



CONSTRUCTION EQUIPMENT

RANGO VOLVO A60H 340071 - DIESEL ENGINE



Sample No: VCP388315
Oil Type: DIESEL ENGINE OIL SAE 15W40
Job No: RANGO



SAMPLE INFORMATION

Sample Number	VCP388315	---	---	---
Sample Date	02 May 2024	---	---	---
Machine Hours	9449	---	---	---
Oil Hours	0	---	---	---
Oil Changed	N/A	---	---	---
Sample Status	ATTENTION	---	---	---

ARNOLD MACHINERY COMPANY
 4323 EAST WINSLOW AVENUE
 PHOENIX, AZ
 US 85040
 Contact: JAKE ZAYES
 jzayes@arnoldmachinery.com
 T: (602)414-1900
 F: (602)414-1904



OIL CONDITION

Visc @ 100°C	cSt	█ 13.7	---	---	---
Base Number (BN)	mg KOH/g	█ 8.6	---	---	---
Oxidation (PA)	%	55	---	---	---

Diagnosis

Check for low coolant level. Resample at the next service interval to monitor. All component wear rates are normal. Sodium and/or potassium levels are high. Test for glycol is negative. 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 %	%	█ 0.5	---	---	---
Nitration (PA)	%	55	---	---	---
Sulfation (PA)	%	55	---	---	---
Glycol	%	NEG	---	---	---
Fuel	%	<1.0	---	---	---
Silicon	ppm	█ 8	---	---	---
Sodium	ppm	● 69	---	---	---
Potassium	ppm	█ 2	---	---	---



WEAR METALS

Iron	ppm	█ 10	---	---	---
Copper	ppm	█ 9	---	---	---
Lead	ppm	█ 0	---	---	---
Tin	ppm	█ 0	---	---	---
Aluminum	ppm	█ 2	---	---	---
Chromium	ppm	█ <1	---	---	---
Molybdenum	ppm	█ 15	---	---	---
Nickel	ppm	█ 0	---	---	---
Titanium	ppm	█ 89	---	---	---
Silver	ppm	█ 0	---	---	---
Manganese	ppm	█ <1	---	---	---
Vanadium	ppm	<1	---	---	---



ADDITIVES

Calcium	ppm	█ 1909	---	---	---
Magnesium	ppm	█ 406	---	---	---
Zinc	ppm	█ 1159	---	---	---
Phosphorus	ppm	█ 995	---	---	---
Barium	ppm	█ 0	---	---	---
Boron	ppm	█ 169	---	---	---

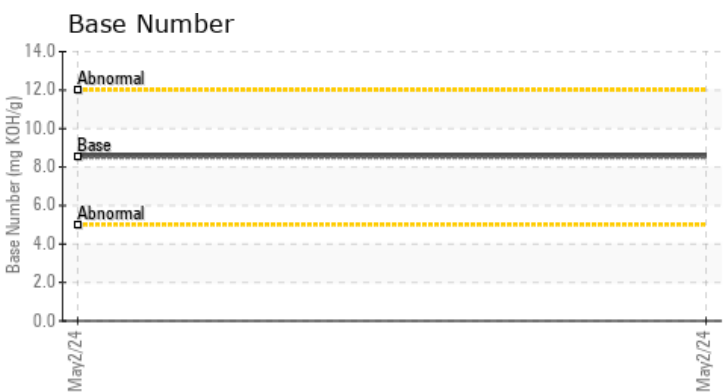
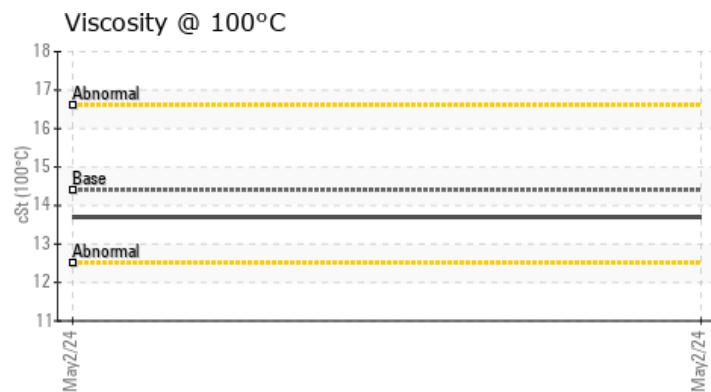
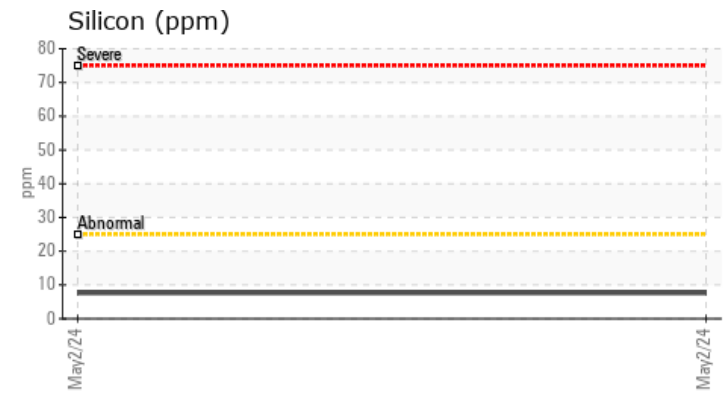
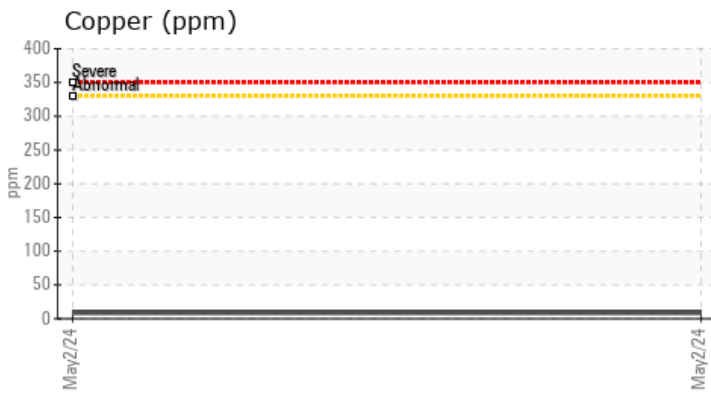
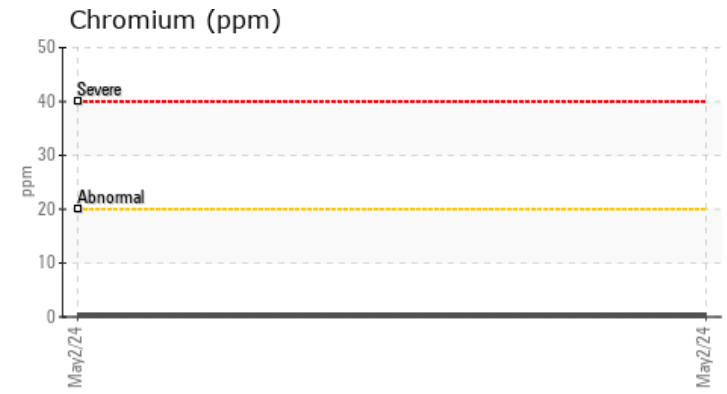
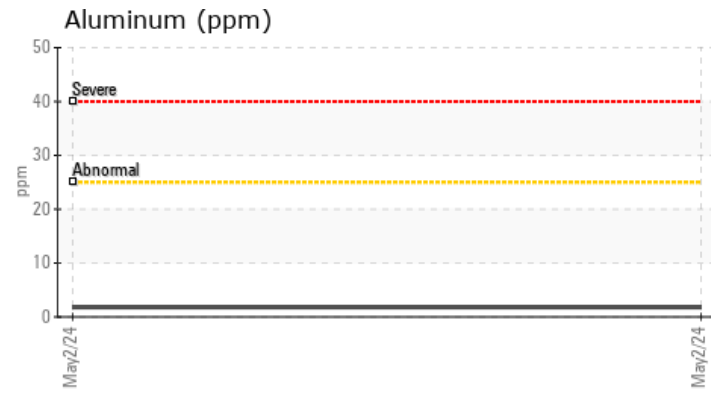
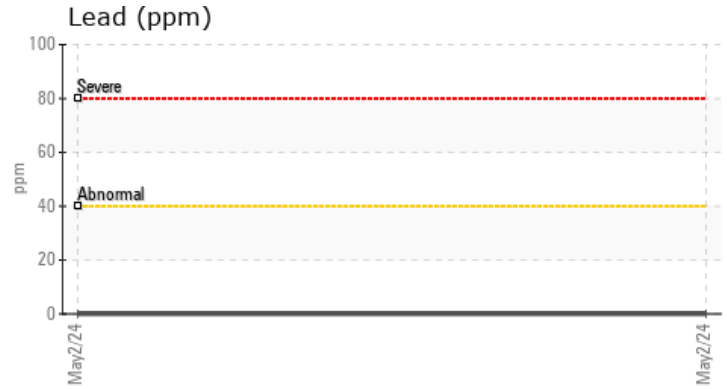
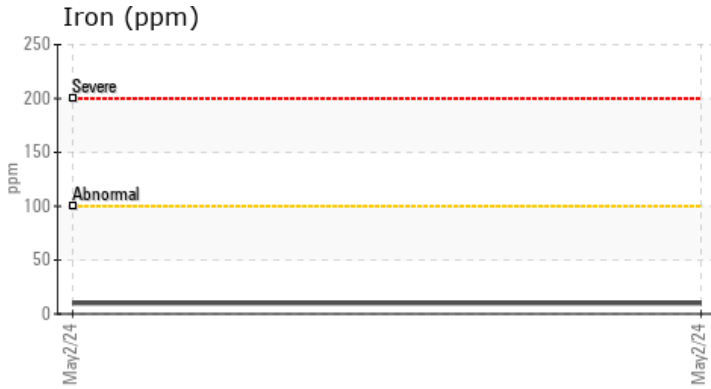
Depot: VOLVO6174
Unique No: 11019680
Signed: Sean Felton
Report Date: 16 May 2024



