

PROBLEM SUMMARY

Sample Rating Trend

ISO

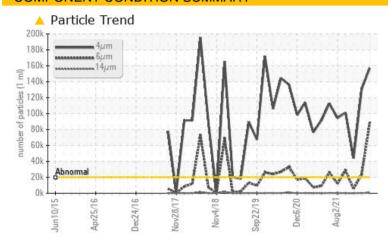
Cranes

Crane - Mid Ship Slewing Gearbox #3 (S/N Sample Tag MA-04002-S9)

Gearbox

PETRO CANADA GEARLUBE TOS 80W90 (33 LTR)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

We recommend you service the filters on this component. Resample at the next service interval to monitor.

PROBLEMATIC TEST RESULTS									
Sample Status			ATTENTION	NORMAL	SEVERE				
Particles >14µm	ASTM D7647	>640	△ 783	231	25				
Oil Cleanliness	ISO 4406 (c)	>21/19/16	△ 24/24/17	24/22/15	A 23/20/12				

Customer Id: TERHAM Sample No.: PC0052595 Lab Number: 02582286 Test Package: MAR 2

To manage this report scan the QR code

To discuss the diagnosis or test data: Kevin Marson +1 (289)291-4644 x4644 Kevin.Marson@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.

HISTORICAL DIAGNOSIS

14 Jun 2023 Diag: Kevin Marson





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.



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.



05 Oct 2021 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.





OIL ANALYSIS REPORT

Sample Rating Trend

ISO

history2

nistory1

Cranes

Crane - Mid Ship Slewing Gearbox #3 (S/N Samp

Gearbox

PETRO CANADA GEARLUBE TOS 80W90 (33

DIAGNOSIS

Recommendation

We recommend you service the filters on this component. Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

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

Fluid Condition

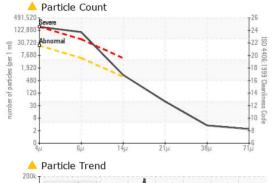
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

ole Tag MA-04002-S9)				1
LTR)	n2015 Apr2016	Dec2016 Nov2017	Nov2018 Sep2019 Dec2020	Aug2021
SAMPLE INFORMATION	method	limit/base	current	h
mple Number	Client Info		PC0052595	PC00

