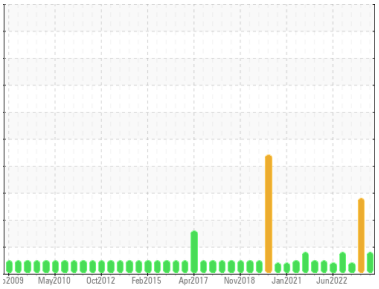
PROBLEM SUMMARY

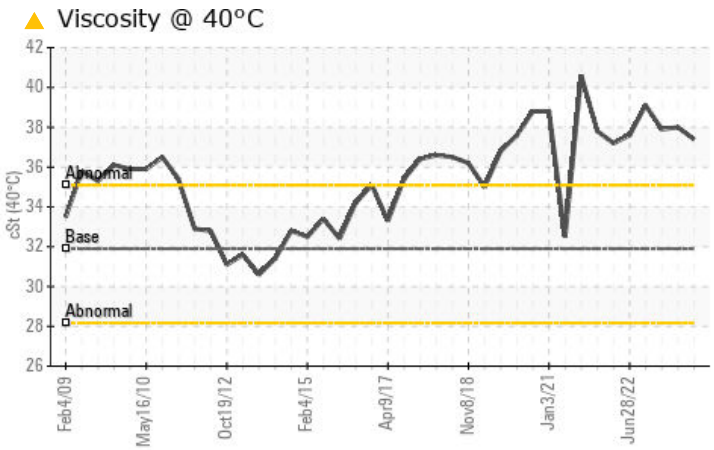
Sample Rating Trend

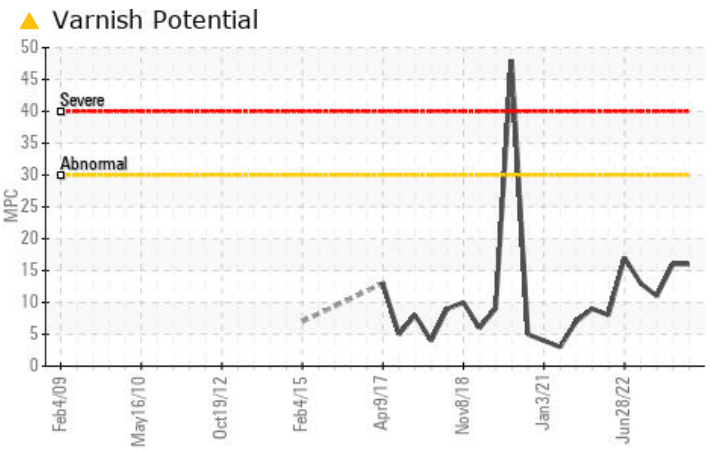


INSOLUBLES

Area
System 33 - Gas Compression [01954098]
Machine Id
Z-3301A Gas Compressor Seal Oil Train A
Component
Compressor
Fluid
IRVING HYDRAULIC OIL LP 32 (9785 LTR)

COMPONENT CONDITION SUMMARY





RECOMMENDATION

We recommend an early resample to monitor this condition. No other corrective action is recommended at this time.

PROBLEMATIC TEST RESULTS

Sample Status				**ABNORMAL**	ABNORMAL	ABNORMAL
MPC Varnish Potential	Scale	ASTM D7843(m)*	>15	▲ **16**	▲ 16	11
Visc @ 40°C	cSt	ASTM D7279(m)	31.9	▲ **37.4**	▲ 38.0	▲ 37.9

Customer Id: HIBSTJ
Sample No.: PP
Lab Number: 02589296
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
Resample	---	---	?	We recommend an early resample to monitor this condition.

HISTORICAL DIAGNOSIS

16 Apr 2023 Diag: Bill Quesnel

DEGRADATION

We recommend an early resample to monitor this condition. No other corrective action is recommended at this time.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 light concentration of varnish present. The water content is negligible. 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. Viscosity of sample indicates oil is within ISO 32 range, advise investigate. The AN level is acceptable for this fluid.

view report

17 Mar 2023 Diag: Bill Quesnel

VISCOSITY

Resample at the next service interval to monitor.All component wear rates are normal. The direct-reading & analytical ferrographic results are normal indicating no abnormal wear in the system. The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The water content is negligible. The system and fluid cleanliness is acceptable. The oil viscosity is higher than typical. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report