CONSTRUCTION EQUIPMENT



GRAPHS





CONSTRUCTION EQUIPMENT

RANGO VOLVO A60H 340071 - TRANSMISSION



Sample No: VCP382258
Oil Type: DIESEL ENGINE OIL SAE 15W40
Job No: RANGO



SAMPLE INFORMATION

Sample Number	VCP382258	---	---	---
Sample Date	02 May 2024	---	---	---
Machine Hours	9449	---	---	---
Oil Hours	0	---	---	---
Oil Changed	N/A	---	---	---
Sample Status	ABNORMAL	---	---	---

ARNOLD MACHINERY COMPANY
 4323 EAST WINSLOW AVENUE
 PHOENIX, AZ
 US 85040
 Contact: JAKE ZAYES
 jzayes@arnoldmachinery.com
 T: (602)414-1900
 F: (602)414-1904



OIL CONDITION

Visc @ 40°C	cSt	█ 90.3	---	---	---
-------------	-----	--------	-----	-----	-----



CONTAMINATION

Water	%	NEG	---	---	---
Silicon	ppm	█ 11	---	---	---
Sodium	ppm	█ 2	---	---	---
Potassium	ppm	█ 5	---	---	---

Diagnosis

No corrective action is recommended at this time. Resample at the next service interval to monitor. All component wear rates are normal. Moderate concentration of visible dirt/debris present in the fluid. The condition of the fluid is acceptable for the time in service.



WEAR METALS

Iron	ppm	█ 12	---	---	---
Copper	ppm	█ 7	---	---	---
Lead	ppm	█ 0	---	---	---
Tin	ppm	█ <1	---	---	---
Aluminum	ppm	█ 2	---	---	---
Chromium	ppm	█ <1	---	---	---
Molybdenum	ppm	█ 5	---	---	---
Nickel	ppm	<1	---	---	---
Titanium	ppm	█ 80	---	---	---
Silver	ppm	0	---	---	---
Manganese	ppm	█ <1	---	---	---
Vanadium	ppm	1	---	---	---



ADDITIVES

Calcium	ppm	█ 1654	---	---	---
Magnesium	ppm	█ 412	---	---	---
Zinc	ppm	█ 1140	---	---	---
Phosphorus	ppm	█ 1080	---	---	---
Barium	ppm	█ 0	---	---	---
Boron	ppm	█ 206	---	---	---

