding	Scale 0-10	ASTM D7684*				
Ferrous Cutting	Scale 0-10	ASTM D7684*				
Ferrous Rolling	Scale 0-10	ASTM D7684*				1
Ferrous Break-in	Scale 0-10	ASTM D7684*				
Ferrous Spheres	Scale 0-10	ASTM D7684*				
Ferrous Black Oxides	Scale 0-10	ASTM D7684*		**1**		
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*		**2**	1	1
Fibres	Scale 0-10	ASTM D7684*				
Spheres	Scale 0-10	ASTM D7684*				
Other	Scale 0-10	ASTM D7684*				2

WEAR

All component wear rates are normal. The direct-reading & analytical ferrographic results are normal indicating no abnormal wear in the system.



Remaining Useful Life (RULER)



MPC (Varnish Test)

Sample Color & Clarity