



# CONSTRUCTION EQUIPMENT

717434 BULK EXPRESS VOLVO EC220EL 315754 - DIESEL ENGINE



**Sample No:** VCP436035  
**Oil Type:** VOLVO ULTRA DIESEL ENGINE OIL 15W40 VDS-3  
**Job No:** 717434 BULK EXPRESS



## SAMPLE INFORMATION

|               |             |     |     |     |
|---------------|-------------|-----|-----|-----|
| Sample Number | VCP436035   | --- | --- | --- |
| Sample Date   | 04 Jun 2024 | --- | --- | --- |
| Machine Hours | 2467        | --- | --- | --- |
| Oil Hours     | 0           | --- | --- | --- |
| Oil Changed   | Changed     | --- | --- | --- |
| Sample Status | ABNORMAL    | --- | --- | --- |

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## OIL CONDITION

|                  |          |        |     |     |     |
|------------------|----------|--------|-----|-----|-----|
| Visc @ 100°C     | cSt      | █ 13.0 | --- | --- | --- |
| Base Number (BN) | mg KOH/g | █ 7.9  | --- | --- | --- |
| Oxidation (PA)   | %        | 75     | --- | --- | --- |

## Diagnosis

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor. All component wear rates are normal. Elemental level of silicon (Si) above normal indicating ingress of seal material. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.



## CONTAMINATION

|                |     |       |     |     |     |
|----------------|-----|-------|-----|-----|-----|
| Water          | %   | NEG   | --- | --- | --- |
| Soot %         | %   | █ 0.2 | --- | --- | --- |
| Nitration (PA) | %   | 73    | --- | --- | --- |
| Sulfation (PA) | %   | 57    | --- | --- | --- |
| Glycol         | %   | NEG   | --- | --- | --- |
| Fuel           | %   | <1.0  | --- | --- | --- |
| Silicon        | ppm | ▲ 51  | --- | --- | --- |
| Sodium         | ppm | █ 2   | --- | --- | --- |
| Potassium      | ppm | █ 0   | --- | --- | --- |



## WEAR METALS

|            |     |      |     |     |     |
|------------|-----|------|-----|-----|-----|
| Iron       | ppm | █ 11 | --- | --- | --- |
| Copper     | ppm | █ 2  | --- | --- | --- |
| Lead       | ppm | █ <1 | --- | --- | --- |
| Tin        | ppm | █ <1 | --- | --- | --- |
| Aluminum   | ppm | █ 3  | --- | --- | --- |
| Chromium   | ppm | █ <1 | --- | --- | --- |
| Molybdenum | ppm | █ 57 | --- | --- | --- |
| Nickel     | ppm | █ 0  | --- | --- | --- |
| Titanium   | ppm | 0    | --- | --- | --- |
| Silver     | ppm | █ 0  | --- | --- | --- |
| Manganese  | ppm | █ <1 | --- | --- | --- |
| Vanadium   | ppm | <1   | --- | --- | --- |



## ADDITIVES

|            |     |        |     |     |     |
|------------|-----|--------|-----|-----|-----|
| Calcium    | ppm | █ 1447 | --- | --- | --- |
| Magnesium  | ppm | 890    | --- | --- | --- |
| Zinc       | ppm | █ 1315 | --- | --- | --- |
| Phosphorus | ppm | █ 1043 | --- | --- | --- |
| Barium     | ppm | █ 0    | --- | --- | --- |
| Boron      | ppm | █ 3    | --- | --- | --- |

**Depot:** VOLVO0095  
**Unique No:** 11069862  
**Signed:** Sean Felton  
**Report Date:** 11 Jun 2024



# CONSTRUCTION EQUIPMENT

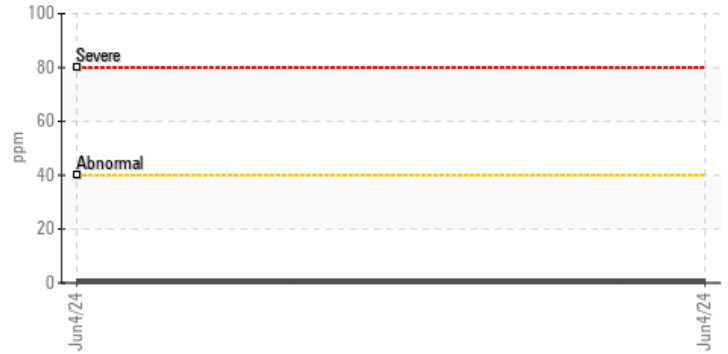


## GRAPHS

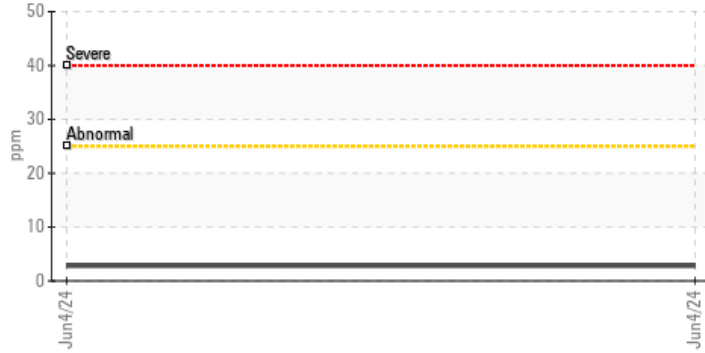
### Iron (ppm)