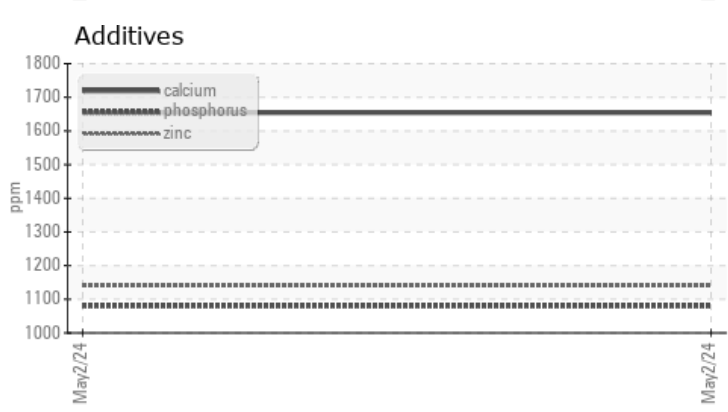
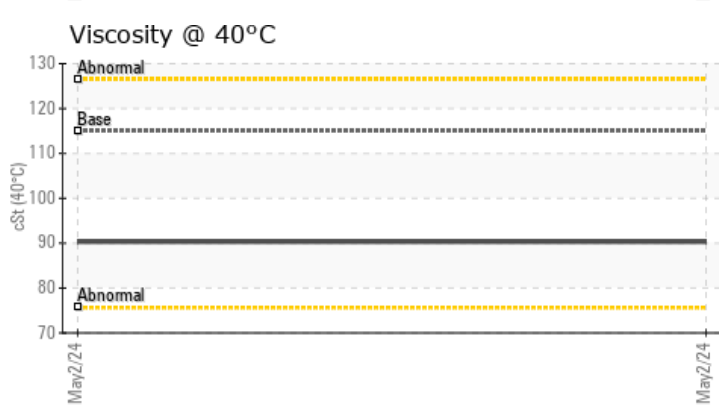
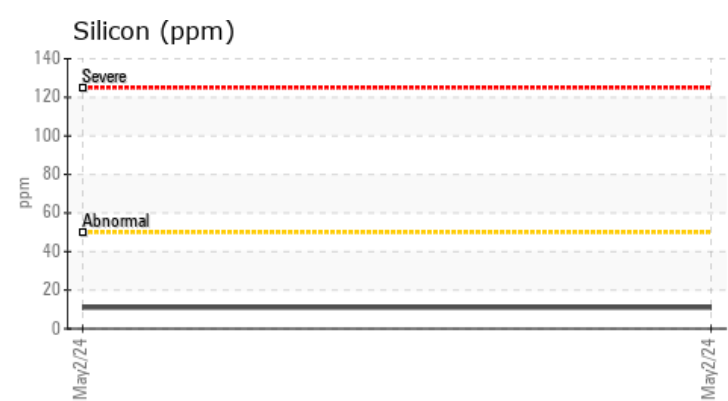
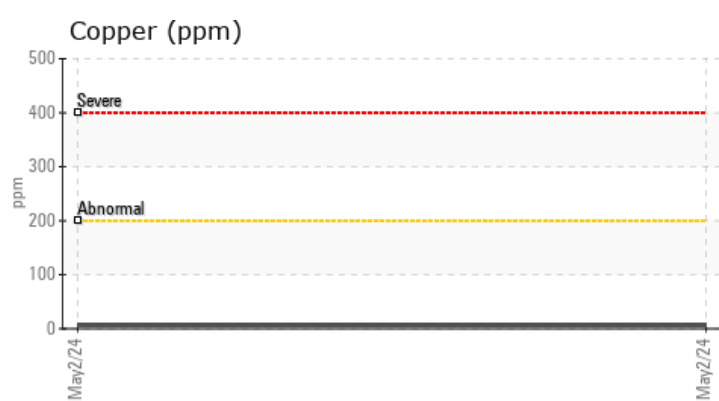
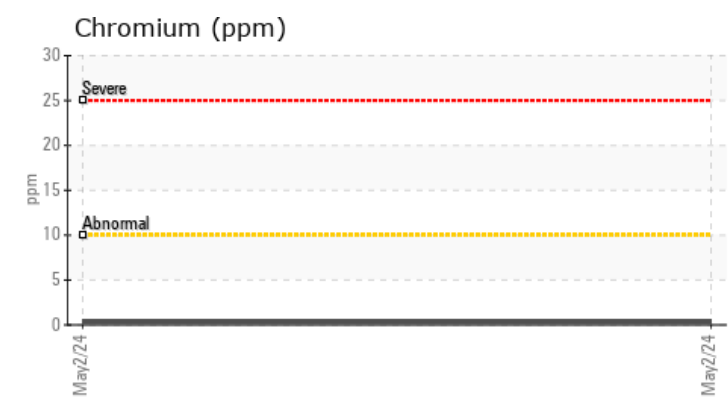
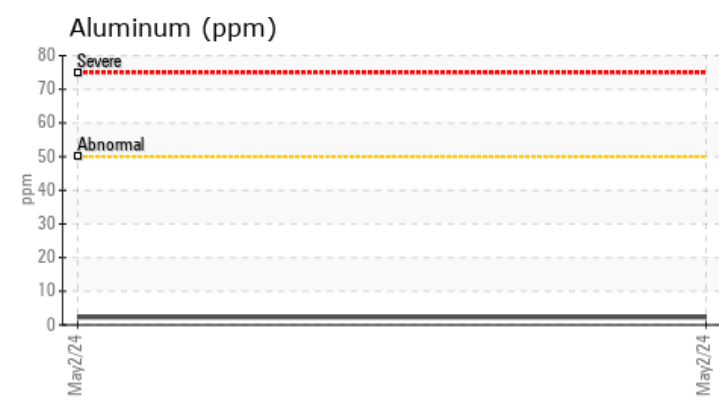
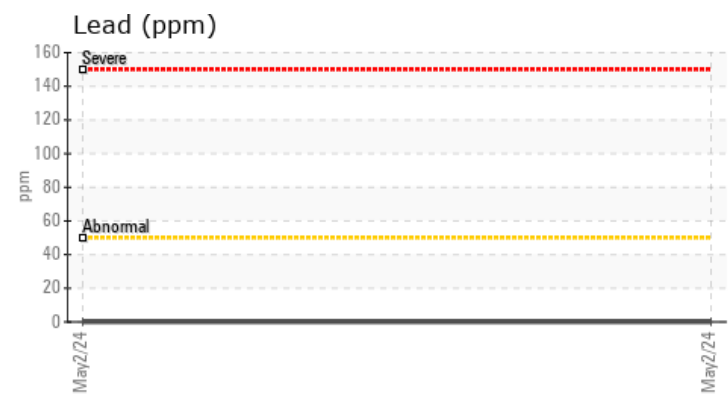
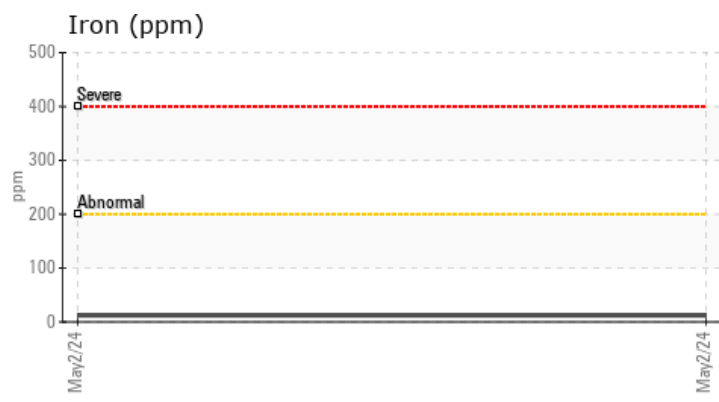
Depot: VOLVO6174
Unique No: 11020489
Signed: Don Baldrige
Report Date: 13 May 2024



