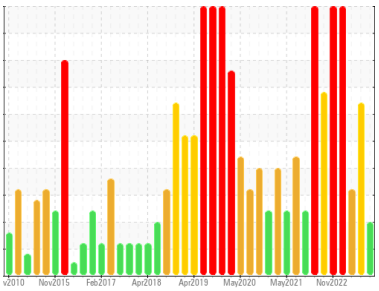
PROBLEM SUMMARY

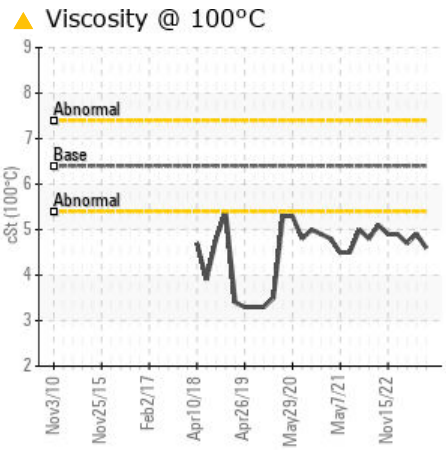
Sample Rating Trend

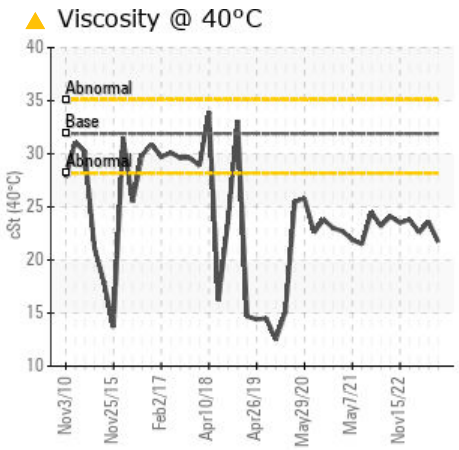


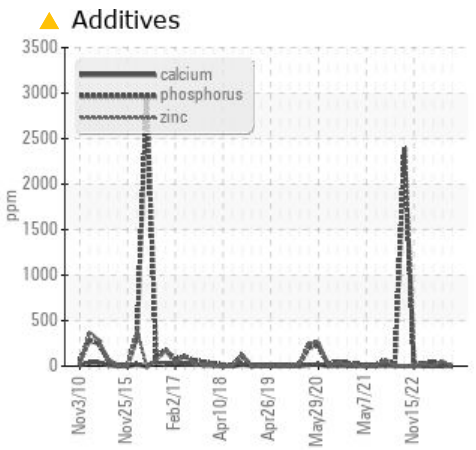
VISCOSITY

Area
System 33 - Gas Compression
Machine Id
Z-3301B Turbine Hydraulic Starter Oil Train B (S/N F-33204)
Component
Hydraulic System
Fluid
IRVING HYDRAULIC OIL LP 32 (290 LTR)

COMPONENT CONDITION SUMMARY







RECOMMENDATION

Confirm the source of the lubricant being utilized for top-up/fill. Resample at the next service interval to monitor.

PROBLEMATIC TEST RESULTS

Sample Status				**ABNORMAL**	ABNORMAL	ABNORMAL
Phosphorus	ppm	ASTM D5185(m)		▲ **2**	▲ 31	▲ 36
Zinc	ppm	ASTM D5185(m)	400	▲ **<1**	▲ 56	▲ <1
Sulfur	ppm	ASTM D5185(m)		▲ **628**	▲ 1085	▲ 1058
Visc @ 40°C	cSt	ASTM D7279(m)	31.9	▲ **21.7**	▲ 23.6	▲ 22.6
Visc @ 100°C	cSt	ASTM D7279(m)	6.4	▲ **4.6**	▲ 4.9	▲ 4.7

Customer Id: HIBSTJ
Sample No.: PP
Lab Number: 02589291
Test Package: MAR 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 (289)291-4643 x4643
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RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Check Fluid Source	---	---	?	Confirm the source of the lubricant being utilized for top-up/fill.