### Lead (ppm)



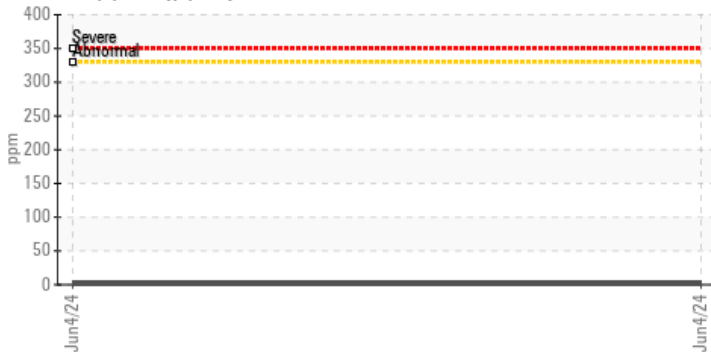
### Aluminum (ppm)



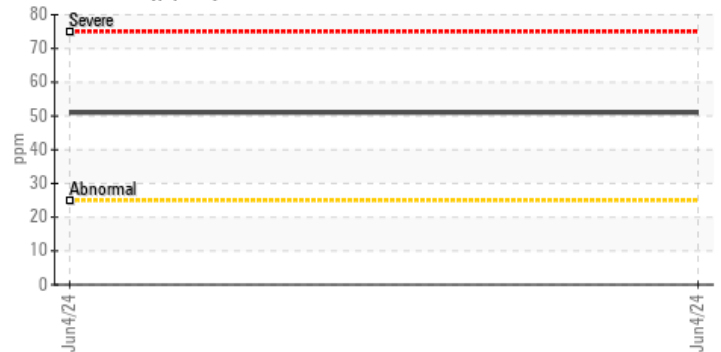
### Chromium (ppm)



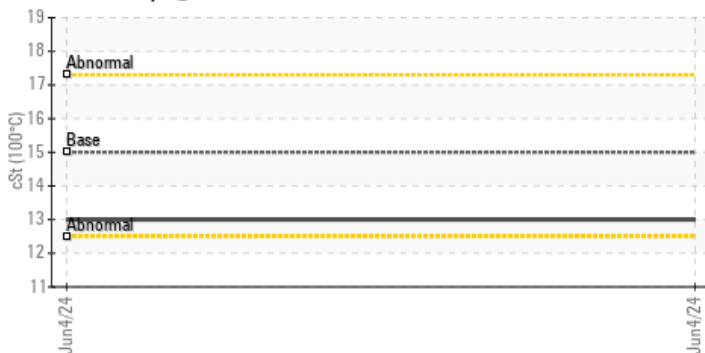
### Copper (ppm)



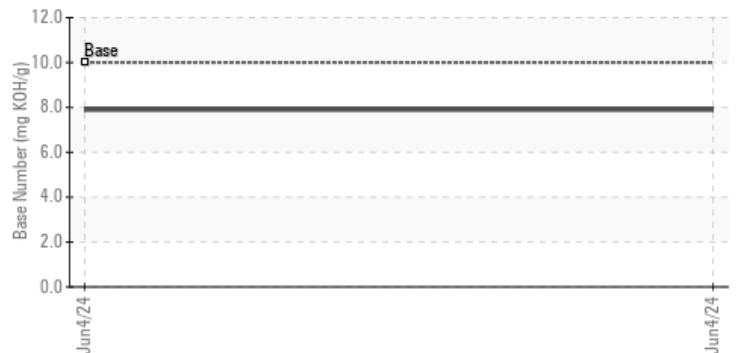
### ▲ Silicon (ppm)



### Viscosity @ 100°C



### Base Number





# CONSTRUCTION EQUIPMENT

## 717434 BULK EXPRESS VOLVO EC220EL 315754 - HYDRAULIC SYSTEM



**Sample No:** VCP454657  
**Oil Type:** VOLVO SUPER HYDRAULIC OIL 46  
**Job No:** 717434 BULK EXPRESS



### SAMPLE INFORMATION

|               |             |     |     |     |
|---------------|-------------|-----|-----|-----|
| Sample Number | VCP454657   | --- | --- | --- |
| Sample Date   | 04 Jun 2024 | --- | --- | --- |
| Machine Hours | 2467        | --- | --- | --- |
| Oil Hours     | 0           | --- | --- | --- |
| Oil Changed   | Changed     | --- | --- | --- |
| Sample Status | ABNORMAL    | --- | --- | --- |

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### OIL CONDITION

|                  |          |        |     |     |     |
|------------------|----------|--------|-----|-----|-----|
| Visc @ 40°C      | cSt      | █ 41.0 | --- | --- | --- |
| Acid Number (AN) | mg KOH/g | █ 0.61 | --- | --- | --- |



