



ASCENDUM

OIL ANALYSIS REPORT

| | |
|-----------------|--------|
| WEAR | NORMAL |
| CONTAMINATION | NORMAL |
| FLUID CONDITION | NORMAL |



Machine Id
VOLVO L220H 3177
Component
Diesel Engine
Fluid
VOLVO ULTRA DIESEL ENGINE OIL 15W40 VDS-3 (13 GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|-------------|-------------|-------------|
| Sample Number | | Client Info | | ASC0003333 | ASC0003032 | ASC0003398 |
| Sample Date | | Client Info | | 15 Jul 2024 | 25 Apr 2024 | 09 Feb 2024 |
| Machine Age | hrs | Client Info | | 9505 | 9086 | 8637 |
| Oil Age | hrs | Client Info | | 419 | 8637 | 500 |
| Filter Age | hrs | Client Info | | 0 | 8637 | 500 |
| Oil Changed | | Client Info | | Changed | Changed | Changed |
| Filter Changed | | Client Info | | Changed | Changed | Changed |
| Sample Status | | | | NORMAL | NORMAL | ABNORMAL |

WEAR

All component wear rates are normal.

| | | | | | | |
|--------------|--------|-------------|------|------|------|------|
| Iron | ppm | ASTM D5185m | >100 | 5 | 5 | 3 |
| Chromium | ppm | ASTM D5185m | >10 | <1 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >10 | 0 | 0 | <1 |
| Titanium | ppm | ASTM D5185m | | 0 | <1 | <1 |
| Silver | ppm | ASTM D5185m | >2 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >10 | 3 | 2 | 2 |
| Lead | ppm | ASTM D5185m | >20 | 0 | <1 | <1 |
| Copper | ppm | ASTM D5185m | >15 | <1 | 1 | 1 |
| Tin | ppm | ASTM D5185m | >10 | 0 | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | 0 | <1 | 0 |
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |

CONTAMINATION

There is no indication of any contamination in the oil.

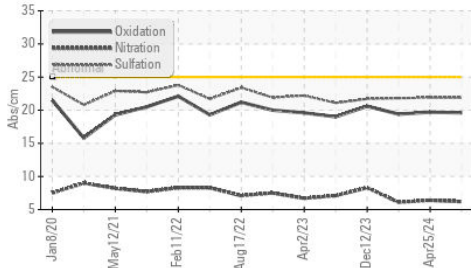
| | | | | | | |
|------------------|----------|-------------|-------|-------|-------|-------|
| Silicon | ppm | ASTM D5185m | >20 | 4 | 5 | ▲ 24 |
| Potassium | ppm | ASTM D5185m | >20 | 1 | 2 | 1 |
| Fuel | | WC Method | >6.0 | <1.0 | <1.0 | <1.0 |
| Water | | WC Method | >0.1 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| Soot % | % | *ASTM D7844 | >3 | 0.1 | 0.1 | 0.1 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 6.2 | 6.4 | 6.1 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 21.9 | 21.9 | 21.8 |
| 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 | >0.1 | NEG | NEG | NEG |

FLUID CONDITION

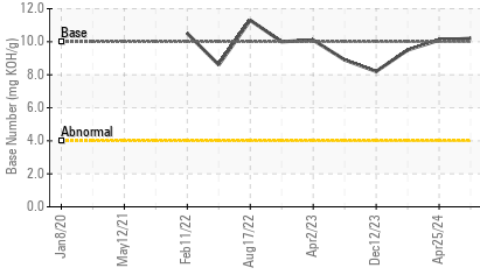
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| | | | | | | |
|------------------|----------|-------------|------|------|------|------|
| Sodium | ppm | ASTM D5185m | | <1 | 1 | 0 |
| Boron | ppm | ASTM D5185m | 2.5 | 46 | 52 | 54 |
| Barium | ppm | ASTM D5185m | 0.0 | 0 | 0 | 13 |
| Molybdenum | ppm | ASTM D5185m | 0.7 | 39 | 39 | 38 |
| Manganese | ppm | ASTM D5185m | 0.0 | 0 | 0 | <1 |
| Magnesium | ppm | ASTM D5185m | 256 | 500 | 483 | 452 |
| Calcium | ppm | ASTM D5185m | 2057 | 1644 | 1577 | 1528 |
| Phosphorus | ppm | ASTM D5185m | 935 | 862 | 917 | 970 |
| Zinc | ppm | ASTM D5185m | 1223 | 1147 | 1079 | 1024 |
| Sulfur | ppm | ASTM D5185m | 4079 | 2775 | 2909 | 3365 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 19.6 | 19.7 | 19.4 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 10 | 10.2 | 10.1 | 9.5 |
| Visc @ 100°C | cSt | ASTM D445 | 15.0 | 12.4 | 12.2 | 12.5 |

