

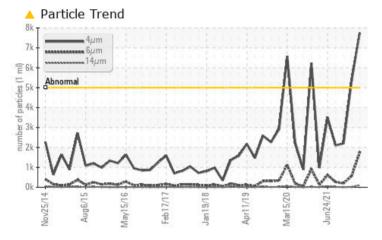
PROBLEM SUMMARY

Cranes

Crane - Mid - Hydraulic System (Slewing) (S/N Sample Tag MA-04002-S2)

PETRO CANADA ATF DEXRON III/MERCON (800 LTR)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

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

| PROBLEMATIC T | EST RESULTS | | | |
|-----------------|----------------|--------------------|--------------|----------|
| Sample Status | | ATTENTI | ON ATTENTION | NORMAL |
| Particles >4µm | ASTM D7647 > | 5000 A 7752 | ▲ 5384 | 2207 |
| Particles >6µm | ASTM D7647 > | 1300 🔺 1750 | 563 | 193 |
| Oil Cleanliness | ISO 4406 (c) > | 19/17/14 🔺 20/18/1 | 4 🔺 20/16/11 | 18/15/10 |

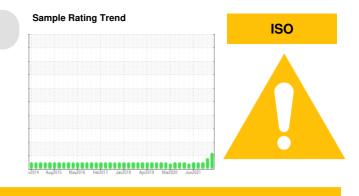
Customer Id: TERHAM Sample No.: PC0052587 Lab Number: 02582135 Test Package: MAR 2



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

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

05 Oct 2021 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 Aug 2021 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.







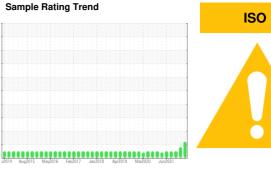


OIL ANALYSIS REPORT

Area Cranes Crane - Mid - Hydraulic System (Slewing) (S/N Sample Tag MA-04002-S2) Component

Hydraulic System

PETRO CANADA ATF DEXRON III/MERCON (800 LTR)



