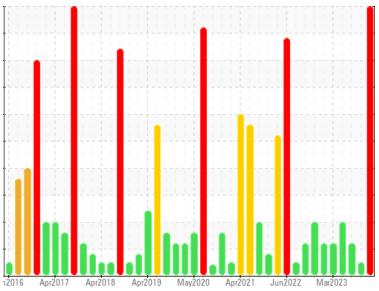
PROBLEM SUMMARY

Area
System 33 - Gas Compression
Machine Id
Z-3301A Turbine Lube Oil Train A (S/N F-33101)
Component
Turbine
Fluid
MOBIL JET OIL II (750 LTR)

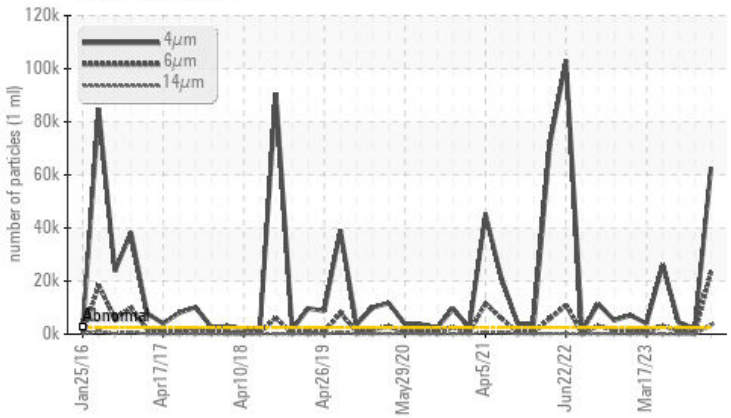
Sample Rating Trend



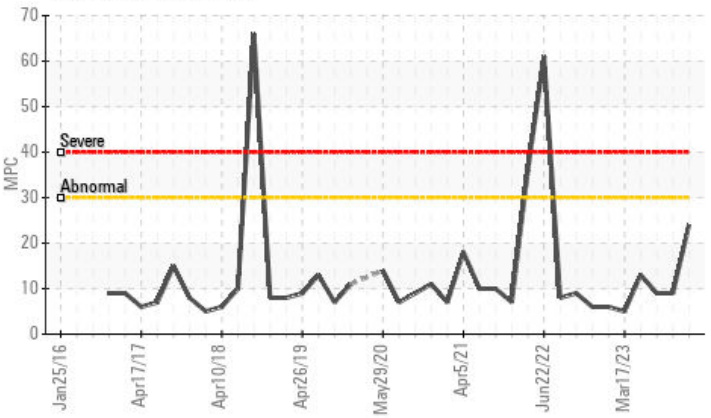
ISO

COMPONENT CONDITION SUMMARY

▲ Particle Trend



▲ Varnish Potential



RECOMMENDATION

We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. 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. Resample in 30-45 days to monitor this situation. No other corrective action is recommended at this time.

PROBLEMATIC TEST RESULTS

Sample Status				SEVERE	NORMAL	ATTENTION
Particles >4µm		ASTM D7647	>2500	▲ **62773**	2029	4418
Particles >6µm		ASTM D7647	>640	▲ **23577**	417	1172
Particles >14µm		ASTM D7647	>80	▲ **3328**	21	47
Particles >21µm		ASTM D7647	>20	▲ **1105**	8	10
Particles >38µm		ASTM D7647	>4	▲ **108**	1	0
Particles >71µm		ASTM D7647	>3	▲ **11**	1	0
Oil Cleanliness		ISO 4406 (c)	>18/16/13	▲ **23/22/19**	18/16/12	19/17/13
MPC Varnish Potential	Scale	ASTM D7843(m)*	>15	▲ **24**	9	9

Customer Id: HIBSTJ
Sample No.: PP
Lab Number: 02644592
Test Package: AOM 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
gloria.gonzalez@wearcheck.com

RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Change Filter	---	---	?	We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid.
Resample	---	---	?	Resample in 30-45 days to monitor this situation.
Check Breathers	---	---	?	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.
Check Dirt Access	---	---	?	We advise that you check all areas where contaminants can enter the system.
Filter Fluid	---	---	?	We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid.