### CONTAMINATION

|           |     |     |     |     |     |
|-----------|-----|-----|-----|-----|-----|
| Water     | %   | NEG | --- | --- | --- |
| Silicon   | ppm | █ 6 | --- | --- | --- |
| Sodium    | ppm | █ 1 | --- | --- | --- |
| Potassium | ppm | █ 1 | --- | --- | --- |



### WEAR METALS

|            |     |      |     |     |     |
|------------|-----|------|-----|-----|-----|
| Iron       | ppm | █ 5  | --- | --- | --- |
| Copper     | ppm | █ 40 | --- | --- | --- |
| Lead       | ppm | █ <1 | --- | --- | --- |
| Tin        | ppm | █ <1 | --- | --- | --- |
| Aluminum   | ppm | █ 2  | --- | --- | --- |
| Chromium   | ppm | █ <1 | --- | --- | --- |
| Molybdenum | ppm | █ 0  | --- | --- | --- |
| Nickel     | ppm | █ 0  | --- | --- | --- |
| Titanium   | ppm | <1   | --- | --- | --- |
| Silver     | ppm | 0    | --- | --- | --- |
| Manganese  | ppm | █ 0  | --- | --- | --- |
| Vanadium   | ppm | 0    | --- | --- | --- |



### ADDITIVES

|            |     |       |     |     |     |
|------------|-----|-------|-----|-----|-----|
| Calcium    | ppm | █ 80  | --- | --- | --- |
| Magnesium  | ppm | █ 1   | --- | --- | --- |
| Zinc       | ppm | █ 571 | --- | --- | --- |
| Phosphorus | ppm | █ 445 | --- | --- | --- |
| Barium     | ppm | █ 0   | --- | --- | --- |
| Boron      | ppm | █ 0   | --- | --- | --- |

### Diagnosis

The oil change at the time of sampling has been noted. We recommend you service the filters on this component. Resample at the next service interval to monitor. We were unable to perform a particle count due to a high concentration of particles present in this sample. All component wear rates are normal. Moderate concentration of visible dirt/debris present in the oil. The AN level is acceptable for this fluid. The condition of the oil is acceptable for the time in service.