08 Jan 2023 Diag: Bill Quesnel

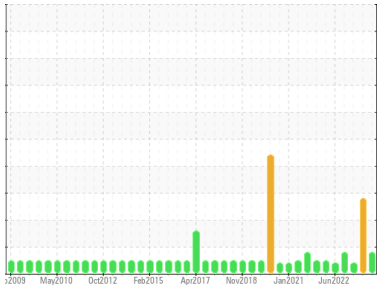
VISCOSITY

Resample at the next service interval to monitor.All component wear rates are normal. The direct-reading & analytical ferrographic results are normal indicating no abnormal wear in the system. The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The water content is negligible. The system and fluid cleanliness is acceptable. Viscosity of sample indicates oil is within ISO 46 range, advise investigate. 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



INSOLUBLES

Area
System 33 - Gas Compression [01954098]
Machine Id
Z-3301A Gas Compressor Seal Oil Train A
Component
Compressor
Fluid
IRVING HYDRAULIC OIL LP 32 (9785 LTR)

DIAGNOSIS

Recommendation

We recommend an early resample to monitor this condition. No other corrective action is recommended at this time.

Wear

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

Contaminants

MPC (Membrane Patch Colorimetry) test indicates a light concentration of varnish present. The water content is negligible.

Oil Condition

The viscosity of the oil is higher than normal, possibly indicating the addition of a heavier grade of oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**PP**	PP	PP
Sample Date		Client Info		**24 Sep 2023**	16 Apr 2023	17 Mar 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				**ABNORMAL**	ABNORMAL	ABNORMAL

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)		**0**	<1	<1
Titanium	ppm	ASTM D5185(m)		**0**	0	0
Silver	ppm	ASTM D5185(m)		**<1**	0	0
Aluminum	ppm	ASTM D5185(m)	>15	**<1**	0	0
Lead	ppm	ASTM D5185(m)	>65	**<1**	0	<1
Copper	ppm	ASTM D5185(m)	>65	**<1**	0	0
Tin	ppm	ASTM D5185(m)	>10	**0**	<1	0
Antimony	ppm	ASTM D5185(m)		**0**	<1	<1
Vanadium	ppm	ASTM D5185(m)		**0**	0	0
Beryllium	ppm	ASTM D5185(m)		**0**	0	0
Cadmium	ppm	ASTM D5185(m)		**0**	0	0

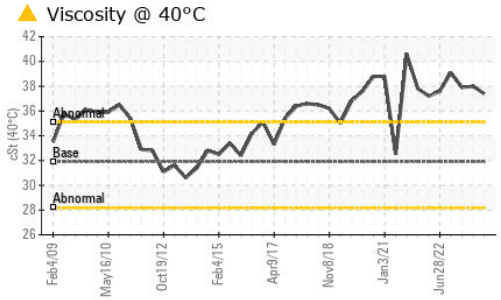
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)		**<1**	<1	<1
Barium	ppm	ASTM D5185(m)		**<1**	0	0
Molybdenum	ppm	ASTM D5185(m)		**0**	0	0
Manganese	ppm	ASTM D5185(m)		**0**	0	0
Magnesium	ppm	ASTM D5185(m)		**0**	0	<1
Calcium	ppm	ASTM D5185(m)		**<1**	0	0
Phosphorus	ppm	ASTM D5185(m)		**2**	1	5
Zinc	ppm	ASTM D5185(m)	400	**2**	2	7
Sulfur	ppm	ASTM D5185(m)		**2074**	2406	2428
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	<1
Potassium	ppm	ASTM D5185(m)	>20	**0**	0	<1
Water	%	ASTM D6304*	>0.1	**0.00**	0.001	0.001
ppm Water	ppm	ASTM D6304*	>1000	**0.00**	0.5	6.7

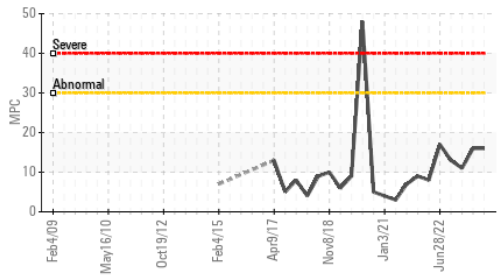
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*		**0**	0	0
Nitration	Abs/cm	ASTM D7624*		**2.7**	2.8	3.1
Sulfation	Abs/.1mm	ASTM D7415*		**11.6**	12.1	14.3

