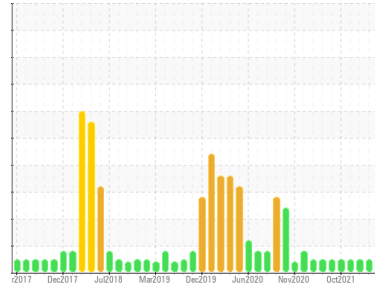


Area
Cranes [450185704]
Machine Id
Crane - Fwd Slewing Gearbox #3 (S/N Sample Tag MA-04003-S9)
Component
Gearbox
Fluid
PETRO CANADA GEARLUBE TOS 80W90 (33 LTR)



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 | PC | PC0053009 | PC0040127 |
| Sample Date | Client Info | 13 Aug 2023 | 02 May 2023 | 29 Nov 2021 |
| 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 | 4 | 3 | 2 |
| Chromium | ppm | ASTM D5185(m) >10 | 0 | 0 | 0 |
| Nickel | ppm | ASTM D5185(m) >10 | 0 | 0 | <1 |
| Titanium | ppm | ASTM D5185(m) | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185(m) | 0 | 0 | <1 |
| Aluminum | ppm | ASTM D5185(m) >5 | 0 | 0 | 0 |
| Lead | ppm | ASTM D5185(m) >65 | 0 | <1 | 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 | 235 | 222 | 218 |
| Barium | ppm | ASTM D5185(m) 1 | 0 | 0 | 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 | <1 | <1 |
| Calcium | ppm | ASTM D5185(m) 6 | 3 | 1 | 3 |
| Phosphorus | ppm | ASTM D5185(m) 1000 | 1017 | 989 | 928 |
| Zinc | ppm | ASTM D5185(m) 3 | 14 | 18 | 5 |
| Sulfur | ppm | ASTM D5185(m) 19400 | 16839 | 16159 | 15813 |
| Lithium | ppm | ASTM D5185(m) | <1 | <1 | <1 |

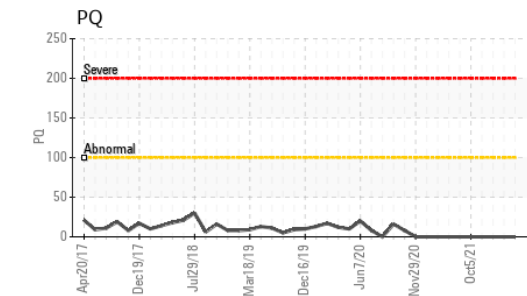
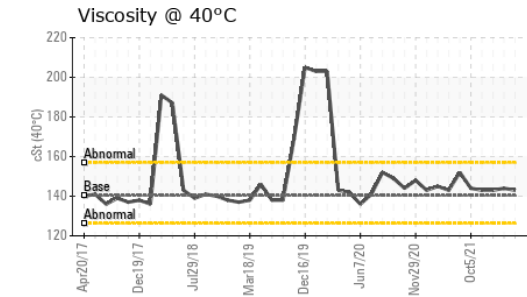
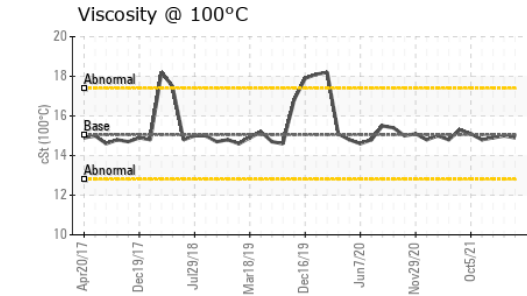
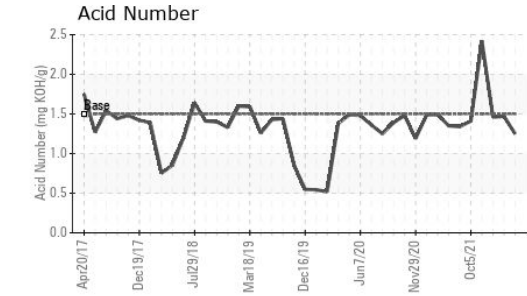
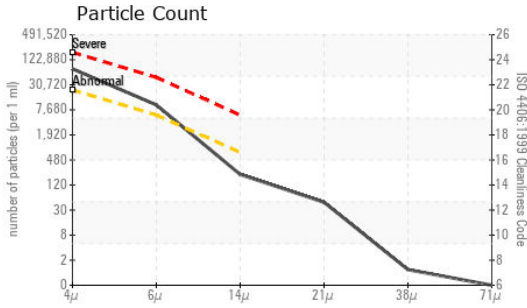
CONTAMINANTS method limit/base current history1 history2