| Ninor. Oil Age Iva Client Info D D D D Part Sample Status Client Info N.A N.A N.A N.A Contamination Sample Status Image Image Client Info N.A N.A N.A Sample Status Image Mathematical Client Info N.A ATTENTION NORMAL Visit Condition AN Itendit acceptable for this fluid. The ndition of the oil is suitable for further service. Method Status Image ASTM DB15561 O O O O Nickle Dpm ASTM DB15561 O O O O O O Nickle Dpm ASTM DB15561 O O O O O O O Nickle Dpm ASTM DB15561 O | DIAGNOSIS | SAMPLE INFOR | | M method | limit/base | current | history1 | history2 | |
|---|--|-----------------|-------|---------------|------------|-------------|-----------|----------|--|
| Precommend you service he filters on this notion. Sample Date Client Info 12 Aug 2023 14 Jun 2023 06 Oct 2021 samponent. Common the act is an onomal. On Age hrs Client Info 0 | Becommendation | Sample Number | | Client Info | | PC0052587 | PC0052190 | PC416830 | |
| monome. Client Info 0 0 0 Component wear rates are normal. Client Info NA NA NA Component wear rates are normal. Client Info NA NA NA Contamination ere is a light amount of sill (particulates < 14) component is accoptable for the fluit. The a Al treat is accoptable for the fluit. The didtion of the oil is accoptable for the fluit. The addition of the oil is accoptable for the fluit. The didtion of the oil is autable for further service. WEAP METALS method Imitbase Comotion 0 0 Silver ppm ASTILDESSm >00 0 0 0 0 Chromium ppm ASTILDESSm >00 0 | | | | | | | | | |
| Ohlor. Oil Age hrs Client Info O O O Bar Component wear rates are normal. Contamination ere is a light amount of slit (particulates < 14 crons in size) present in the oil. MA NA NA NA NA Bar Component wear rates are normal. Contamination ere is a light amount of slit (particulates < 14) | component. Resample at the next service interval to | | hrs | | | - | | | |
| part Oli Changad Client ino NA NA NA Component war rates are normal. Sample Status i Namele Status interval Attention Normal. Toris in subpropertin the oil is suitable for further service. WEAR METALS method method method interval Q 0 0 0 AN level is acceptable for think of the oil is suitable for further service. FO ASTM 2588 0 < | nonitor. | • | | | | | | | |
| component wear rates are normal. Sample Status Image: Sample Status ATTENTION NORMAL Contamination ere is a light amount of silt (particulates < 14 cons in size) present in the oil. <td>MCAR METALS method limit/base current history1 history1 PQ ASTM Diskien >10 0 0 0 0 e AN level is acceptable for thirs fluid. The ndition of the oil is suitable for further service. Normal MSTM Diskien >10 0<td>lear</td><td>-</td><td></td><td></td><td></td><th></th><td></td><td></td></td> | MCAR METALS method limit/base current history1 history1 PQ ASTM Diskien >10 0 0 0 0 e AN level is acceptable for thirs fluid. The ndition of the oil is suitable for further service. Normal MSTM Diskien >10 0 <td>lear</td> <td>-</td> <td></td> <td></td> <td></td> <th></th> <td></td> <td></td> | lear | - | | | | | | |
| Contamination Contamination Contamination Current Nistory1 Nistory2 rors in size) present in the oil. O 0 | Il component wear rates are normal. | - | | | | | | | |