HISTORICAL DIAGNOSIS

WATER

16 Apr 2023 Diag: Kevin Marson

We advise that you check for the source of water entry. Check seals and/or filters for points of contaminant entry. 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. We advise that you use off-line filtration with water adsorbent filters to attempt to remove the water from this oil. We advise that you follow the water drain-off procedure for this component. We recommend you service the filters on this component. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition.Copper ppm levels are marginal. All other component wear rates are normal. There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. Excessive free water present. Viscosity of sample indicates oil is within ISO 22 range, advise investigate. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. The AN level is acceptable for this fluid.

view report

VISCOSITY

17 Mar 2023 Diag: Kevin Marson

We recommend you service the filters on this component. Confirm the source of the lubricant being utilized for top-up/fill. Resample at the next service interval to monitor.All component wear rates are normal. There is a light amount of silt (particulates < 14 microns in size) present in the oil. The water content is negligible. Viscosity of sample indicates oil is within ISO 22 range, advise investigate. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report

ISO

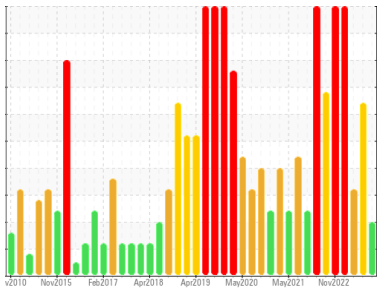
29 Jan 2023 Diag: Kevin Marson

Check seals and/or filters for points of contaminant entry. We advise that you check all areas where contaminants can enter the system. 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. We advise that you follow the water drain-off procedure for this component. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. Confirm the source of the lubricant being utilized for top-up/fill. Resample in 30-45 days to monitor this situation.All component wear rates are normal. Particles >14µm are severely high. Particles >21µm are severely high. Particles >6µm are severely high. Oil Cleanliness are severely high. Particles >4µm are severely high. Particles >4µm are severely high.. Particles >71µm are abnormally high. Particles >38µm are abnormally high. Free water present. Elemental level of calcium (Ca) indicates contamination with brine (salt water). Viscosity of sample indicates oil is within ISO 22 range, advise investigate. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

view report

OIL ANALYSIS REPORT

Sample Rating Trend



VISCOSITY

Area
System 33 - Gas Compression
Machine Id
Z-3301B Turbine Hydraulic Starter Oil Train B (S/N F-33204)
Component
Hydraulic System
Fluid
IRVING HYDRAULIC OIL LP 32 (290 LTR)

DIAGNOSIS

▲ Recommendation

Confirm the source of the lubricant being utilized for top-up/fill. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The water content is negligible. The system and fluid cleanliness is acceptable.

▲ Fluid Condition

Viscosity of sample indicates oil is within ISO 22 range, advise investigate. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. 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**	PC	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
Iron	ppm	ASTM D5185(m)	>20	**0**	2	0
Chromium	ppm	ASTM D5185(m)	>10	**0**	0	0
Nickel	ppm	ASTM D5185(m)	>10	**<1**	1	0
Titanium	ppm	ASTM D5185(m)		**0**	0	0
Silver	ppm	ASTM D5185(m)		**<1**	0	0
Aluminum	ppm	ASTM D5185(m)	>10	**0**	0	0
Lead	ppm	ASTM D5185(m)	>20	**0**	2	0
Copper	ppm	ASTM D5185(m)	>20	**<1**	▲ 11	0
Tin	ppm	ASTM D5185(m)	>10	**0**	0	0
Antimony	ppm	ASTM D5185(m)		**0**	<1	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

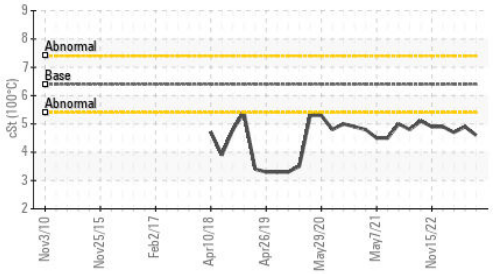
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)		**<1**	<1	<1
Barium	ppm	ASTM D5185(m)		**<1**	0	0
Molybdenum	ppm	ASTM D5185(m)		**0**	0	0
Manganese	ppm	ASTM D5185(m)		**0**	0	0
Magnesium	ppm	ASTM D5185(m)		**0**	0	<1
Calcium	ppm	ASTM D5185(m)		**<1**	0	0
Phosphorus	ppm	ASTM D5185(m)		▲ **2**	▲ 31	▲ 36
Zinc	ppm	ASTM D5185(m)	400	▲ **<1**	▲ 56	▲ <1
Sulfur	ppm	ASTM D5185(m)		▲ **628**	▲ 1085	▲ 1058
Lithium	ppm	ASTM D5185(m)		**<1**	<1	<1