CONSTRUCTION EQUIPMENT



VOLVO GRAPHS





CONSTRUCTION EQUIPMENT

RANGO VOLVO A60H 340071 - WET DISC BRAKE



Sample No: VCP382266
Oil Type: VOLVO WET BRAKE TRANSAXLE OIL
Job No: RANGO



SAMPLE INFORMATION

Sample Number	VCP382266	---	---	---
Sample Date	02 May 2024	---	---	---
Machine Hours	9449	---	---	---
Oil Hours	0	---	---	---
Oil Changed	N/A	---	---	---
Sample Status	NORMAL	---	---	---

ARNOLD MACHINERY COMPANY
 4323 EAST WINSLOW AVENUE
 PHOENIX, AZ
 US 85040
 Contact: JAKE ZAYES
 jzayes@arnoldmachinery.com
 T: (602)414-1900
 F: (602)414-1904



OIL CONDITION

Visc @ 40°C	cSt	█ 55.9	---	---	---
-------------	-----	--------	-----	-----	-----



CONTAMINATION

Water	%	NEG	---	---	---
Silicon	ppm	█ 15	---	---	---
Sodium	ppm	█ 0	---	---	---
Potassium	ppm	█ <1	---	---	---

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	█ 12	---	---	---
Copper	ppm	█ 26	---	---	---
Lead	ppm	█ 2	---	---	---
Tin	ppm	█ 0	---	---	---
Aluminum	ppm	█ 1	---	---	---
Chromium	ppm	█ 0	---	---	---
Molybdenum	ppm	█ <1	---	---	---
Nickel	ppm	█ <1	---	---	---
Titanium	ppm	<1	---	---	---
Silver	ppm	0	---	---	---
Manganese	ppm	█ <1	---	---	---
Vanadium	ppm	0	---	---	---



ADDITIVES

Calcium	ppm	█ 3349	---	---	---
Magnesium	ppm	█ 20	---	---	---
Zinc	ppm	█ 1575	---	---	---
Phosphorus	ppm	█ 1173	---	---	---
Barium	ppm	█ 0	---	---	---
Boron	ppm	█ 94	---	---	---

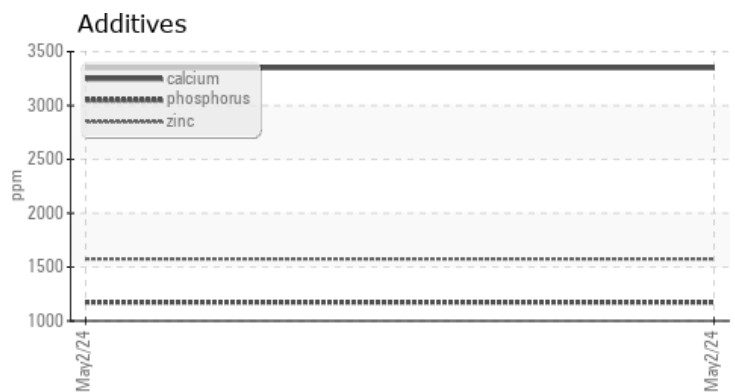
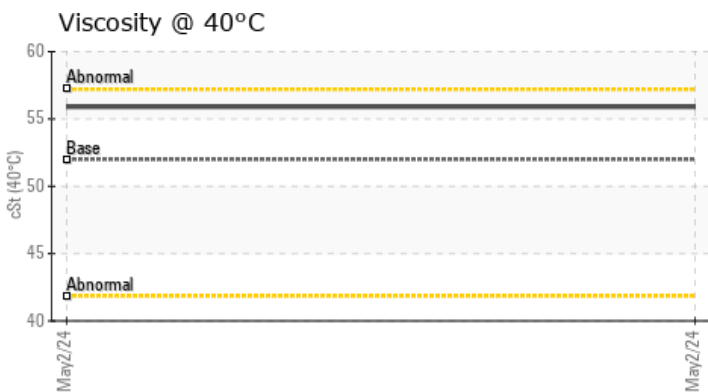
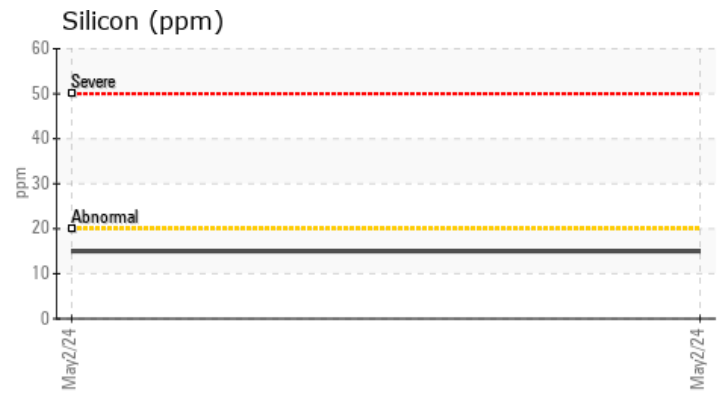
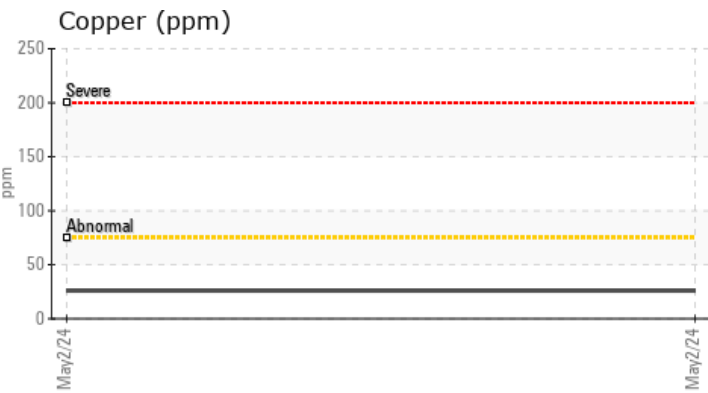
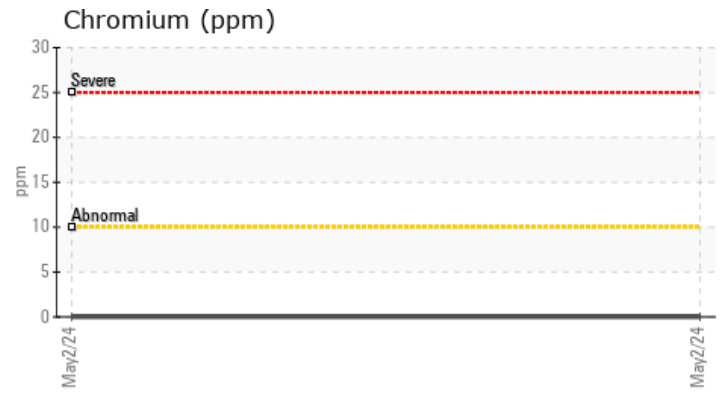
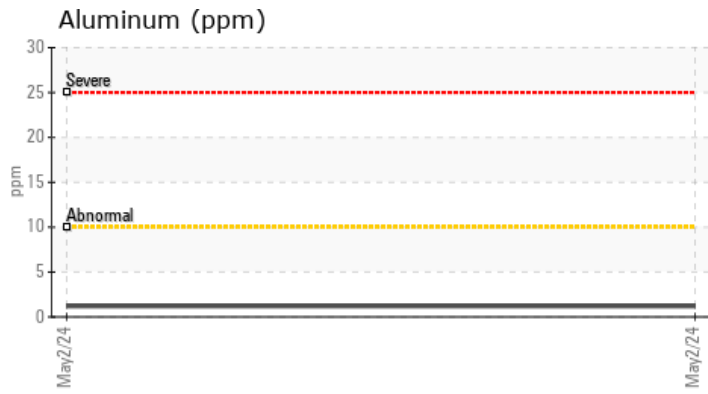
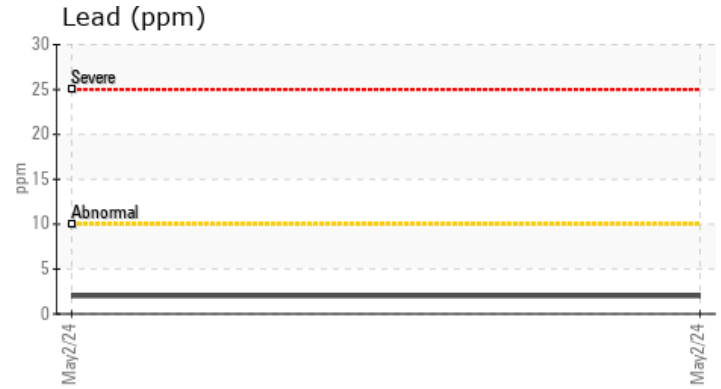
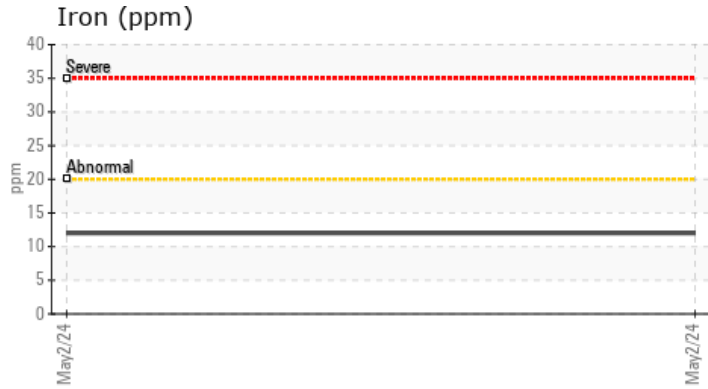
Depot: VOLVO6174
Unique No: 11020338
Signed: Angela Borella
Report Date: 13 May 2024