HISTORICAL DIAGNOSIS

NORMAL

04 Apr 2024 Diag: Bill Quesnel

Resample at the next service interval to monitor.All component wear rates are normal. The ferrography 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 AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report

ISO

24 Sep 2023 Diag: Bill Quesnel

We recommend you service the filters on this component. 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. There is a light amount of silt (particulates < 14 microns in size) present in the oil. The water content is negligible. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report

ISO

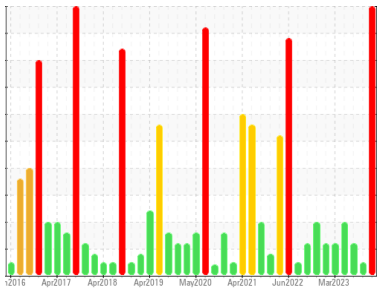
16 Apr 2023 Diag: Bill Quesnel

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 recommend you service the filters on this component. Resample in 30-45 days to monitor this situation.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 silt (particulates < 14 microns in size) present in the oil. The water content is negligible. The system cleanliness code is much higher than the acceptable limit for the target ISO 4406 cleanliness code. 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



ISO

Area
System 33 - Gas Compression
Machine Id
Z-3301A Turbine Lube Oil Train A (S/N F-33101)
Component
Turbine
Fluid
MOBIL JET OIL II (750 LTR)

DIAGNOSIS

Recommendation
We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. 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. Resample in 30-45 days to monitor this situation. No other corrective action is recommended at this time.

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 particulates (2 to 100 microns in size) present in the oil. MPC (Membrane Patch Colorimetry) test indicates a light concentration of varnish present. The water content is negligible. The system cleanliness code is much higher than the acceptable limit for the target ISO 4406 cleanliness code.

Oil Condition
The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**PP**	PP	PP
Sample Date		Client Info		**15 Jun 2024**	04 Apr 2024	24 Sep 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**	NORMAL	ATTENTION

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184*		**0**	0	0
Iron	ppm	ASTM D5185(m)	>15	**<1**	0	0
Chromium	ppm	ASTM D5185(m)	>4	**0**	0	0
Nickel	ppm	ASTM D5185(m)	>2	**<1**	0	<1
Titanium	ppm	ASTM D5185(m)		**0**	0	0
Silver	ppm	ASTM D5185(m)		**<1**	0	<1
Aluminum	ppm	ASTM D5185(m)	>10	**0**	0	0
Lead	ppm	ASTM D5185(m)		**0**	0	<1
Copper	ppm	ASTM D5185(m)	>5	**<1**	0	<1
Tin	ppm	ASTM D5185(m)	>5	**0**	0	0
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

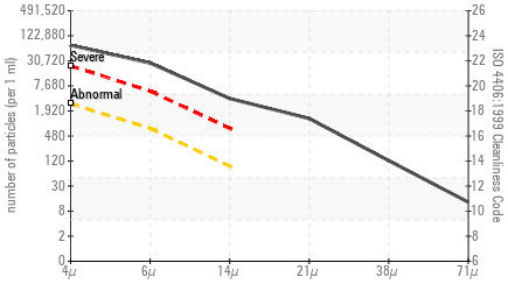
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)		**<1**	<1	<1
Barium	ppm	ASTM D5185(m)		**0**	0	<1
Molybdenum	ppm	ASTM D5185(m)		**0**	0	0
Manganese	ppm	ASTM D5185(m)		**0**	0	0
Magnesium	ppm	ASTM D5185(m)		**0**	0	0
Calcium	ppm	ASTM D5185(m)		**0**	0	0
Phosphorus	ppm	ASTM D5185(m)		**2218**	2149	2283
Zinc	ppm	ASTM D5185(m)		**<1**	<1	<1
Sulfur	ppm	ASTM D5185(m)		**18**	5	2
Lithium	ppm	ASTM D5185(m)		**<1**	<1	<1