**Depot:** VOLVO0095  
**Unique No:** 11070111  
**Signed:** Don Baldrige  
**Report Date:** 10 Jun 2024

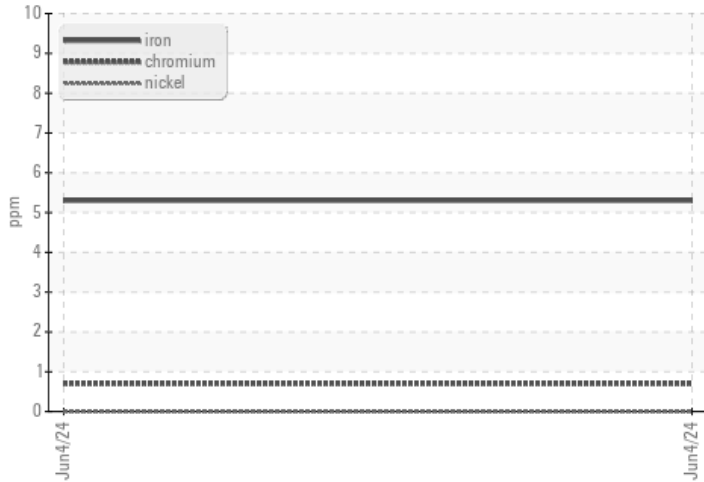


# CONSTRUCTION EQUIPMENT

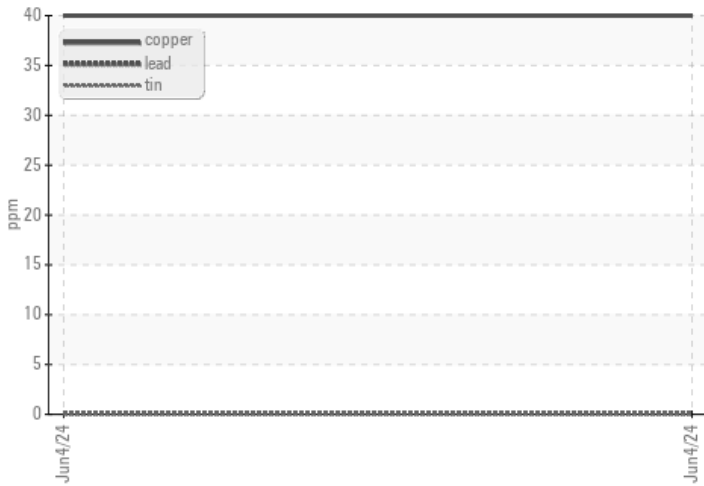


## GRAPHS

### Ferrous Alloys



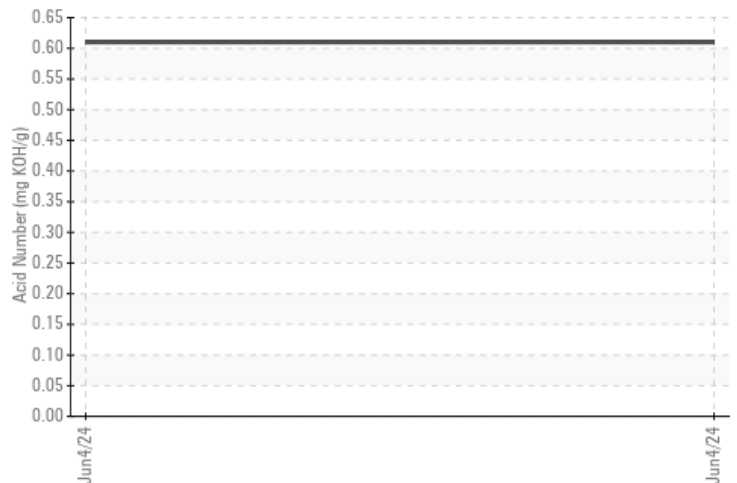
### Non-ferrous Metals



### Viscosity @ 40°C



### Acid Number





# CONSTRUCTION EQUIPMENT

717434 BULK EXPRESS VOLVO EC220EL 315754 - SWING DRIVE



**Sample No:** VCP445696  
**Oil Type:** VOLVO PREMIUM GEAR OIL 85W-140 GL-5  
**Job No:** 717434 BULK EXPRESS



## SAMPLE INFORMATION

|               |             |     |     |     |
|---------------|-------------|-----|-----|-----|
| Sample Number | VCP445696   | --- | --- | --- |
| Sample Date   | 04 Jun 2024 | --- | --- | --- |
| Machine Hours | 2467        | --- | --- | --- |
| Oil Hours     | 0           | --- | --- | --- |
| Oil Changed   | Changed     | --- | --- | --- |
| Sample Status | NORMAL      | --- | --- | --- |

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## OIL CONDITION

|             |     |       |     |     |     |
|-------------|-----|-------|-----|-----|-----|
| Visc @ 40°C | cSt | █ 170 | --- | --- | --- |
|-------------|-----|-------|-----|-----|-----|



## CONTAMINATION

|           |     |      |     |     |     |
|-----------|-----|------|-----|-----|-----|
| Water     | %   | NEG  | --- | --- | --- |
| Silicon   | ppm | █ 31 | --- | --- | --- |
| Sodium    | ppm | █ 2  | --- | --- | --- |
| Potassium | ppm | █ 0  | --- | --- | --- |

## Diagnosis

Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The condition of the oil is acceptable for the time in service.



## WEAR METALS

|            |     |       |     |     |     |
|------------|-----|-------|-----|-----|-----|
| Iron       | ppm | █ 283 | --- | --- | --- |
| Copper     | ppm | █ 42  | --- | --- | --- |
| Lead       | ppm | █ 0   | --- | --- | --- |
| Tin        | ppm | █ <1  | --- | --- | --- |
| Aluminum   | ppm | █ <1  | --- | --- | --- |
| Chromium   | ppm | █ 3   | --- | --- | --- |
| Molybdenum | ppm | █ 0   | --- | --- | --- |
| Nickel     | ppm | █ 0   | --- | --- | --- |
| Titanium   | ppm | 0     | --- | --- | --- |
| Silver     | ppm | 0     | --- | --- | --- |
| Manganese  | ppm | █ 6   | --- | --- | --- |
| Vanadium   | ppm | 0     | --- | --- | --- |



## ADDITIVES

|            |     |       |     |     |     |
|------------|-----|-------|-----|-----|-----|
| Calcium    | ppm | █ 38  | --- | --- | --- |
| Magnesium  | ppm | █ <1  | --- | --- | --- |
| Zinc       | ppm | █ 45  | --- | --- | --- |
| Phosphorus | ppm | █ 312 | --- | --- | --- |
| Barium     | ppm | █ 3   | --- | --- | --- |
| Boron      | ppm | █ 0   | --- | --- | --- |