CONSTRUCTION EQUIPMENT



VOLVO GRAPHS





CONSTRUCTION EQUIPMENT

RANGO VOLVO A60H 340071 - HYDRAULIC SYSTEM



Sample No: VCP382265
Oil Type: AW HYDRAULIC OIL ISO 46
Job No: RANGO



SAMPLE INFORMATION

Sample Number	VCP382265	---	---	---
Sample Date	02 May 2024	---	---	---
Machine Hours	9449	---	---	---
Oil Hours	0	---	---	---
Oil Changed	N/A	---	---	---
Sample Status	NORMAL	---	---	---

ARNOLD MACHINERY COMPANY
 4323 EAST WINSLOW AVENUE
 PHOENIX, AZ
 US 85040
 Contact: JAKE ZAYES
 jzayes@arnoldmachinery.com
 T: (602)414-1900
 F: (602)414-1904



OIL CONDITION

Visc @ 40°C	cSt	█ 44.9	---	---	---
Acid Number (AN)	mg KOH/g	█ 0.127	---	---	---



CONTAMINATION

Water	%	NEG	---	---	---
Particles >4µm		█ 765	---	---	---
Particles >6µm		█ 220	---	---	---
Particles >14µm		█ 33	---	---	---
ISO 4406:1999 (c)		17/15/12	---	---	---
Silicon	ppm	█ <1	---	---	---
Sodium	ppm	█ 0	---	---	---
Potassium	ppm	█ 0	---	---	---

Diagnosis

Resample at the next service interval to monitor. All component wear rates are normal. The amount and size of particulates present in the system are acceptable. There is no indication of any contamination in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.



WEAR METALS

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



ADDITIVES

Calcium	ppm	█ 68	---	---	---
Magnesium	ppm	█ 4	---	---	---
Zinc	ppm	█ 22	---	---	---
Phosphorus	ppm	█ 63	---	---	---
Barium	ppm	█ <1	---	---	---
Boron	ppm	█ 2	---	---	---

Depot: VOLVO6174
Unique No: 11019887
Signed: Don Baldrige
Report Date: 14 May 2024