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>15	**0**	0	0
Sodium	ppm	ASTM D5185(m)		**<1**	<1	<1
Potassium	ppm	ASTM D5185(m)	>20	**<1**	0	0
Water	%	ASTM D6304*	>.1	**0.071**	0.038	0.082
ppm Water	ppm	ASTM D6304*	>1000	**713**	385	822.5

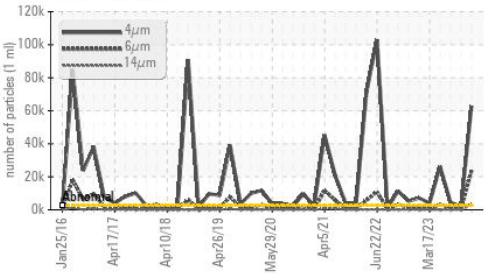
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*		**0.2**	0.1	0.1
Nitration	Abs/cm	ASTM D7624*		**8.4**	8.0	8.5
Sulfation	Abs/.1mm	ASTM D7415*		**169.1**	168.0	167.3

OIL ANALYSIS REPORT

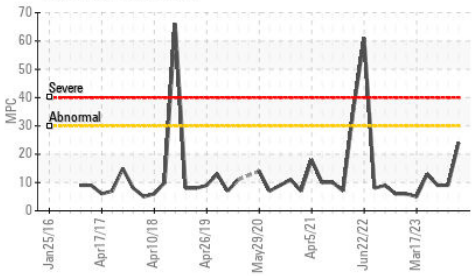
Particle Count



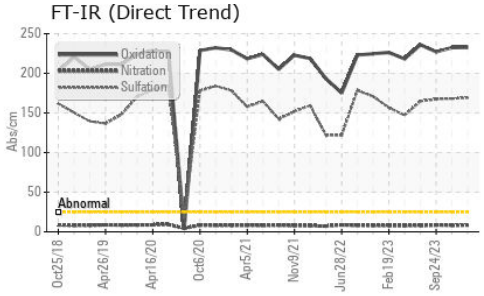
Particle Trend



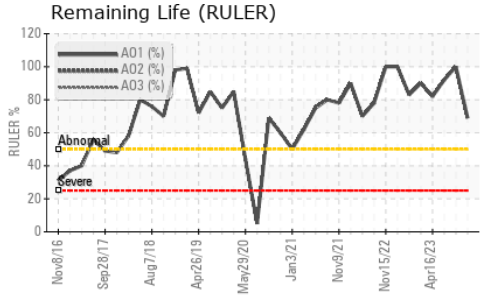
Varnish Potential



FT-IR (Direct Trend)



Remaining Life (RULER)



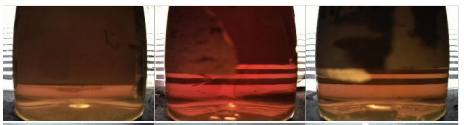
FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>2500	▲ **62773**	2029	● 4418
Particles >6µm		ASTM D7647	>640	▲ **23577**	417	● 1172
Particles >14µm		ASTM D7647	>80	▲ **3328**	21	47
Particles >21µm		ASTM D7647	>20	▲ **1105**	8	10
Particles >38µm		ASTM D7647	>4	▲ **108**	1	0
Particles >71µm		ASTM D7647	>3	▲ **11**	1	0
Oil Cleanliness		ISO 4406 (c)	>18/16/13	▲ **23/22/19**	18/16/12	● 19/17/13

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	ASTM D7414*		**232.7**	232.4	227.1
Acid Number (AN)	mg KOH/g	ASTM D974*	0.03	**0.08**	0.07	0.10
Anti-Oxidant 1	%	ASTM D6971*	<25	**69**	100	92
MPC Varnish Potential	Scale	ASTM D7843(m)*	>15	▲ **24**	9	9

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**	NONE	NONE
Sand/Dirt	scalar	Visual*	NONE	**VLITE**	NONE	NONE
Appearance	scalar	Visual*	NORML	**NORML**	NORML	NORML
Odor	scalar	Visual*	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	Visual*	>.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)	27.6	**26.2**	26.1	25.6
Visc @ 100°C	cSt	ASTM D7279(m)	5.1	**5.1**	5.1	5.2
Viscosity Index (VI)	Scale	ASTM D2270*		**125**	126	138