| pCq Notest of 0 0 id Condition pm MSIM 0818/m >20 2 2 1 AN level is acceptable for this fluid. The ndition of the oil is suitable for further service. Chromium pm MSIM 0818/m >10 0 0 0 0 Notest is acceptable for further service. Nikel pm ASIM 0818/m >10 <1 | Contamination | WEAR META | LS | method | limit/base | current | history1 | history2 | |
| A Nieveli acceptable for this fluid. The number of the oil is suitable for further service. Promium ppm ASTU (58)(30) >10 0 0 <1 | icrons in size) present in the oil. | PQ | | ASTM D8184* | | 0 | 0 | 0 | |
| e AN level is acceptable for this fluid. The mixted pm ASTM 051561 >10 0 <1 | uid Condition | Iron | ppm | ASTM D5185(m) | >20 | 2 | 2 | 1 | |
| Nickel ppm ASTN 058(m) >10 <1 0 <1 Titanium ppm ASTN 058(m) 0 0 0 0 Silvor ppm ASTN 058(m) 0 0 0 0 Aluminum ppm ASTN 058(m) >20 2 1 1 Lead ppm ASTN 058(m) >20 3 3 3 Tin ppm ASTN 058(m) >10 <1 | | Chromium | ppm | | | 0 | 0 | 0 | |
| Tittanium ppm ASTM 2585(m) I 0 0 0 Silver ppm ASTM 2585(m) >10 <1 <1 Auminium ppm ASTM 2585(m) >20 2 1 1 Copper ppm ASTM 2585(m) >20 3 3 3 Tim ppm ASTM 2585(m) >10 <1 <1 <1 Antimony ppm ASTM 2585(m) >10 <1 <1 <1 Vanadium ppm ASTM 2585(m) <0 0 0 0 0 Boryin ppm ASTM 2585(m) 0 0 0 0 0 ADDITIVES resthod Imit/base current history1 history2 Molybdenum ppm ASTM 2585(m) 10.0 82 81 90 Magnesium ppm ASTM 2585(m) 0.0 0 0 0 0 Magnesium ppm ASTM 2585(m) 0.0 0 0 0 0 Solitor ppm < | ondition of the oil is suitable for further service. | Nickel | ppm | ASTM D5185(m) | >10 | <1 | 0 | <1 | |
| Silver ppm ASTM DS185/m >10 <1 <1 Aluminum ppm ASTM DS185/m >20 2 1 1 Lead ppm ASTM DS185/m >20 3 3 3 Tin ppm ASTM DS185/m >20 3 3 3 Tin ppm ASTM DS185/m >10 <1 | | Titanium | | | | 0 | 0 | 0 | |
| Aluminum ppm ASTM DS185(m) >10 <1 | | Silver | ppm | ASTM D5185(m) | | 0 | 0 | <1 | |
| Lead ppm ASTM D5183/m >20 2 1 1 Copper ppm ASTM D5183/m >20 3 3 Tim ppm ASTM D5183/m >10 <1 | | Aluminum | | | >10 | <1 | <1 | <1 | |
| Copper ppm ASTM 25185(m) >20 3 3 3 Tin ppm ASTM 05186(m) 510 <1 <1 <1 Antimony ppm ASTM 05186(m) 0 0 0 0 Vanadium ppm ASTM 05186(m) 0 0 0 0 Berryllium ppm ASTM 05186(m) 0 0 0 0 ADDITIVES method Imit/base current history1 history2 Boron ppm ASTM 05186(m) 1.0 8 7 7 Molybdenum ppm ASTM 05186(m) 0.0 0 0 0 Manganese ppm ASTM 05186(m) 0.0 0 0 0 Suffur ppm ASTM 05186(m) 0.0 1.0 1.1 1.1 2.8 Cinc ppm ASTM 05186(m) 0.0 1.0 1.4 2.9 2.8 Suffur ppm ASTM 05186(m) 2.0 3.6 3.5 3.4 Phosphorus ppm | | | | | | | 1 | | |
| Tin ppm ASTM D5185(m) >10 <1 | | | | | | | 3 | | |
| AntimonyppmASTM D5185im000VanadiumppmASTM D5185im0000BerylliumppmASTM D5185im0000CadmiumppmASTM D5185im1082819090ADDITIVESmethodlimit/basecurrenthistory1history290BoronppmASTM D5185im1.082819090BariumppmASTM D5185im0.00000MolybdenumppmASTM D5185im0.00000MaganeseppmASTM D5185im1.0<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 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 130 82 81 90 Barium ppm ASTM D5185(m) 1.0 82 81 90 Molybdenum ppm ASTM D5185(m) 0.0 0 0 0 Manganese ppm ASTM D5185(m) 1.0 1 1 1 Calcium ppm ASTM D5185(m) 2.00 313 2.91 2.88 Zinc ppm ASTM D5185(m) 2.60 313 2.91 2.88 Zinc ppm ASTM D5185(m) 4.40 821 7.68 85.8 Lithium ppm ASTM D5185(m) 2.0 1 1 1 Sulfur ppm ASTM D5185(m) 2.0 1 | | | | | | | | | |