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>15	**0**	1	0
Sodium	ppm	ASTM D5185(m)		**<1**	0	0
Potassium	ppm	ASTM D5185(m)	>20	**0**	0	<1
Water	%	ASTM D6304*	>0.05	**0.003**	0.005	0.003
ppm Water	ppm	ASTM D6304*	>500	**30.9**	50.0	29.5

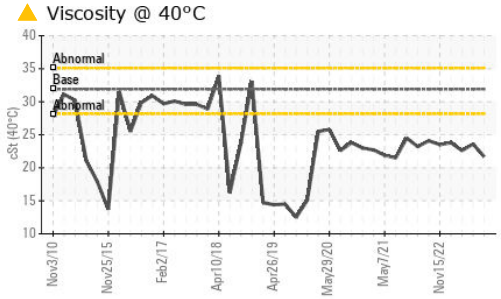
FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>5000	**2924**	▲ 10943	▲ 5795
Particles >6µm		ASTM D7647	>1300	**837**	▲ 2579	▲ 1676
Particles >14µm		ASTM D7647	>160	**69**	129	142
Particles >21µm		ASTM D7647	>40	**18**	25	40
Particles >38µm		ASTM D7647	>10	**1**	0	1
Particles >71µm		ASTM D7647	>3	**0**	0	0
Oil Cleanliness		ISO 4406 (c)	>19/17/14	**19/17/13**	▲ 21/19/14	▲ 20/18/14

OIL ANALYSIS REPORT

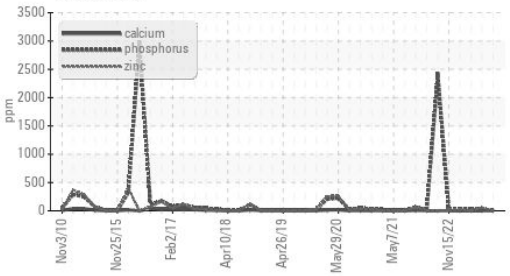
Viscosity @ 100°C



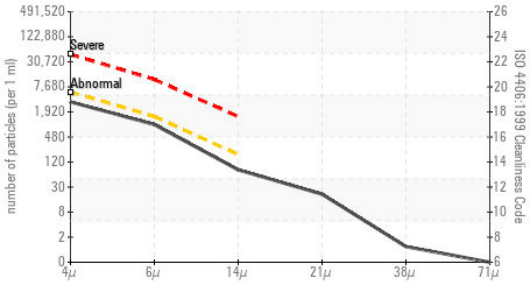
Viscosity @ 40°C



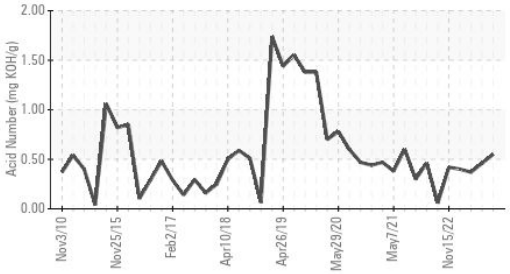
Additives



Particle Count



Acid Number



FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*		**0.55**	0.46	0.37

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**	▲ LAYRD	NORML
Odor	scalar	Visual*	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	Visual*	>0.05	**NEG**	.2%	NEG
Free Water	scalar	Visual*		**NEG**	▲ >10%	NEG

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	31.9	▲ **21.7**	▲ 23.6	▲ 22.6
Visc @ 100°C	cSt	ASTM D7279(m)	6.4	▲ **4.6**	▲ 4.9	▲ 4.7
Viscosity Index (VI)	Scale	ASTM D2270*	151	**130**	134	128
COC Flash Point	°C	ASTM D92*	194	**---**	---	210

SEDIMENT		method	limit/base	current	history1	history2
Pentane Insolubles	%	ASTM D893(m)*		**0.044**	0.042	0.054

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					

ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : PP
Lab Number : 02589291
Unique Number : 5658357
Test Package : MAR 2 (Additional Tests: COC Flash, KF, KV100, PntInsol, TAN Man, Visc)

Received : 16 Oct 2023
Diagnosed : 17 Oct 2023
Diagnostician : Kevin Marson

HIBERNIA MGMT & DEVELOPMENT CO. LTD
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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.