SEDIMENT		method	limit/base	current	history1	history2
Pentane Insolubles	%	ASTM D893(m)*		**0.071**	0.031	0.043

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 : 02644592
Unique Number : 5802131
Test Package : AOM 2 (Additional Tests: COC Flash, PntInsol)

Received : 28 Jun 2024
Tested : 05 Jul 2024
Diagnosed : 05 Jul 2024 - 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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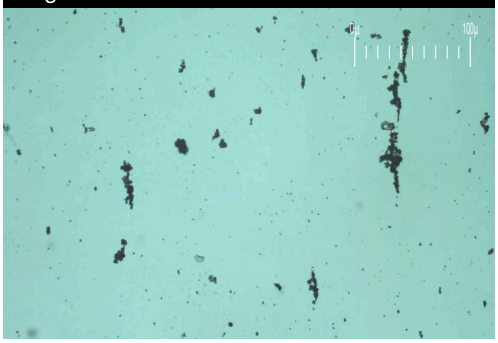
Report Id: HIBSTJ [WCAMIS] 02644592 (Generated: 07/05/2024 18:13:44) Rev: 1

Submitted By: ?

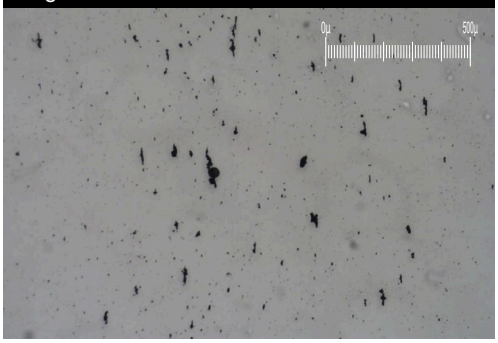
FERROGRAPHY REPORT

Area
System 33 - Gas Compression
Machine Id
Z-3301A Turbine Lube Oil Train A (S/N F-33101)
Component
Turbine
Fluid
MOBIL JET OIL II (750 LTR)

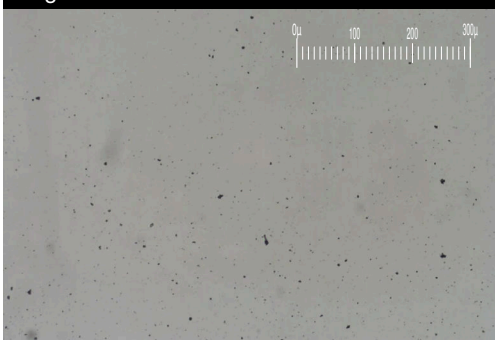
Magn: 200x Illum: BC



Magn: 50x Illum: RW



Magn: 100x Illum: RW

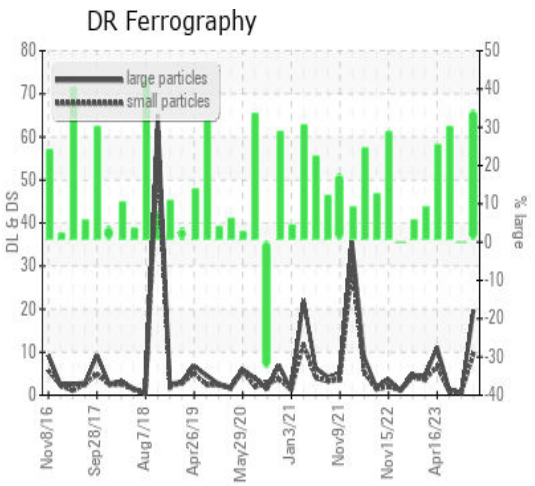


DR-FERROGRAPHY		method	limit/base	current	history1	history2
Large Particles		DR-Ferr*		**19.6**	0.6	1.3
Small Particles		DR-Ferr*		**9.6**	0.6	0.7
Total Particles		DR-Ferr*	>---	**29.2**	1.2	2
Large Particles Percentage	%	DR-Ferr*		**34.2**	0	30
Severity Index		DR-Ferr*		**196**	0	1