| Beryllium ppm ASTM D5/85(m) 0 0 0 Cadmium ppm ASTM D5/85(m) Imit/base current history1 history2 Boron ppm ASTM D5/85(m) 130 82 81 90 Barium ppm ASTM D5/85(m) 130 82 81 90 Barium ppm ASTM D5/85(m) 1.0 8 7 7 Molybdenum ppm ASTM D5/85(m) 1.0 82 81 90 Maganese ppm ASTM D5/85(m) 1.0 8 7 7 Molybdenum ppm ASTM D5/85(m) 1.0 1 1 1 Calcium ppm ASTM D5/85(m) 2.0 363 2.91 2.88 Zinc ppm ASTM D5/85(m) 4.0 1.0 1 1 Sulfur ppm ASTM D5/85(m) 2.0 1 1 1 Sulfur ppm ASTM D5/85(m) 2.1 <td></td> <td></td> <td></td> <td></td> <td></td> <th></th> <td></td> <td></td> | | | | | | | | | |
| Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 1.30 82 81 90 Barium ppm ASTM D5185(m) 1.0 8 7 7 Molybdenum ppm ASTM D5185(m) 0.0 0 0 0 Magnesium ppm ASTM D5185(m) 0.0 0 0 0 Galcium ppm ASTM D5185(m) 2.0 36 35 34 Phosphorus ppm ASTM D5185(m) 2.0 313 2.91 2.88 Zince ppm ASTM D5185(m) 1.0 1.11 1.10 2.88 Zinfur ppm ASTM D5185(m) 2.0 313 2.91 2.88 Zinfur ppm ASTM D5185(m) 1.0 1.1 1.1 1.1 Sulfur ppm ASTM D5185(m) 2.1 1.1 1.1 1.1 1.1 Sodium ppm ASTM D | | | | () | | | | | |
| ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5165(m) 1.30 82 8.1 90 Barium ppm ASTM D5165(m) 1.0 8 7 7 Molybdenum ppm ASTM D5165(m) 0.0 0 0 0 Manganese ppm ASTM D5165(m) 1.0 <1 | | , | | | | | | | |
| Boron ppm ASTM D5185(m) 1.30 82 81.1 90 Barium ppm ASTM D5185(m) 1.0 8 7 7 Molybdenum ppm ASTM D5185(m) 0.0 0 0 0 Manganese ppm ASTM D5185(m) 0.0 0 0 0 Magnesium ppm ASTM D5185(m) 1.0 -1 <1 <1 <1 Calcium ppm ASTM D5185(m) 1.0 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 | | | ρριιι | | limit/bacc | | | | |
| Barium ppm ASTM D5185(m) 1.0 8 7 7 Molybdenum ppm ASTM D5185(m) 0.0 0 0 0 Manganese ppm ASTM D5185(m) 0 0 0 0 Magnesium ppm ASTM D5185(m) 1.0 <1 <1 <1 Calcium ppm ASTM D5185(m) 2.0 36 35 34 Phosphorus ppm ASTM D5185(m) 2.00 36 35 34 Zinc ppm ASTM D5185(m) 2.00 313 2.91 2.88 Zinc ppm ASTM D5185(m) 4.00 821 7.68 858 Lithium ppm ASTM D5185(m) 4.00 821 7.68 858 Silicon ppm ASTM D5185(m) 5.1 1 1 1 1 Sodium ppm ASTM D5185(m) >20 1 <1 1 1 Sodium ppm ASTM D5185(m) >20 1 <1 1 1 1 1 | | | | | | | | | |
| Molybdenum ppm ASTM D5185(m) 0.0 0 0 Manganese ppm ASTM D5185(m) 1.0 <1 | | | | | | | | | |
| Maganesse ppm ASTM D5185(m) 0 0 0 Magnesium ppm ASTM D5185(m) 1.0 <1 | | | | | | | | | |
| Magnesium ppm ASTM D5185(m) 1.0 <1 <1 <1 Calcium ppm ASTM D5185(m) 20 36 35 34 Phosphorus ppm ASTM D5185(m) 280 313 291 288 Zinc ppm ASTM D5185(m) 10 141 129 110 Sulfur ppm ASTM D5185(m) 440 821 768 858 Lithium ppm ASTM D5185(m) 440 821 768 858 Soliton ppm ASTM D5185(m) 440 821 768 858 Lithium ppm ASTM D5185(m) 440 821 768 858 Soliton ppm ASTM D5185(m) 440 821 768 858 Soliton ppm ASTM D5185(m) 440 821 71 1 1 CONTAMINANTS method limit/base current history1 history2 2 2 Soliton ppm ASTM D7647 >5000 A 7752 5384 2 | | - | | | 0.0 | | | | |
| Calcium ppm ASTM D5185(m) 20 36 35 34 Phosphorus ppm ASTM D5185(m) 280 313 291 288 Zinc ppm ASTM D5185(m) 10 141 129 110 Sulfur ppm ASTM D5185(m) 440 821 768 858 Lithium ppm ASTM D5185(m) 440 821 <1 | | • | | . , | 4.0 | | | | |
| Phosphorus ppm ASTM D5185(m) 280 313 291 288 Zinc ppm ASTM D5185(m) 10 141 129 110 Sulfur ppm ASTM D5185(m) 440 821 768 858 Lithium ppm ASTM D5185(m) 440 821 768 858 Silicon ppm ASTM D5185(m) | | - | | | | | | | |
| Zinc ppm ASTM D5185(m) 10 141 129 110 Sulfur ppm ASTM D5185(m) 440 821 768 858 Lithium ppm ASTM D5185(m) 440 821 768 858 Solitor ppm ASTM D5185(m) - - 1 - 1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >15 1 1 1 Sodium ppm ASTM D5185(m) >15 1 1 1 1 Sodium ppm ASTM D5185(m) >20 1 <1 | | | | | | | | | |
