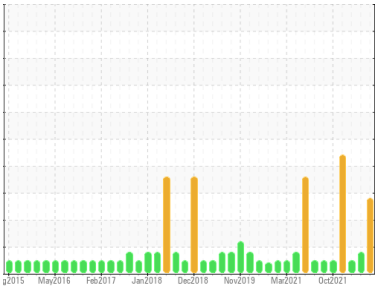
PROBLEM SUMMARY

Area
Cranes [450207986]
Machine Id
Crane - Mid Ship Slewing Gearbox #3 (S/N Sample Tag MA-04002-S9)
Component
Gearbox
Fluid
PETRO CANADA GEARLUBE TOS 80W90 (33 LTR)

Sample Rating Trend



WEAR PARTICLES

COMPONENT CONDITION SUMMARY

No relevant graphs to display

RECOMMENDATION

We advise that you check for visible metal particles in the oil. 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.

PROBLEMATIC TEST RESULTS

Sample Status				**ABNORMAL**	ATTENTION	NORMAL
Ferrous Cutting	Scale 0-10	ASTM D7684*		▲ **1**		
White Metal	scalar	Visual*	NONE	▲ **LIGHT**	NONE	NONE
PrtFilter					*no image*	*no image*

Customer Id: TERHAM
Sample No.: PC0076226
Lab Number: 02590133
Test Package: IND 2

To manage this report scan the QR code

To discuss the diagnosis or test data:
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RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Change Filter	---	---	?	We recommend you service the filters on this component.
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 For Visual Metal	---	---	?	We advise that you check for visible metal particles in the oil.
Check Seals	---	---	?	Check seals and/or filters for points of contaminant entry.

HISTORICAL DIAGNOSIS

12 Aug 2023 Diag: Kevin Marson

ISO

We recommend you service the filters on this component. 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 AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report

14 Jun 2023 Diag: Kevin Marson

NORMAL

Resample at the next service interval to monitor.All component wear rates are normal. The system cleanliness is acceptable for your target ISO 4406 cleanliness code. 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

02 May 2023 Diag: Kevin Marson

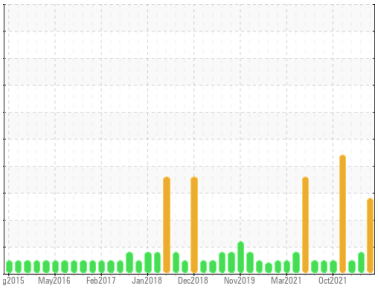
DEGRADATION

We recommend you service the filters on this component. We recommend an early resample to monitor this condition.All component wear rates are normal. There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. The high AN level of the oil indicates the presence of oxi-polymerized products. The AN level is much higher than the recommended limit. The oil is no longer serviceable.

view report

OIL ANALYSIS REPORT

Sample Rating Trend



WEAR PARTICLES

Area
Cranes [450207986]
Machine Id
Crane - Mid Ship Slewing Gearbox #3 (S/N Sample Tag MA-04002-S9)
Component
Gearbox
Fluid
PETRO CANADA GEARLUBE TOS 80W90 (33 LTR)

DIAGNOSIS

Recommendation

We advise that you check for visible metal particles in the oil. 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.

Wear

Wear particle analysis indicates that the ferrous cutting particles are abnormal. Cutting wear particles are caused by either hard protuberances (mis-aligned components, etc.), or abrasives entering the system and embedding themselves in softer materials (sand, etc.), and gouging out mating surfaces.

Contaminants

There is a high amount of silt (particulates < 14 microns in size) present in the oil.