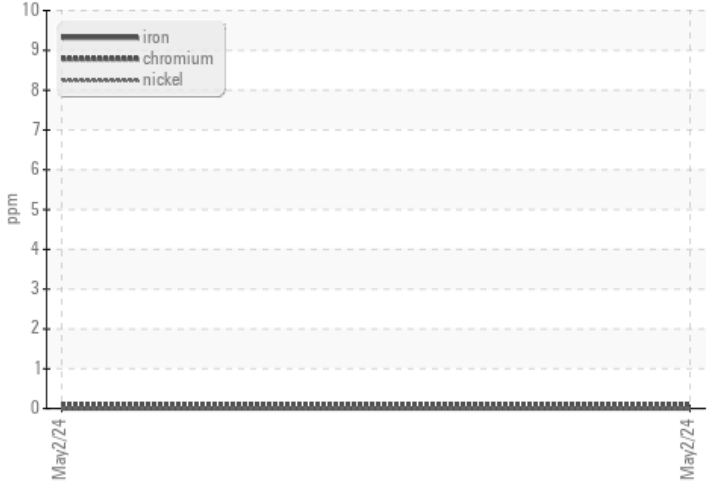


CONSTRUCTION EQUIPMENT

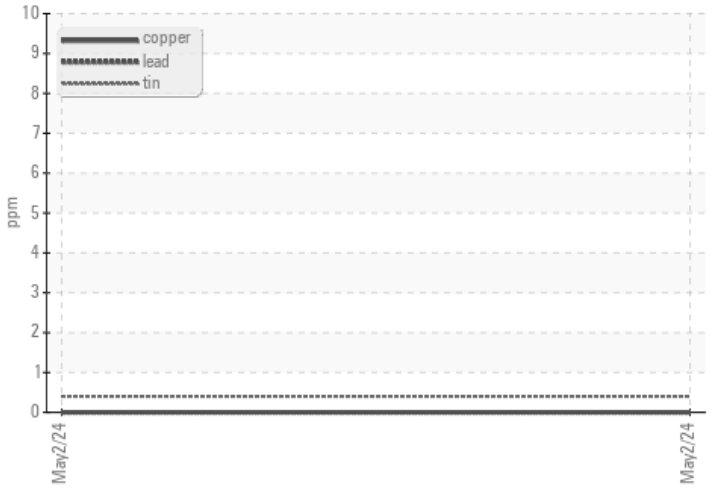


GRAPHS

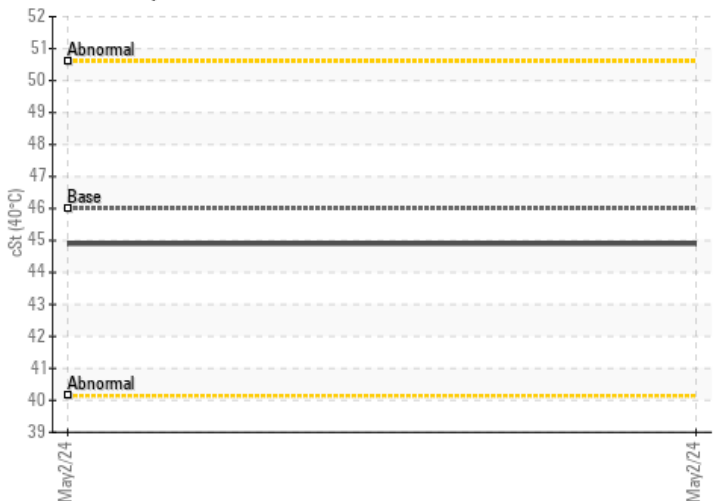
Ferrous Alloys



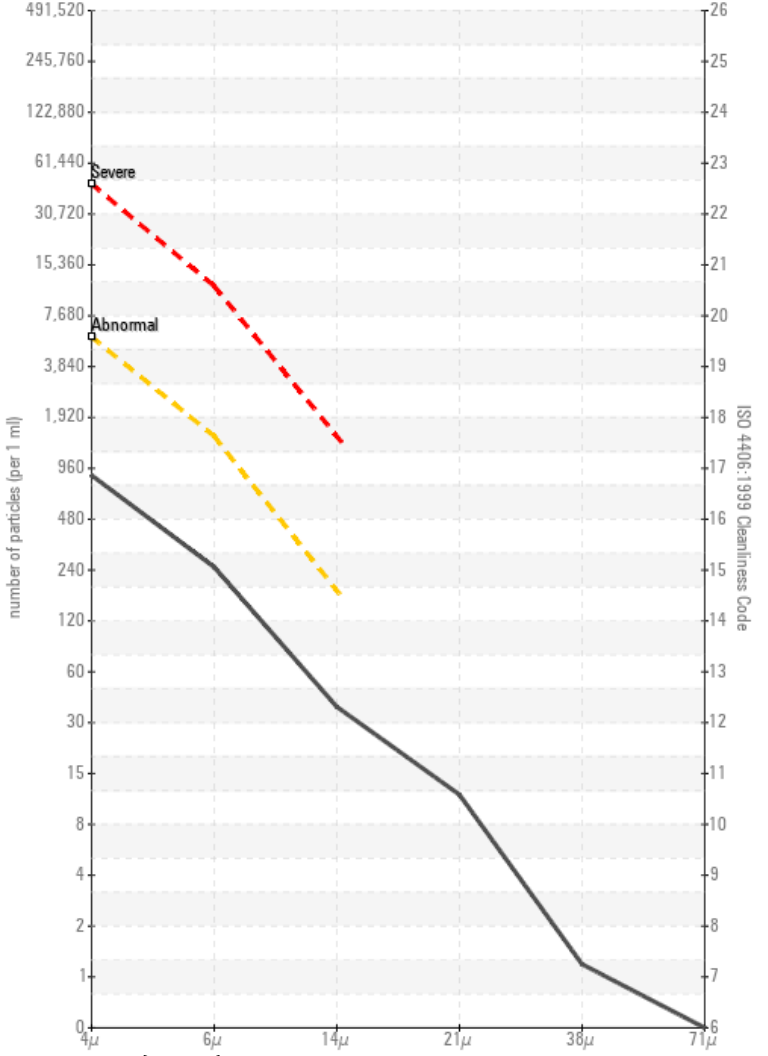
Non-ferrous Metals



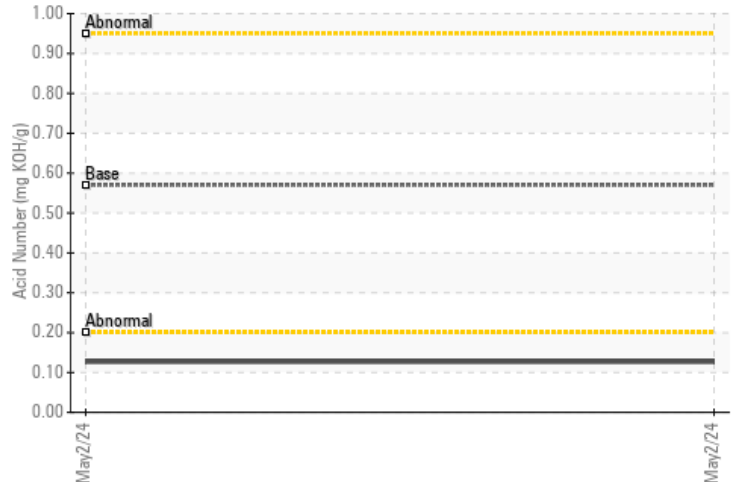
Viscosity @ 40°C



Particle Count



Acid Number





CONSTRUCTION EQUIPMENT

RANGO VOLVO A60H 340071 - FRONT AXLE



Sample No: VCP382262
Oil Type: GEAR OIL SAE 90
Job No: RANGO



SAMPLE INFORMATION

Sample Number	VCP382262	---	---	---
Sample Date	02 May 2024	---	---	---
Machine Hours	9449	---	---	---
Oil Hours	0	---	---	---
Oil Changed	N/A	---	---	---
Sample Status	NORMAL	---	---	---