| Sulfur ppm ASTM D5/t85(m) 440 821 768 858 Lithium ppm ASTM D5/t85(m) I <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5/t85(m) >15 1 1 1 1 Sodium ppm ASTM D5/t85(m) >15 1 | | | | | | | | | |
| LithiumppmASTM D5185(m)< | | | | . , | | | | | |
| CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185(m)>151111SodiumppmASTM D5185(m)>1511111SodiumppmASTM D5185(m)>201<1 | | | ppm | | 440 | | | | |
| SiliconppmASTM D5185(m)>151111SodiumppmASTM D5185(m) 3 222PotassiumppmASTM D5185(m)>201<1<1<1FLUID CLEANLINESSmethodlimit/basecurrenthistory1history2Particles >4 μ mASTM D7647>5000775253842207Particles >6 μ mASTM D7647>1300 1750 563193Particles >14 μ mASTM D7647>160101168Particles >21 μ mASTM D7647>10010Particles >38 μ mASTM D7647>3000 | | Lithium | ppm | ASTM D5185(m) | | <1 | <1 | <1 | |
| SodiumppmASTM D5185(m)322PotassiumppmASTM D5185(m)>201<1<1FLUID CLEANLINESSmethodlimit/basecurrenthistory1history2Particles >4 μ mASTM D7647>5000775253842207Particles >6 μ mASTM D7647>13001750563193Particles >14 μ mASTM D7647>160101168Particles >21 μ mASTM D7647>402352Particles >38 μ mASTM D7647>10010Particles >71 μ mASTM D7647>3000 | | CONTAMINA | NTS | method | limit/base | current | history1 | history2 | |
| SodiumppmASTM D5185(m)322PotassiumppmASTM D5185(m)>201<1 | | Silicon | ppm | ASTM D5185(m) | >15 | 1 | 1 | 1 | |
| FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >5000 ▲ 7752 ▲ 5384 2207 Particles >6µm ASTM D7647 >1300 ▲ 1750 563 193 Particles >6µm ASTM D7647 >160 101 16 8 Particles >14µm ASTM D7647 >160 101 16 8 Particles >21µm ASTM D7647 >40 23 5 2 Particles >38µm ASTM D7647 >10 0 1 0 Particles >71µm ASTM D7647 >3 0 0 0 | | Sodium | | ASTM D5185(m) | | 3 | 2 | 2 | |
| Particles >4 μ mASTM D7647>5000775253842207Particles >6 μ mASTM D7647>13001750563193Particles >14 μ mASTM D7647>160101168Particles >21 μ mASTM D7647>402352Particles >38 μ mASTM D7647>10010Particles >71 μ mASTM D7647>3000 | | Potassium | ppm | ASTM D5185(m) | >20 | 1 | <1 | <1 | |
| Particles >6μm ASTM D7647 >1300 ▲ 1750 563 193 Particles >14μm ASTM D7647 >160 101 16 8 Particles >21μm ASTM D7647 >40 23 5 2 Particles >38μm ASTM D7647 >10 0 1 0 Particles >71μm ASTM D7647 >3 0 0 0 | | FLUID CLEAN | | S method | limit/base | current | history1 | history2 | |
| Particles >6μm ASTM D7647 >1300 ▲ 1750 563 193 Particles >14μm ASTM D7647 >160 101 16 8 Particles >21μm ASTM D7647 >40 23 5 2 Particles >38μm ASTM D7647 >10 0 1 0 Particles >71μm ASTM D7647 >3 0 0 0 | | Particles >4µm | | ASTM D7647 | >5000 | 7752 | 5384 | 2207 | |
| Particles >14μm ASTM D7647 >160 101 16 8 Particles >21μm ASTM D7647 >40 23 5 2 Particles >38μm ASTM D7647 >10 0 1 0 Particles >71μm ASTM D7647 >3 0 0 0 | | | | | | | | | |
| Particles >21μm ASTM D7647 >40 23 5 2 Particles >38μm ASTM D7647 >10 0 1 0 Particles >71μm ASTM D7647 >3 0 0 0 | | | | | | | | | |
| Particles >38μm ASTM D7647 >10 0 1 0 Particles >71μm ASTM D7647 >3 0 0 0 | | | | | | | | | |
| Particles >71μm ASTM D7647 >3 0 0 0 | | | | | | | | | |
| | | | | | | | | | |
| Oil Cleanliness ISO 4406 (c) >19/17/14 ▲ 20/18/14 ▲ 20/16/11 18/15/10 | | Oil Cleanliness | | | | | 20/16/11 | 18/15/10 | |