OIL ANALYSIS REPORT

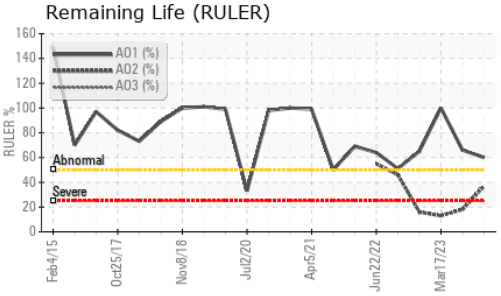
Viscosity @ 40°C



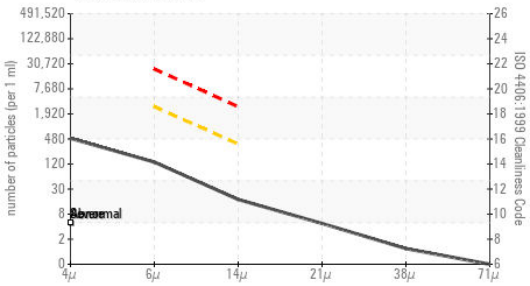
Varnish Potential



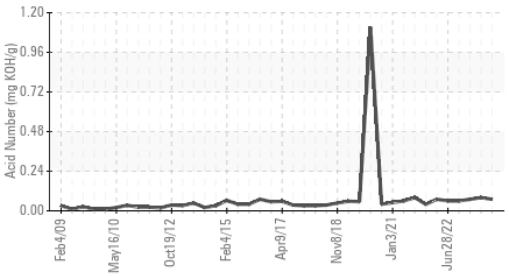
Remaining Life (RULER)



Particle Count



Acid Number

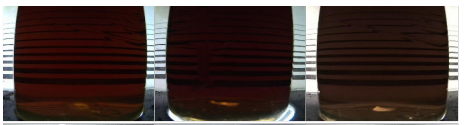
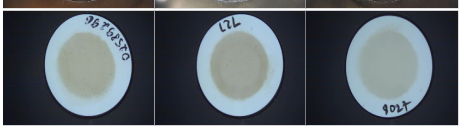


FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647		**437**	4773	833
Particles >6µm		ASTM D7647	>2500	**118**	992	175
Particles >14µm		ASTM D7647	>320	**15**	52	9
Particles >21µm		ASTM D7647	>80	**4**	21	3
Particles >38µm		ASTM D7647	>20	**1**	3	1
Particles >71µm		ASTM D7647	>4	**0**	0	0
Oil Cleanliness		ISO 4406 (c)	>--/18/15	**16/14/11**	19/17/13	17/15/10

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	ASTM D7414*		**3.5**	4.0	3.9
Acid Number (AN)	mg KOH/g	ASTM D974*		**0.07**	0.08	0.07
Anti-Oxidant 1	%	ASTM D6971*	<25	**60**	66	100
Anti-Oxidant 2	%	ASTM D6971*	<25	**37**	▲ 18	▲ 13
MPC Varnish Potential	Scale	ASTM D7843(m)*	>15	▲ **16**	▲ 16	11

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	**NONE**	VLITE	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	**NEG**	NEG	NEG
Free Water	scalar	Visual*		**NEG**	NEG	NEG

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	31.9	▲ **37.4**	▲ 38.0	▲ 37.9
Visc @ 100°C	cSt	ASTM D7279(m)	6.4	**6.2**	6.2	6.2
Viscosity Index (VI)	Scale	ASTM D2270*	151	**113**	110	110

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

CALA Testing Accreditation No. 1005078
ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : PP
Lab Number : 02589296
Unique Number : 5658362
Test Package : AOM 2

Received : 16 Oct 2023
Diagnosed : 20 Oct 2023
Diagnostician : Bill Quesnel

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
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CA A1C 6K3
Contact: Christopher Michelau
christopher.j.michelau@exxonmobil.com
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Report Id: HIBSTJ [WCAMIS] 02589296 (Generated: 10/20/2023 09:37:12) Rev: 1

Submitted By: ?

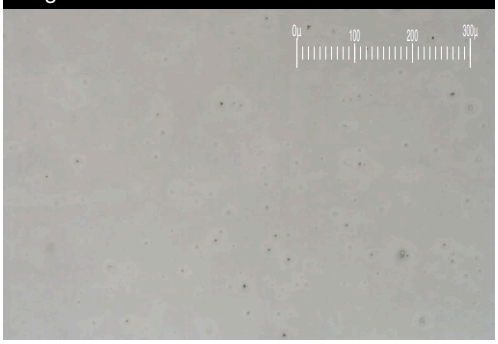
FERROGRAPHY REPORT

Area
System 33 - Gas Compression [01954098]
Machine Id
Z-3301A Gas Compressor Seal Oil Train A
Component
Compressor
Fluid
IRVING HYDRAULIC OIL LP 32 (9785 LTR)

