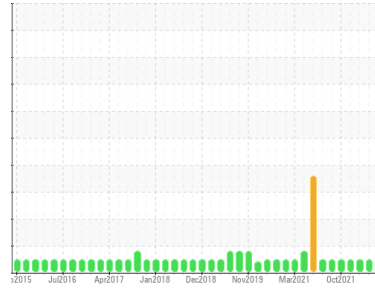


Area
Cranes [450207986]
Machine Id
Crane - Mid Ship Slewing Gearbox #2 (S/N Sample Tag MA-04002-S8)
Component
Gearbox
Fluid
PETRO CANADA GEARLUBE TOS 80W90 (33 LTR)



DIAGNOSIS

Recommendation
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 system and fluid cleanliness is acceptable.

Fluid Condition
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 | PC0076224 | PC0052591 | PC0052195 |
| Sample Date | Client Info | 04 Oct 2023 | 12 Aug 2023 | 14 Jun 2023 |
| Machine Age | hrs | Client Info | 0 | 0 |
| Oil Age | hrs | Client Info | 0 | 0 |
| Oil Changed | Client Info | N/A | N/A | N/A |
| Sample Status | | NORMAL | NORMAL | NORMAL |

WEAR METALS

| method | limit/base | current | history1 | history2 | |
|-----------|-------------|--------------------|--------------|----------|----|
| PQ | ASTM D8184* | 0 | 0 | 0 | |
| Iron | ppm | ASTM D5185(m) >150 | 8 | 7 | 5 |
| 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 | <1 |
| Aluminum | ppm | ASTM D5185(m) >5 | 0 | 0 | 0 |
| Lead | ppm | ASTM D5185(m) >65 | <1 | 0 | 0 |
| Copper | ppm | ASTM D5185(m) >80 | <1 | <1 | <1 |
| Tin | ppm | ASTM D5185(m) >8 | 0 | 0 | 0 |
| 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 | 253 | 240 | 237 |
| Barium | ppm | ASTM D5185(m) 1 | <1 | <1 | 0 |
| Molybdenum | ppm | ASTM D5185(m) 0.0 | 0 | 0 | 0 |
| Manganese | ppm | ASTM D5185(m) | 0 | <1 | 0 |
| Magnesium | ppm | ASTM D5185(m) 2 | <1 | 2 | 2 |
| Calcium | ppm | ASTM D5185(m) 6 | 4 | 15 | 5 |
| Phosphorus | ppm | ASTM D5185(m) 1000 | 927 | 1094 | 978 |
| Zinc | ppm | ASTM D5185(m) 3 | 12 | 114 | 13 |
| Sulfur | ppm | ASTM D5185(m) 19400 | 19622 | 23664 | 19589 |
| Lithium | ppm | ASTM D5185(m) | <1 | <1 | <1 |

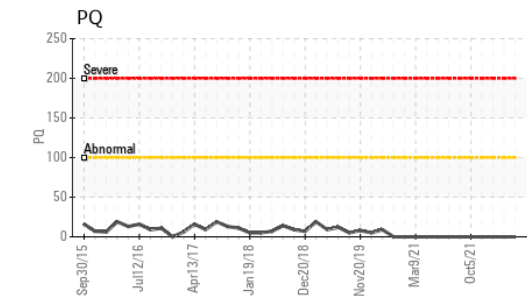
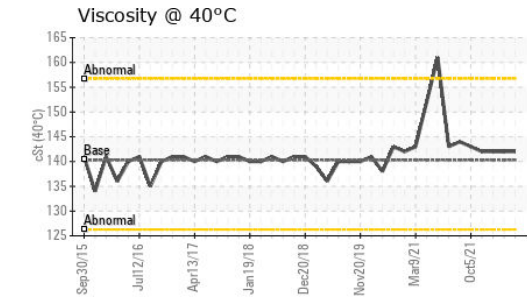
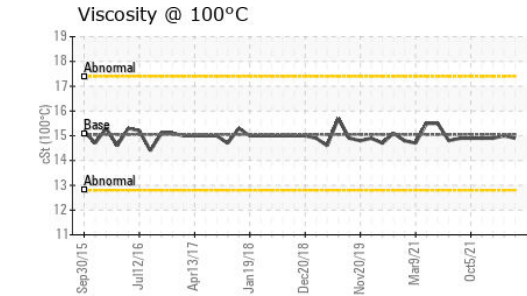
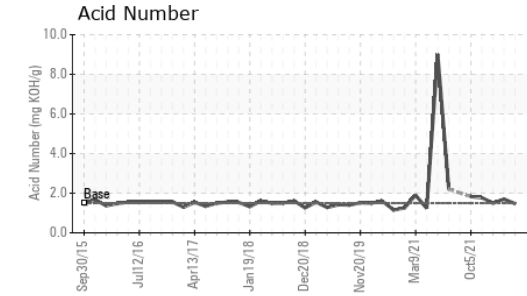
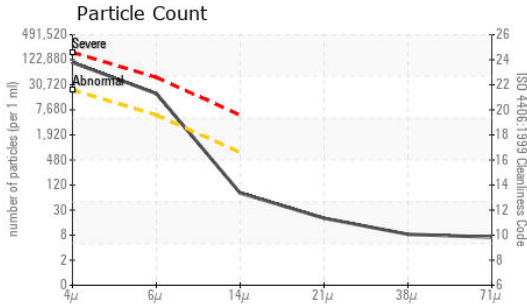
CONTAMINANTS