Oil Condition

The AN level is acceptable for this fluid. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

Particle Filter (Magn: 100 x)

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**PC0076226**	PC0052595	PC0052199
Sample Date		Client Info		**04 Oct 2023**	12 Aug 2023	14 Jun 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**	ATTENTION	NORMAL

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184*		**0**	0	3
Iron	ppm	ASTM D5185(m)	>150	**11**	18	19
Chromium	ppm	ASTM D5185(m)	>10	**0**	0	0
Nickel	ppm	ASTM D5185(m)	>10	**0**	<1	0
Titanium	ppm	ASTM D5185(m)		**0**	0	0
Silver	ppm	ASTM D5185(m)		**<1**	0	0
Aluminum	ppm	ASTM D5185(m)	>5	**0**	<1	<1
Lead	ppm	ASTM D5185(m)	>65	**<1**	0	0
Copper	ppm	ASTM D5185(m)	>80	**2**	3	4
Tin	ppm	ASTM D5185(m)	>8	**0**	<1	<1
Antimony	ppm	ASTM D5185(m)	>5	**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

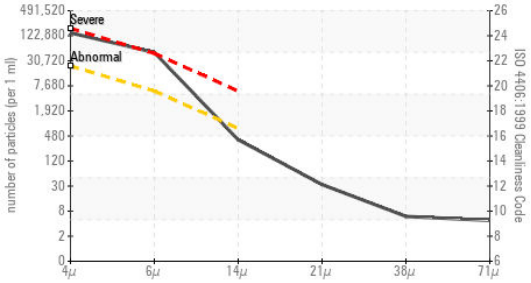
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	240	**245**	230	232
Barium	ppm	ASTM D5185(m)	1	**<1**	<1	<1
Molybdenum	ppm	ASTM D5185(m)	0.0	**0**	<1	<1
Manganese	ppm	ASTM D5185(m)		**0**	<1	<1
Magnesium	ppm	ASTM D5185(m)	2	**1**	1	2
Calcium	ppm	ASTM D5185(m)	6	**4**	49	50
Phosphorus	ppm	ASTM D5185(m)	1000	**906**	1009	954
Zinc	ppm	ASTM D5185(m)	3	**26**	33	28
Sulfur	ppm	ASTM D5185(m)	19400	**16581**	17963	16988
Lithium	ppm	ASTM D5185(m)		**<1**	<1	<1

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>20	**4**	6	6
Sodium	ppm	ASTM D5185(m)		**<1**	<1	<1
Potassium	ppm	ASTM D5185(m)	>20	**0**	<1	<1

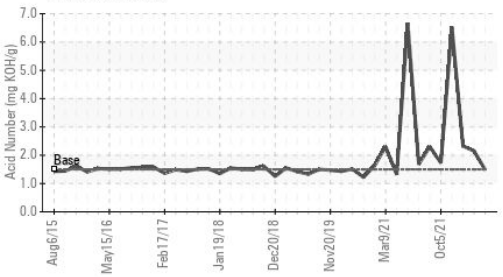
FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>20000	**124093**	157160	130643
Particles >6µm		ASTM D7647	>5000	**42268**	88012	23247
Particles >14µm		ASTM D7647	>640	**343**	▲ 783	231
Particles >21µm		ASTM D7647	>160	**29**	42	45
Particles >38µm		ASTM D7647	>40	**5**	3	1
Particles >71µm		ASTM D7647	>10	**4**	2	0
Oil Cleanliness		ISO 4406 (c)	>21/19/16	**24/23/16**	▲ 24/24/17	24/22/15