Magn: 200x Illum: BC

Magn: 50x Illum: RW

Magn: 100x Illum: RW

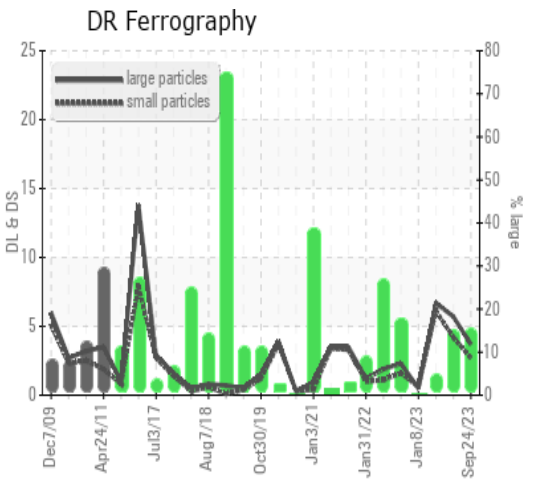


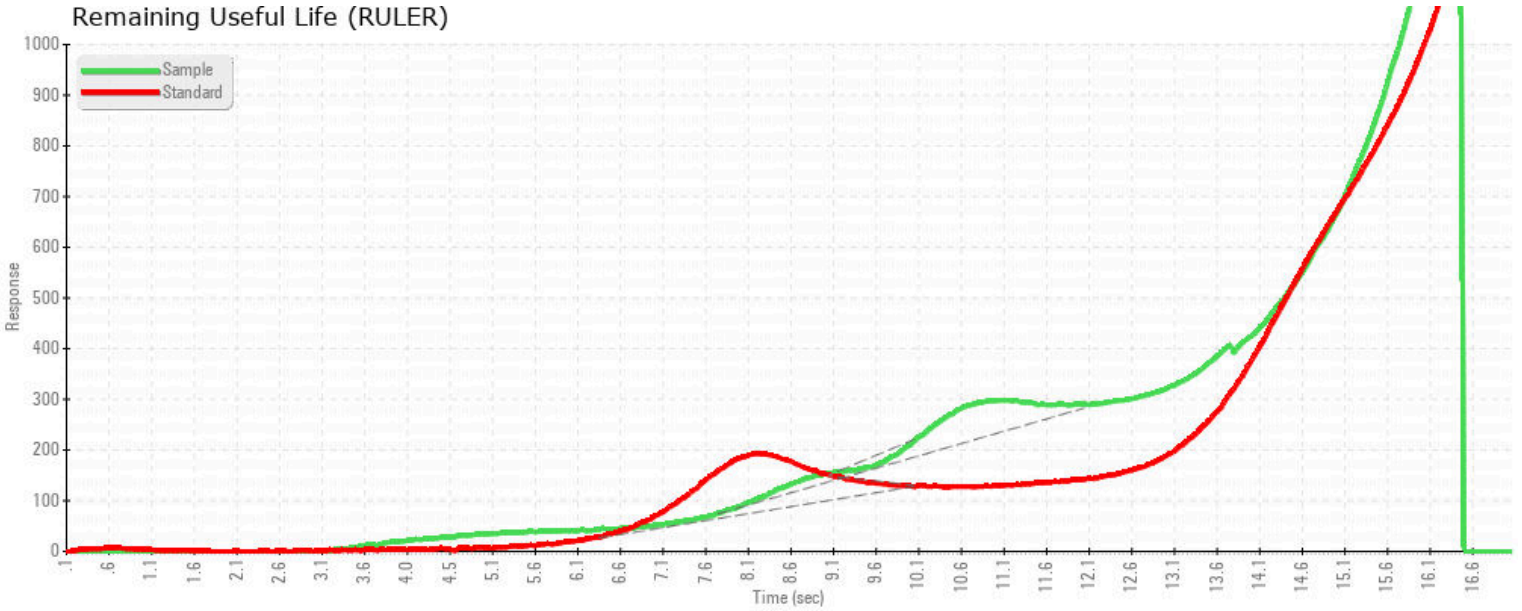
DR-FERROGRAPHY		method	limit/base	current	history1	history2
Large Particles		DR-Ferr*		**3.7**	5.7	6.7
Small Particles		DR-Ferr*		**2.7**	4.2	6.1
Total Particles		DR-Ferr*	>---	**6.4**	9.9	12.8
Large Particles Percentage	%	DR-Ferr*		**15.6**	15.2	4.7
Severity Index		DR-Ferr*		**4**	9	4

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

WEAR

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





MPC (Varnish Test)

Sample Color & Clarity