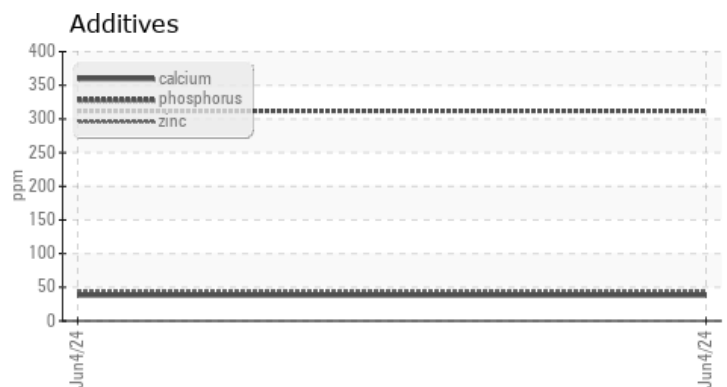
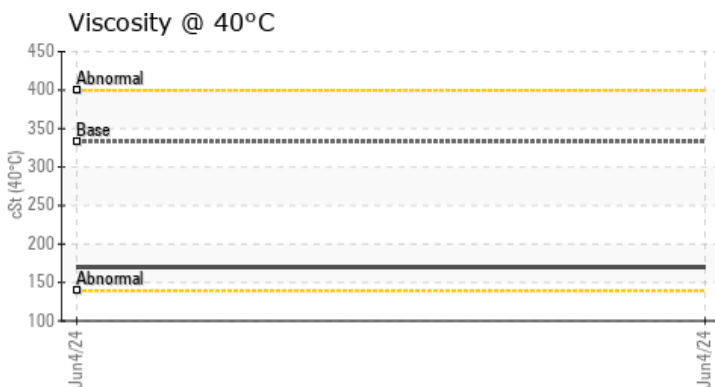
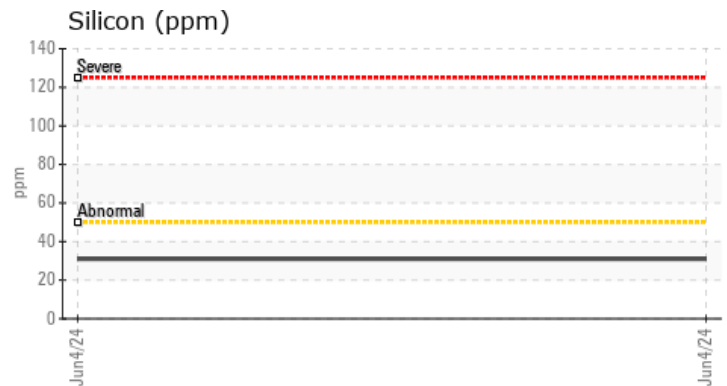
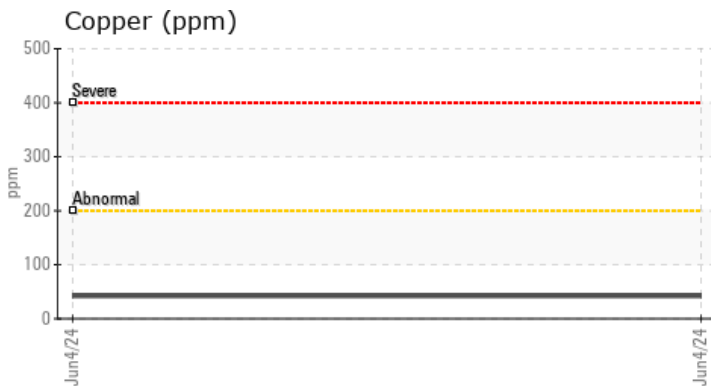
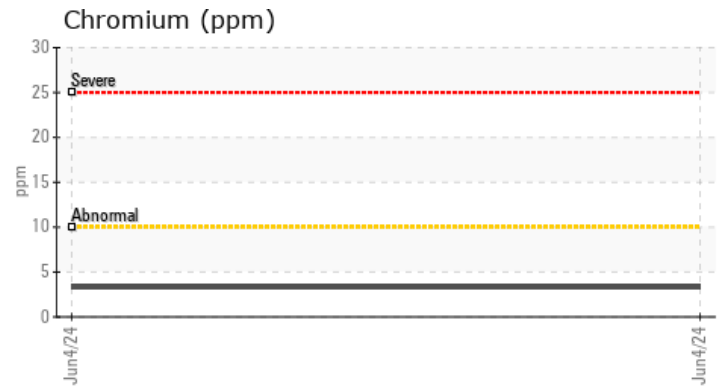
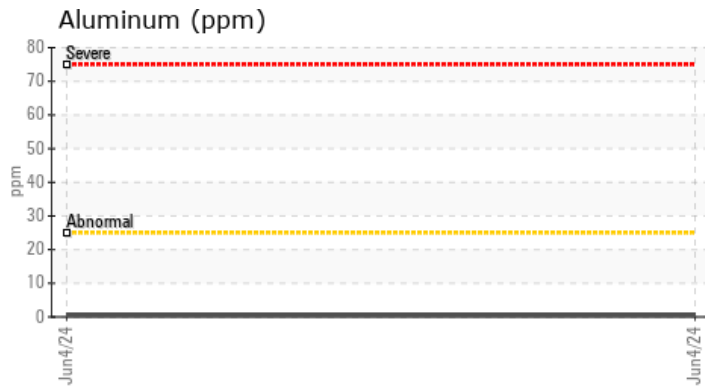
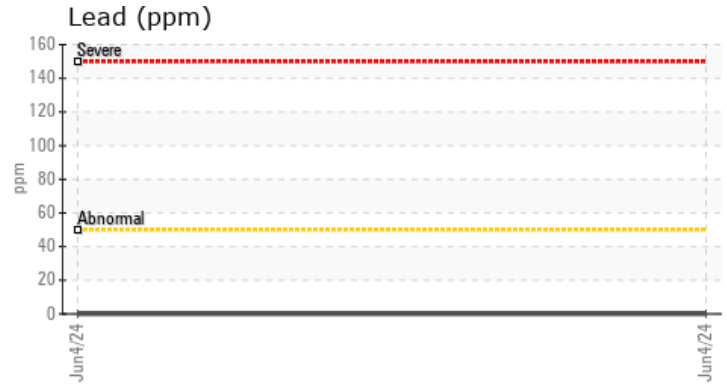
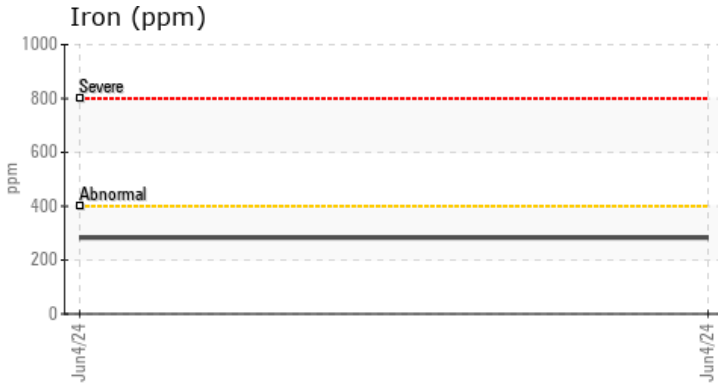
**Depot:** VOLVO0095  
**Unique No:** 11070535  
**Signed:** Don Baldrige  
**Report Date:** 10 Jun 2024