ARNOLD MACHINERY COMPANY
 4323 EAST WINSLOW AVENUE
 PHOENIX, AZ
 US 85040
 Contact: JAKE ZAYES
 jzayes@arnoldmachinery.com
 T: (602)414-1900
 F: (602)414-1904



OIL CONDITION

Visc @ 40°C	cSt	█ 109	---	---	---
-------------	-----	-------	-----	-----	-----



CONTAMINATION

Water	%	NEG	---	---	---
Silicon	ppm	█ <1	---	---	---
Sodium	ppm	█ 0	---	---	---
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	█ 12	---	---	---
Copper	ppm	█ 0	---	---	---
Lead	ppm	█ <1	---	---	---
Tin	ppm	█ 0	---	---	---
Aluminum	ppm	█ 0	---	---	---
Chromium	ppm	█ 0	---	---	---
Molybdenum	ppm	█ 1	---	---	---
Nickel	ppm	█ 0	---	---	---
Titanium	ppm	0	---	---	---
Silver	ppm	0	---	---	---
Manganese	ppm	█ 0	---	---	---
Vanadium	ppm	0	---	---	---



ADDITIVES

Calcium	ppm	█ 45	---	---	---
Magnesium	ppm	█ 4	---	---	---
Zinc	ppm	█ 39	---	---	---
Phosphorus	ppm	█ 1207	---	---	---
Barium	ppm	█ 0	---	---	---
Boron	ppm	█ 203	---	---	---

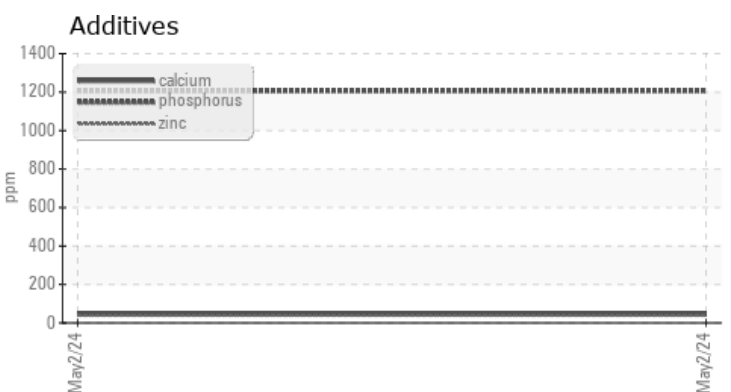
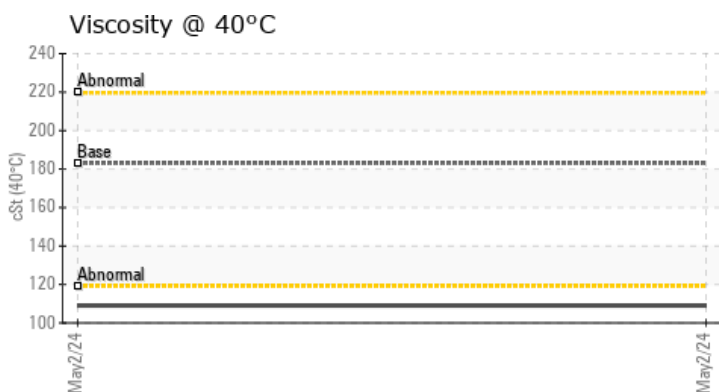
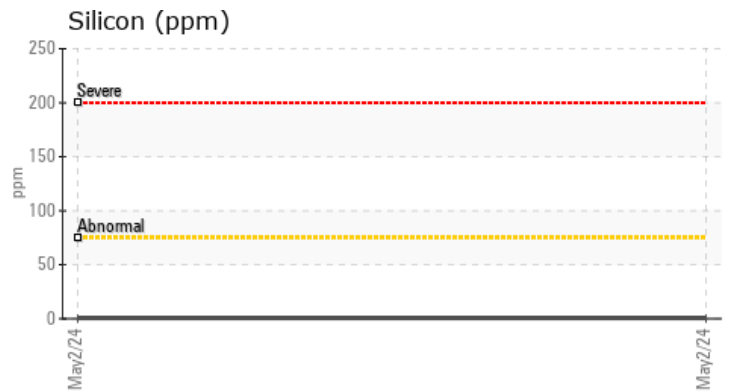
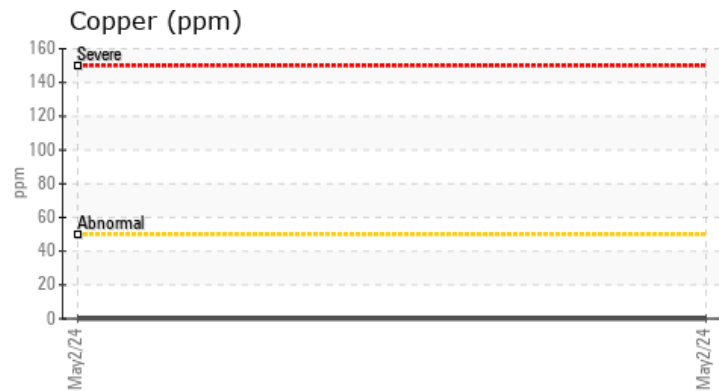
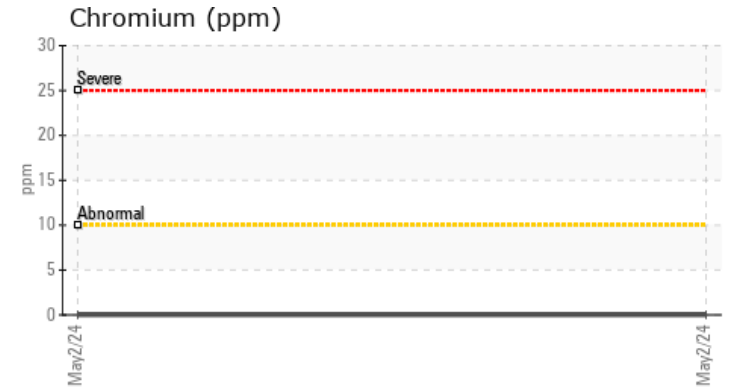
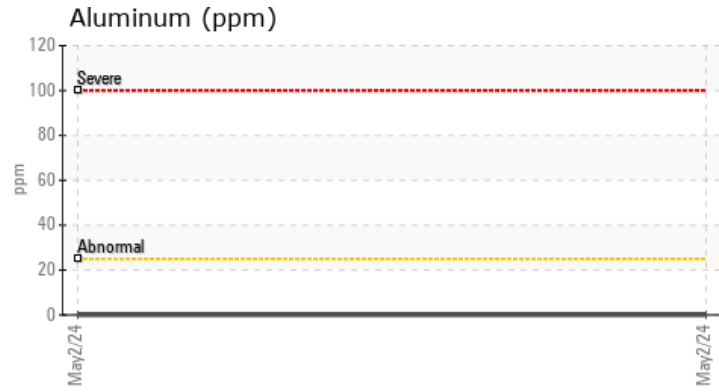
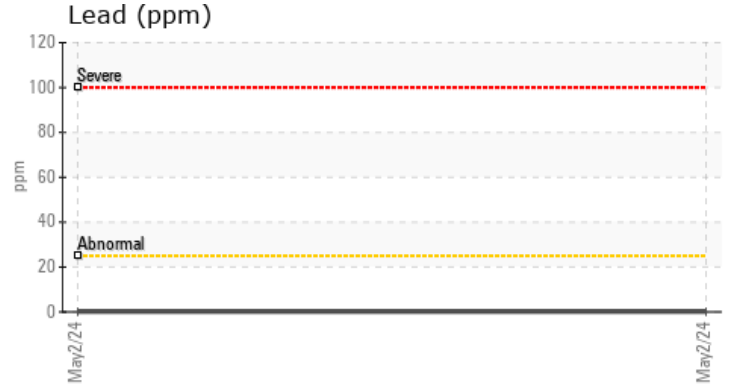
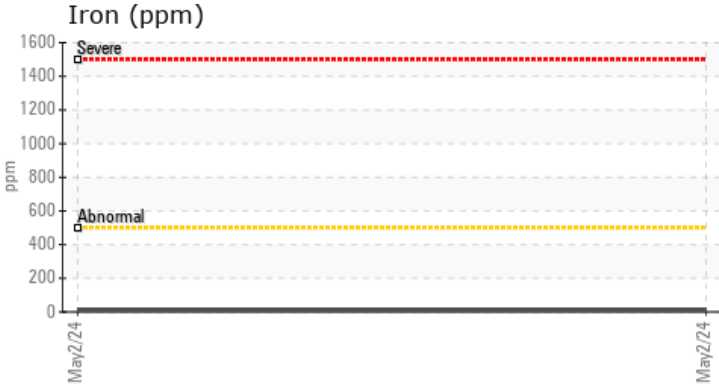
Depot: VOLVO6174
Unique No: 11020335
Signed: Wes Davis
Report Date: 10 May 2024