| method | limit/base | current | history1 | history2 | |
|-----------|------------|-------------------|--------------|----------|----|
| Silicon | ppm | ASTM D5185(m) >20 | 4 | 3 | 4 |
| Sodium | ppm | ASTM D5185(m) | <1 | 2 | <1 |
| Potassium | ppm | ASTM D5185(m) >20 | 0 | <1 | <1 |

FLUID CLEANLINESS

| method | limit/base | current | history1 | history2 | |
|-----------------|--------------|-----------|-----------------|----------|----------|
| Particles >4µm | ASTM D7647 | >20000 | 91068 | 26705 | 76575 |
| Particles >6µm | ASTM D7647 | >5000 | 16440 | 2904 | 13214 |
| Particles >14µm | ASTM D7647 | >640 | 68 | 19 | 103 |
| Particles >21µm | ASTM D7647 | >160 | 17 | 5 | 22 |
| Particles >38µm | ASTM D7647 | >40 | 7 | 1 | 0 |
| Particles >71µm | ASTM D7647 | >10 | 6 | 1 | 0 |
| Oil Cleanliness | ISO 4406 (c) | >21/19/16 | 24/21/13 | 22/19/11 | 23/21/14 |

OIL ANALYSIS REPORT

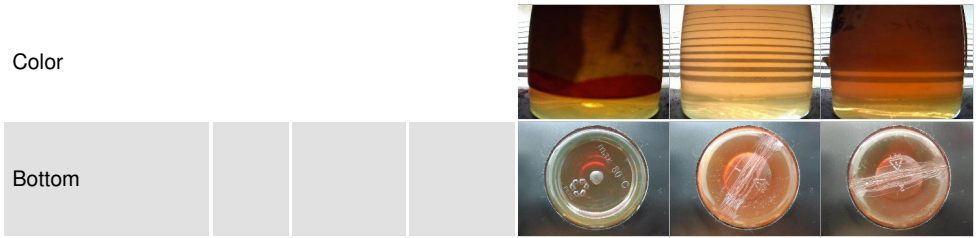


| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|-------------------|----------|------------|------------|-------------|----------|----------|
| Acid Number (AN) | mg KOH/g | ASTM D974* | 1.5 | 1.47 | 1.70 | 1.50 |

| 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 | 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 | 142 | 142 | 142 |
| Visc @ 100°C | cSt | ASTM D7279(m) | 15.05 | 14.9 | 15.0 | 14.9 |
| Viscosity Index (VI) | Scale | ASTM D2270* | 109 | 105 | 106 | 105 |

SAMPLE IMAGES



Color
Bottom



ISO 17025:2017
Accredited
Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : PC0076224
Lab Number : **02590132**
Unique Number : 5659198
Test Package : IND 2 (Additional Tests: KV100, PQ, PrtCount, TAN Man, VI)
Received : 18 Oct 2023
Diagnosed : 19 Oct 2023
Diagnostician : Kevin Marson

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.

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