# CONSTRUCTION EQUIPMENT



## GRAPHS





# CONSTRUCTION EQUIPMENT

717434 BULK EXPRESS VOLVO EC220EL 315754 - FRONT LEFT FINAL DRIVE



**Sample No:** VCP454774  
**Oil Type:** VOLVO PREMIUM GEAR OIL 80W-90 GL-5  
**Job No:** 717434 BULK EXPRESS



## SAMPLE INFORMATION

|               |             |     |     |     |
|---------------|-------------|-----|-----|-----|
| Sample Number | VCP454774   | --- | --- | --- |
| Sample Date   | 04 Jun 2024 | --- | --- | --- |
| Machine Hours | 2467        | --- | --- | --- |
| Oil Hours     | 0           | --- | --- | --- |
| Oil Changed   | Changed     | --- | --- | --- |
| Sample Status | ABNORMAL    | --- | --- | --- |

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## OIL CONDITION

|             |     |       |     |     |     |
|-------------|-----|-------|-----|-----|-----|
| Visc @ 40°C | cSt | █ 166 | --- | --- | --- |
|-------------|-----|-------|-----|-----|-----|



## CONTAMINATION

|           |     |      |     |     |     |
|-----------|-----|------|-----|-----|-----|
| Water     | %   | NEG  | --- | --- | --- |
| Silicon   | ppm | █ 20 | --- | --- | --- |
| Sodium    | ppm | █ 3  | --- | --- | --- |
| Potassium | ppm | █ 3  | --- | --- | --- |

## Diagnosis

The oil change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor. Gear wear is indicated. All other component wear rates are normal. There is no indication of any contamination in the oil. The condition of the oil is acceptable for the time in service.



## WEAR METALS

|            |     |       |     |     |     |
|------------|-----|-------|-----|-----|-----|
| Iron       | ppm | ▲ 541 | --- | --- | --- |
| Copper     | ppm | █ <1  | --- | --- | --- |
| Lead       | ppm | █ 0   | --- | --- | --- |
| Tin        | ppm | █ 0   | --- | --- | --- |
| Aluminum   | ppm | █ <1  | --- | --- | --- |
| Chromium   | ppm | █ 7   | --- | --- | --- |
| Molybdenum | ppm | █ <1  | --- | --- | --- |
| Nickel     | ppm | █ <1  | --- | --- | --- |
| Titanium   | ppm | 0     | --- | --- | --- |
| Silver     | ppm | 0     | --- | --- | --- |
| Manganese  | ppm | █ 8   | --- | --- | --- |
| Vanadium   | ppm | 0     | --- | --- | --- |



## ADDITIVES

|            |     |       |     |     |     |
|------------|-----|-------|-----|-----|-----|
| Calcium    | ppm | █ 12  | --- | --- | --- |
| Magnesium  | ppm | █ 1   | --- | --- | --- |
| Zinc       | ppm | █ 29  | --- | --- | --- |
| Phosphorus | ppm | █ 250 | --- | --- | --- |
| Barium     | ppm | █ 0   | --- | --- | --- |
| Boron      | ppm | █ 0   | --- | --- | --- |