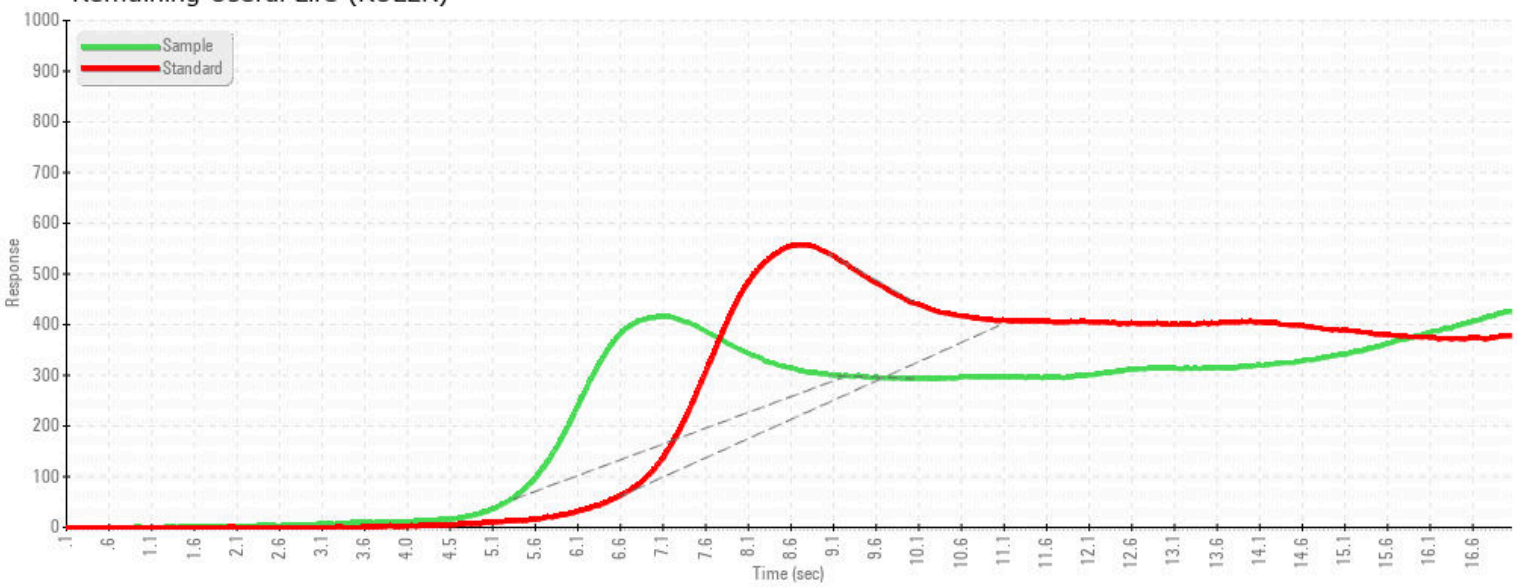
FERROGRAPHY		method	limit/base	current	history1	history2
Ferrous Rubbing	Scale 0-10	ASTM D7684*		**3**	2	2
Ferrous Sliding	Scale 0-10	ASTM D7684*				
Ferrous Cutting	Scale 0-10	ASTM D7684*				
Ferrous Rolling	Scale 0-10	ASTM D7684*		**1**	1	1
Ferrous Break-in	Scale 0-10	ASTM D7684*				
Ferrous Spheres	Scale 0-10	ASTM D7684*				
Ferrous Black Oxides	Scale 0-10	ASTM D7684*		**1**		1
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
Fibres	Scale 0-10	ASTM D7684*				
Spheres	Scale 0-10	ASTM D7684*				
Other	Scale 0-10	ASTM D7684*		**2**	1	1

WEAR

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



Remaining Useful Life (RULER)



MPC (Varnish Test)

Sample Color & Clarity