OIL ANALYSIS REPORT

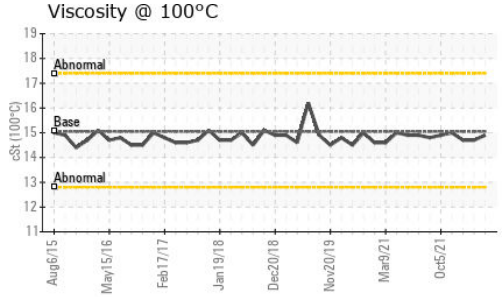
Particle Count



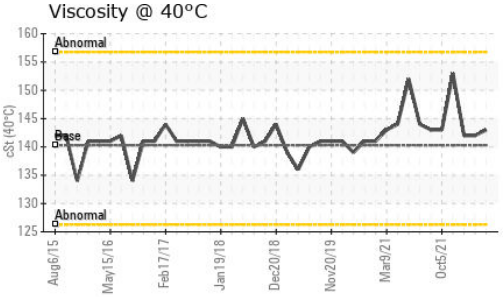
Acid Number



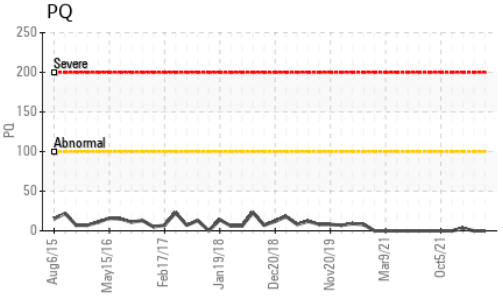
Viscosity @ 100°C



Viscosity @ 40°C



PQ



FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	1.5	**1.49**	2.15	2.32

VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	▲ **LIGHT**	NONE	NONE
Yellow Metal	scalar	Visual*	NONE	**NONE**	NONE	NONE
Precipitate	scalar	Visual*	NONE	**NONE**	NONE	NONE
Silt	scalar	Visual*	NONE	**NONE**	VLITE	NONE
Debris	scalar	Visual*	NONE	**NONE**	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*	>0.2	**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)	140.3	**143**	142	142
Visc @ 100°C	cSt	ASTM D7279(m)	15.05	**14.9**	14.7	14.7
Viscosity Index (VI)	Scale	ASTM D2270*	109	**104**	102	102

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					
PrtFilter				*no image*	*no image*

ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : PC0076226 **Received** : 18 Oct 2023
Lab Number : 02590133 **Diagnosed** : 22 Oct 2023
Unique Number : 5659199 **Diagnostician** : Kevin Marson
Test Package : IND 2 (Additional Tests: A-Ferr, BottomAnalysis, FILTERPATCH, KV100, PQ, PrtCount, PrtFilter, TAN M

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.

Suncor - Terra Nova Projects
Scotia Centre, 235 Water Strret
St. John`s, NL
CA A1C 1B6
Contact: Josh Hynes
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T: (709)778-3575
F: (709)724-2835

PARTICLE FILTER REPORT

Area
Cranes [450207986]
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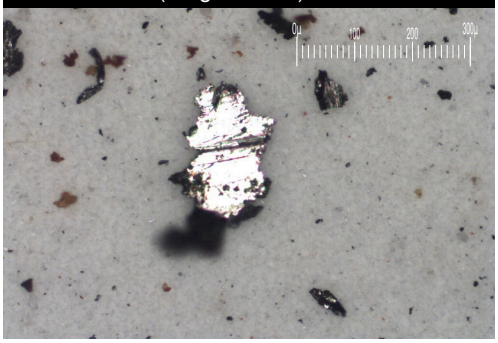
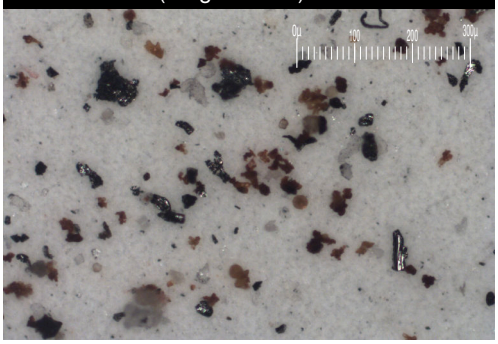
Fluid
PETRO CANADA GEARLUBE TOS 80W90 (33 LTR)

Particle Filter (Magn: 100 x)

Particle Filter (Magn: 100 x)



Particle Filter (Magn: 100 x)



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

WEAR

Wear particle analysis indicates that the ferrous cutting particles are abnormal. Cutting wear particles are caused by either hard protuberances (mis-aligned components, etc.), or abrasives entering the system and embedding themselves in softer materials (sand, etc.), and gouging out mating surfaces.

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