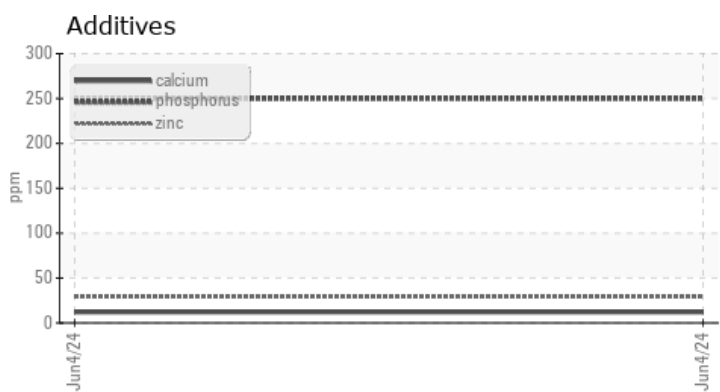
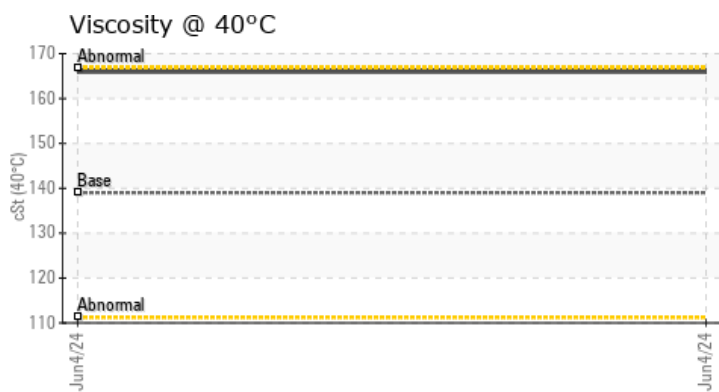
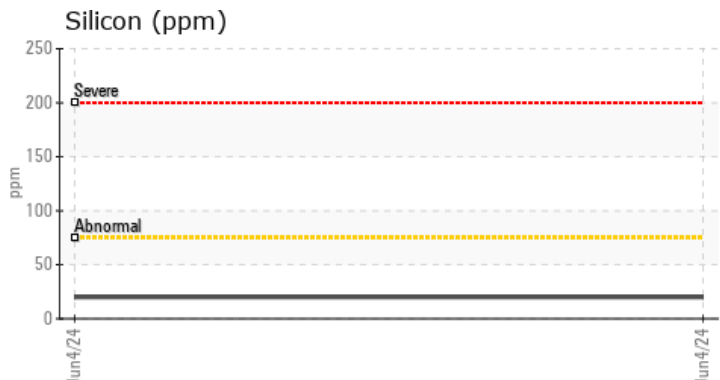
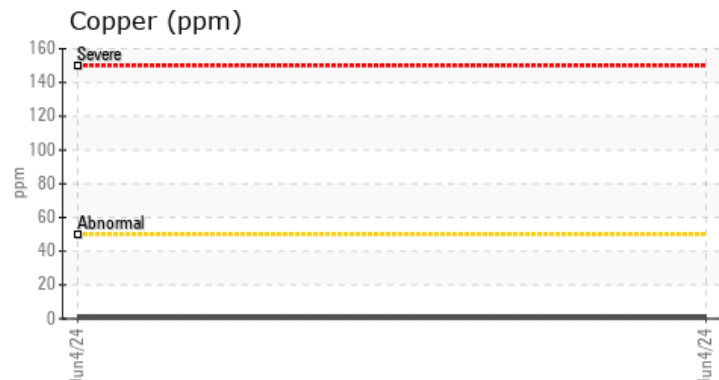
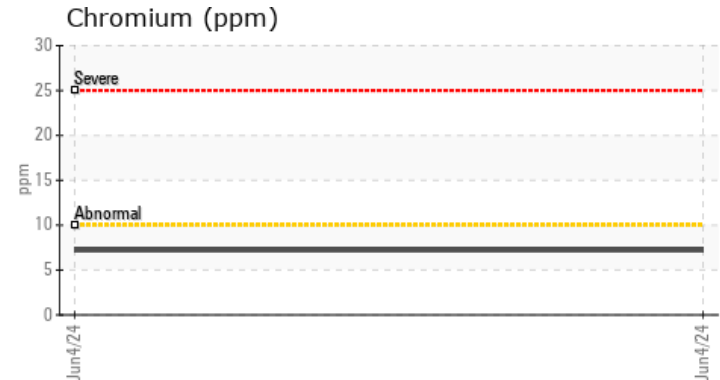
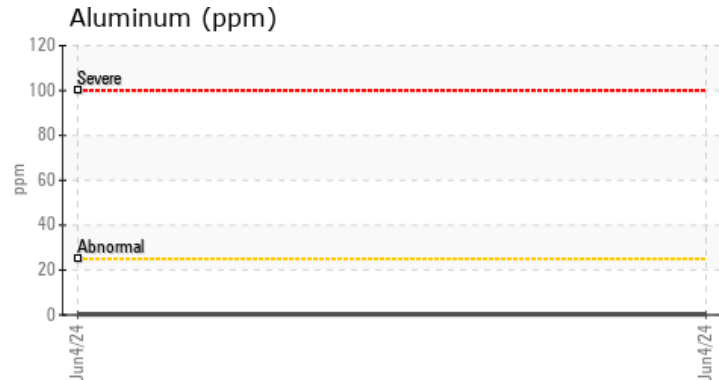
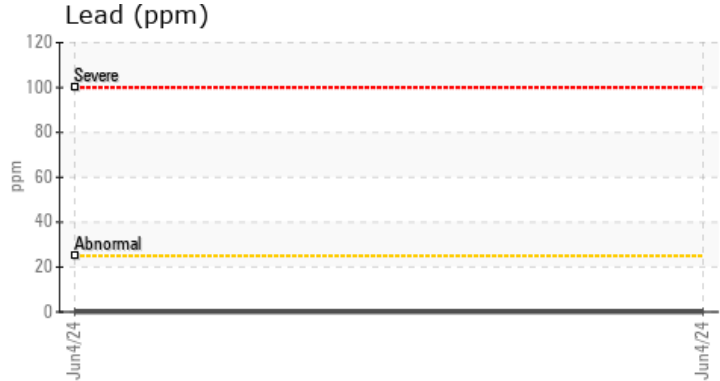
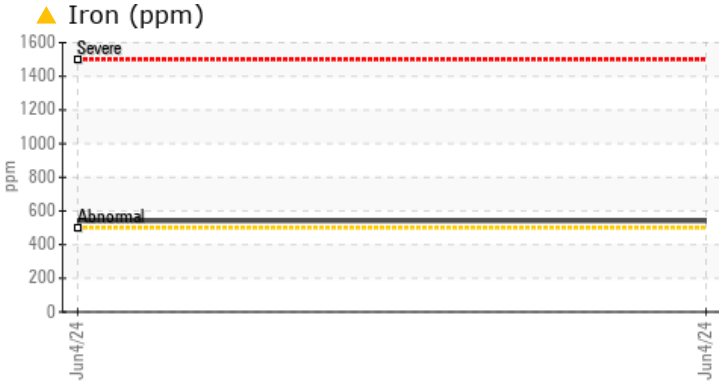
**Depot:** VOLVO0095  
**Unique No:** 11070538  
**Signed:** Don Baldrige  
**Report Date:** 10 Jun 2024