| | | | | | |
|-----------|-----|-------------------|--------------|----|---|
| Silicon | ppm | ASTM D5185(m) >20 | 4 | 3 | 3 |
| Sodium | ppm | ASTM D5185(m) | <1 | <1 | 2 |
| Potassium | ppm | ASTM D5185(m) >20 | 2 | 1 | 2 |

FLUID CLEANLINESS method limit/base current history1 history2

| | | | | | |
|-----------------|--------------|-----------|-----------------|----------|----------|
| Particles >4µm | ASTM D7647 | >20000 | 64240 | 18389 | 32428 |
| Particles >6µm | ASTM D7647 | >5000 | 8788 | 1641 | 3167 |
| Particles >14µm | ASTM D7647 | >640 | 190 | 24 | 6 |
| Particles >21µm | ASTM D7647 | >160 | 41 | 5 | 0 |
| Particles >38µm | ASTM D7647 | >40 | 1 | 1 | 0 |
| Particles >71µm | ASTM D7647 | >10 | 0 | 1 | 0 |
| Oil Cleanliness | ISO 4406 (c) | >21/19/16 | 23/20/15 | 21/18/12 | 22/19/10 |

OIL ANALYSIS REPORT



FLUID DEGRADATION

| method | limit/base | current | history1 | history2 | |
|---------------------------|------------|---------|-------------|----------|------|
| Acid Number (AN) mg KOH/g | ASTM D974* | 1.5 | 1.25 | 1.47 | 1.46 |

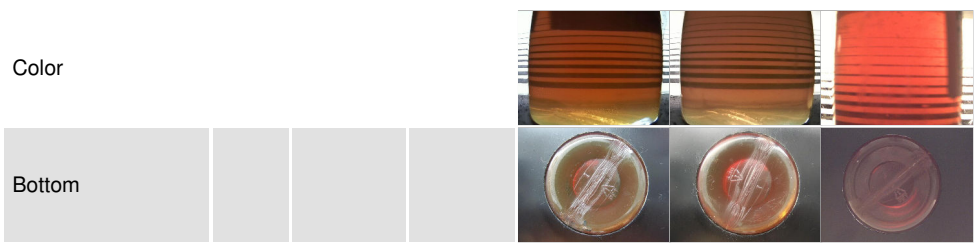
VISUAL

| method | limit/base | current | history1 | history2 | |
|------------------|----------------|---------|--------------|----------|-------|
| White Metal | scalar Visual* | NONE | VLITE | 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 | 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 | 144 | 143 |
| Visc @ 100°C | cSt ASTM D7279(m) | 15.05 | 14.9 | 15.0 | 14.9 |
| Viscosity Index (VI) | Scale ASTM D2270* | 109 | 104 | 104 | 104 |

SAMPLE IMAGES



Color

Bottom



ISO 17025:2017
Accredited
Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : PC
Lab Number : **02582282** **Received** : 13 Sep 2023
Unique Number : 5643347 **Diagnosed** : 15 Sep 2023
Test Package : MAR 2 (Additional Tests: KV100, PQ, PrtCount, VI) **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.

Suncor - Terra Nova Projects
 Scotia Centre, 235 Water Strret
 St. John's, NL
 CA A1C 1B6
 Contact: Josh Hynes
 joshynes@suncor.com
 T: (709)778-3575
 F: (709)724-2835