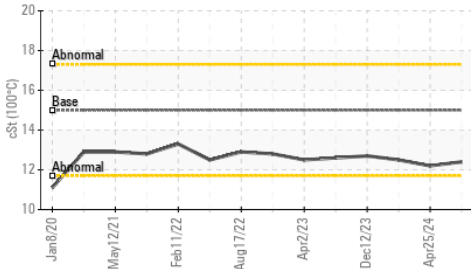
FT-IR (Direct Trend)



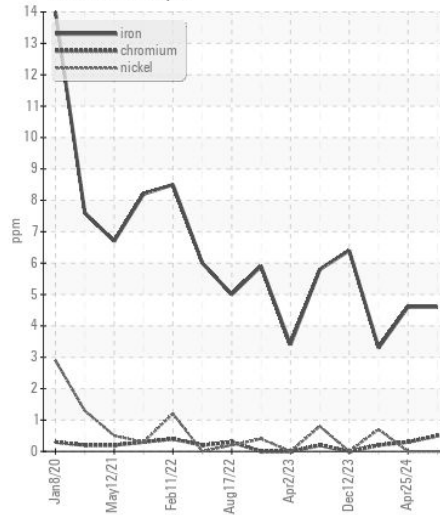
Base Number



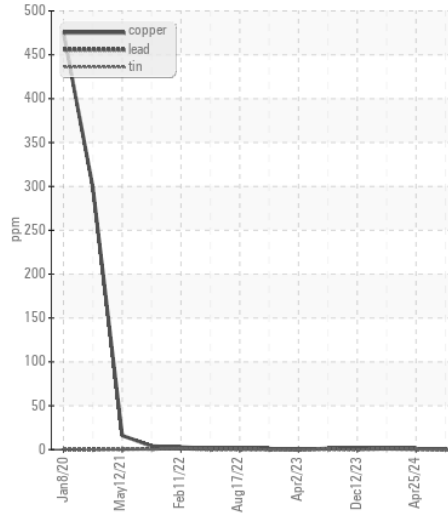
Viscosity @ 100°C



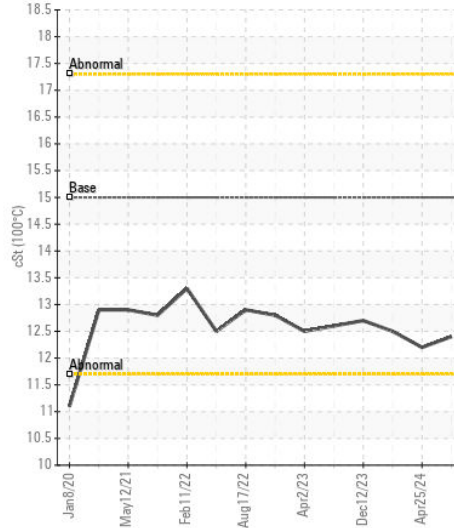
Ferrous Alloys



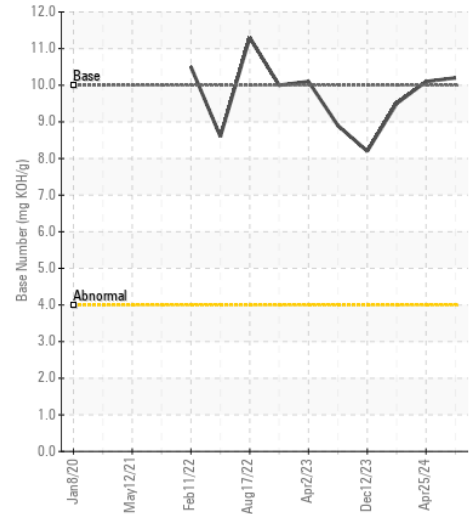
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : ASC0003333

Lab Number : 06237579

Unique Number : 11126413

Test Package : CONST (Additional Tests: TBN)

Received : 16 Jul 2024

Tested : 17 Jul 2024

Diagnosed : 17 Jul 2024 - Wes Davis

160 - ASCENDUM MACHINERY INC - MILLS RIVER

215 FANNING FIELDS RD

MILLS RIVER, NC

US 28759

Contact: BRANDON DRAKE

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To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)