Sample Number		Client Info		PC0052595	PC0052199	PC0052002
Sample Date		Client Info		12 Aug 2023	14 Jun 2023	02 May 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				ATTENTION	NORMAL	SEVERE
WEAR METAL	S	method	limit/base	current	history1	history2
PQ		ASTM D8184*		0	3	0
Iron	ppm	ASTM D5185(m)	>150	18	19	3
Chromium	ppm	ASTM D5185(m)	>10	0	0	0
Nickel	ppm	ASTM D5185(m)	>10	<1	0	0
Titanium	ppm	ASTM D5185(m)		0	0	0
Silver	ppm	ASTM D5185(m)		0	0	0
Aluminum	ppm	ASTM D5185(m)	>5	<1	<1	0
Lead	ppm	ASTM D5185(m)	>65	0	0	0
Copper	ppm	ASTM D5185(m)	>80	3	4	<1
Tin	ppm	ASTM D5185(m)	>8	<1	<1	0
Antimony	ppm	ASTM D5185(m)	>5	0	0	<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)	240	230	232	184
Boron Barium	ppm	ASTM D5185(m) ASTM D5185(m)	240	230 <1	232 <1	184 1
	• • • • • • • • • • • • • • • • • • • •					
Barium	ppm	ASTM D5185(m)	1	<1	<1	1 <1 0
Barium Molybdenum	ppm ppm	ASTM D5185(m) ASTM D5185(m)	1	<1 <1	<1 <1 <1 2	1 <1
Barium Molybdenum Manganese	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0.0	<1 <1 <1	<1 <1 <1	1 <1 0
Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0.0	<1 <1 <1 1 49 1009	<1 <1 <1 2	1 <1 0 2 88 902
Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	1 0.0 2 6	<1 <1 <1 1 49	<1 <1 <1 2 50	1 <1 0 2 88
Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185(m)	1 0.0 2 6 1000	<1 <1 <1 1 49 1009	<1 <1 <1 2 50 954	1 <1 0 2 88 902
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	1 0.0 2 6 1000 3	<1 <1 <1 1 49 1009	<1 <1 <1 2 50 954 28	1 <1 0 2 88 902 54
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	1 0.0 2 6 1000 3	<1 <1 <1 1 49 1009 33 17963	<1 <1 <1 2 50 954 28 16988	1 <1 0 2 88 902 54 16549
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	1 0.0 2 6 1000 3 19400	<1 <1 <1 1 49 1009 33 17963	<1 <1 <1 2 50 954 28 16988 <1	1 <1 0 2 88 902 54 16549 <1
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	1 0.0 2 6 1000 3 19400	<1 <1 <1 1 49 1009 33 17963 <1	<1 <1 <1 2 50 954 28 16988 <1 history1	1 <1 0 2 88 902 54 16549 <1 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	1 0.0 2 6 1000 3 19400	<1 <1 <1 1 49 1009 33 17963 <1 current	<1 <1 <1 <2 50 954 28 16988 <1 history1 6	1 <1 0 2 88 902 54 16549 <1 history2 3
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	1 0.0 2 6 1000 3 19400 limit/base >20	<1 <1 <1 1 49 1009 33 17963 <1 current 6 <1	<1 <1 <1 2 50 954 28 16988 <1 history1 6 <1	1 <1 0 2 88 902 54 16549 <1 history2 3 <1
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	1 0.0 2 6 1000 3 19400 limit/base >20 >20	<1 <1 <1 1 49 1009 33 17963 <1 current 6 <1 <1	<1 <1 <1 2 50 954 28 16988 <1 history1 6 <1 <1	1 <1 0 2 88 902 54 16549 <1 history2 3 <1 0
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) METhod ASTM D5185(m)	1 0.0 2 6 1000 3 19400 limit/base >20 	<1 <1 <1 1 49 1009 33 17963 <1 current 6 <1 <1 turrent 157160	<1 <1 <1 2 50 954 28 16988 <1 history1 6 <1 <1 history1	1 <1 0 2 88 902 54 16549 <1 history2 3 <1 0 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >4µm Particles >6µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	1 0.0 2 6 1000 3 19400 limit/base >20 limit/base >20000	<1 <1 <1 1 49 1009 33 17963 <1 current 6 <1 <1 current	<1 <1 <1 2 50 954 28 16988 <1 history1 6 <1 <1 130643	1 <1 0 2 88 902 54 16549 <1 history2 3 <1 0 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >4µm Particles >6µm Particles >14µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) MASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D7647 ASTM D7647	1 0.0 2 6 1000 3 19400 Simit/base >20 Simit/base >20000 >5000 >640	<1 <1 <1 <1 1 49 1009 33 17963 <1 current 6 <1 <1 <1 current 157160 88012	<1 <1 <1 2 50 954 28 16988 <1 history1 6 <1 <1 history1 130643 23247	1
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >4µm Particles >6µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) MASTM D5185(m) ASTM D7647	1 0.0 2 6 1000 3 19400 Simit/base >20 Simit/base >20000 >5000 >640	<1 <1 <1 <1 1 49 1009 33 17963 <1 current 6 <1 <1 current 157160 88012	<1 <1 <1 <1 2 50 954 28 16988 <1 history1 6 <1 <1 <1 history1 130643 23247 231	1 <1 0 2 88 902 54 16549 <1 history2 3 <1 0 history2 44091 5618
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >4µm Particles >14µm Particles >21µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	1 0.0 2 6 1000 3 19400 Simit/base >20 Simit/base >20000 >5000 >640 >160	<1 <1 <1 <1 1 49 1009 33 17963 <1 current 6 <1 <1 <1 current 157160 88012 ▲ 783 42	<1 <1 <1 <1 <2 <1 <2 <1 <2 <1 <2 <1 <2 <1 <2 <1 <2 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	1

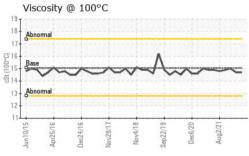


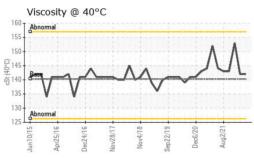
OIL ANALYSIS REPORT



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Ac	id Num	ber						
6.0+ 5.0+							1	
4.0 -								1
Acid Number (mg KOH/g)	e			_		~	M	_
0.0	9	9	7	80	6	0.	12	
Jun10/15	Apr25/16	Dec24/16	Nov28/17	Nov4/18	Sep22/19	Dec6/20	Aug2/21	





FLUID DEGRAD	ATION	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	1.5	2.15	2.32	6.52
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	VLITE	NONE	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 PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	140.3	142	142	153
Visc @ 100°C	cSt	ASTM D7279(m)	15.05	14.7	14.7	15.0
Viscosity Index (VI)	Scale	ASTM D2270*	109	102	102	97
SAMPLE IMAG	ES	method	limit/base	current	history1	history2
Color						



ISO 17025:2017
Accredited
Laboratory

Laboratory
Sample No.
Lab Number
Unique Number

WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
 PC0052595 Received : 13 Sep 2023
 02582286 Diagnosed : 15 Sep 2023

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.

Bottom

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