# CONSTRUCTION EQUIPMENT



## VOLVO GRAPHS







# CONSTRUCTION EQUIPMENT

717434 BULK EXPRESS VOLVO EC220EL 315754 - FRONT RIGHT FINAL DRIVE



**Sample No:** VCP454853  
**Oil Type:** VOLVO PREMIUM GEAR OIL 80W-90 GL-5  
**Job No:** 717434 BULK EXPRESS



## SAMPLE INFORMATION

|               |             |     |     |     |
|---------------|-------------|-----|-----|-----|
| Sample Number | VCP454853   | --- | --- | --- |
| Sample Date   | 04 Jun 2024 | --- | --- | --- |
| Machine Hours | 2467        | --- | --- | --- |
| Oil Hours     | 0           | --- | --- | --- |
| Oil Changed   | Changed     | --- | --- | --- |
| Sample Status | ABNORMAL    | --- | --- | --- |

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F: (954)583-0318



## OIL CONDITION

|             |     |       |     |     |     |
|-------------|-----|-------|-----|-----|-----|
| Visc @ 40°C | cSt | █ 166 | --- | --- | --- |
|-------------|-----|-------|-----|-----|-----|



## CONTAMINATION

|           |     |      |     |     |     |
|-----------|-----|------|-----|-----|-----|
| Water     | %   | NEG  | --- | --- | --- |
| Silicon   | ppm | █ 18 | --- | --- | --- |
| Sodium    | ppm | █ 3  | --- | --- | --- |
| Potassium | ppm | █ 4  | --- | --- | --- |

## Diagnosis

The oil change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor. Gear wear is indicated. All other component wear rates are normal. There is no indication of any contamination in the oil. The condition of the oil is acceptable for the time in service.



## WEAR METALS

|            |     |       |     |     |     |
|------------|-----|-------|-----|-----|-----|
| Iron       | ppm | ▲ 541 | --- | --- | --- |
| Copper     | ppm | █ <1  | --- | --- | --- |
| Lead       | ppm | █ 0   | --- | --- | --- |
| Tin        | ppm | █ 0   | --- | --- | --- |
| Aluminum   | ppm | █ <1  | --- | --- | --- |
| Chromium   | ppm | █ 7   | --- | --- | --- |
| Molybdenum | ppm | █ 1   | --- | --- | --- |
| Nickel     | ppm | █ 0   | --- | --- | --- |
| Titanium   | ppm | 0     | --- | --- | --- |
| Silver     | ppm | 0     | --- | --- | --- |
| Manganese  | ppm | █ 8   | --- | --- | --- |
| Vanadium   | ppm | 0     | --- | --- | --- |



## ADDITIVES

|            |     |       |     |     |     |
|------------|-----|-------|-----|-----|-----|
| Calcium    | ppm | █ 9   | --- | --- | --- |
| Magnesium  | ppm | █ <1  | --- | --- | --- |
| Zinc       | ppm | █ 29  | --- | --- | --- |
| Phosphorus | ppm | █ 240 | --- | --- | --- |
| Barium     | ppm | █ 0   | --- | --- | --- |
| Boron      | ppm | █ 0   | --- | --- | --- |

**Depot:** VOLVO0095  
**Unique No:** 11070539  
**Signed:** Don Baldrige  
**Report Date:** 10 Jun 2024



# CONSTRUCTION EQUIPMENT



## GRAPHS