🔺 Particle Count

🔺 Particle Trend

Acid Number

Aug6/1

14

214

Apr11/19 .

Feb17/17

an 19/18

Aav15/16

491,520 122,880

120 30 8

8

1) sahicles (1)

0

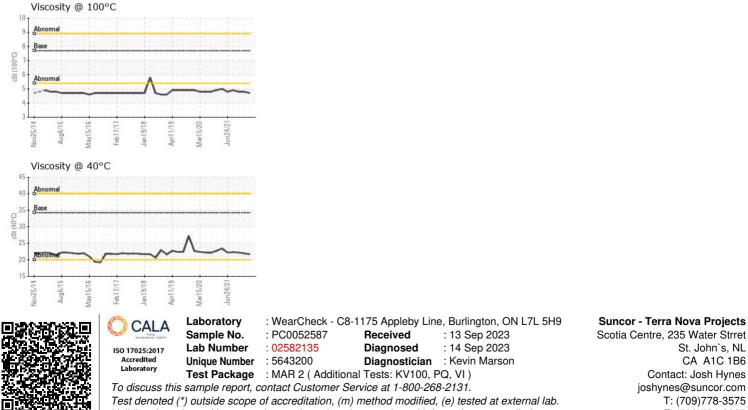
12

Vov25/1

(B/HOX Be 0 umber 0 Acid Ba 0.0

OIL ANALYSIS REPORT

| FLUID DEGRA | DATION | method | limit/base | current | history1 | history2 |
|----------------------|----------|---------------|------------|---------|----------|----------|
| Acid Number (AN) | mg KOH/g | ASTM D974* | 0.16 | 0.98 | 1.11 | 0.95 |
| 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 | 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* | >0.05 | 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) | 34.26 | 21.7 | 21.9 | 22.2 |
| Visc @ 100°C | cSt | ASTM D7279(m) | 7.7 | 4.7 | 4.8 | 4.8 |
| Viscosity Index (VI) | Scale | ASTM D2270* | 210 | 139 | 145 | 142 |
| SAMPLE IMAG | ES | method | limit/base | current | history1 | history2 |
| | | | | | | |
| Color | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Bottom | | | | | | |
| Bottom | | | | | | |



Validity of results and interpretation are based on the sample and information as supplied.

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Contact: Josh Hynes

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