CONSTRUCTION EQUIPMENT



VOLVO GRAPHS





CONSTRUCTION EQUIPMENT

RANGO VOLVO A60H 340071 - BOGIE/CENTER AXLE



Sample No: VCP382267
Oil Type: GEAR OIL SAE 90
Job No: RANGO



SAMPLE INFORMATION

Sample Number	VCP382267	---	---	---
Sample Date	02 May 2024	---	---	---
Machine Hours	9449	---	---	---
Oil Hours	0	---	---	---
Oil Changed	N/A	---	---	---
Sample Status	NORMAL	---	---	---

ARNOLD MACHINERY COMPANY
 4323 EAST WINSLOW AVENUE
 PHOENIX, AZ
 US 85040
 Contact: JAKE ZAYES
 jzayes@arnoldmachinery.com
 T: (602)414-1900
 F: (602)414-1904



OIL CONDITION

Visc @ 40°C	cSt	█ 107	---	---	---
-------------	-----	-------	-----	-----	-----



CONTAMINATION

Water	%	NEG	---	---	---
Silicon	ppm	█ <1	---	---	---
Sodium	ppm	█ 0	---	---	---
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	█ 11	---	---	---
Copper	ppm	█ 0	---	---	---
Lead	ppm	█ <1	---	---	---
Tin	ppm	█ 0	---	---	---
Aluminum	ppm	█ 0	---	---	---
Chromium	ppm	█ 0	---	---	---
Molybdenum	ppm	█ 1	---	---	---
Nickel	ppm	█ 0	---	---	---
Titanium	ppm	0	---	---	---
Silver	ppm	0	---	---	---
Manganese	ppm	█ 0	---	---	---
Vanadium	ppm	0	---	---	---



ADDITIVES

Calcium	ppm	█ 46	---	---	---
Magnesium	ppm	█ 5	---	---	---
Zinc	ppm	█ 40	---	---	---
Phosphorus	ppm	█ 1222	---	---	---
Barium	ppm	█ 0	---	---	---
Boron	ppm	█ 213	---	---	---

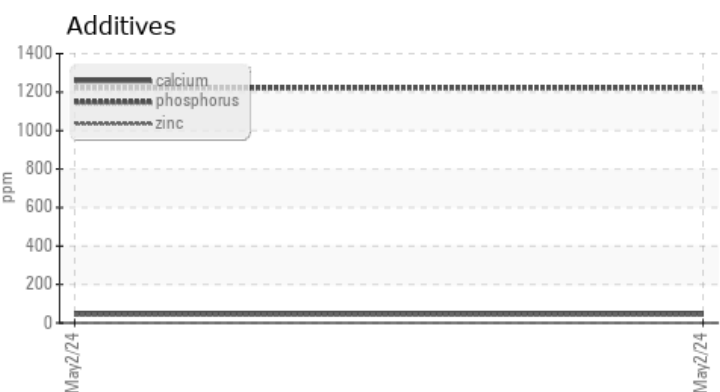
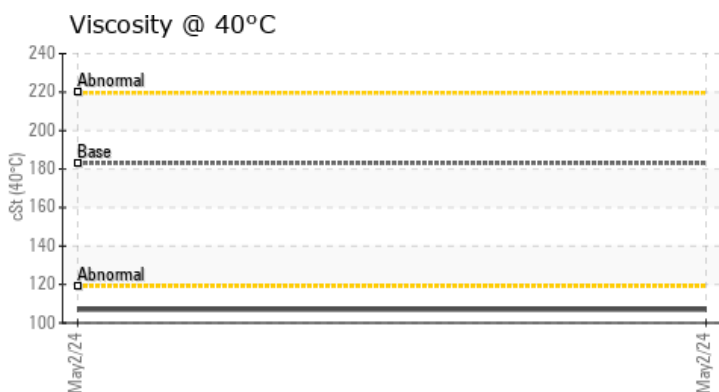
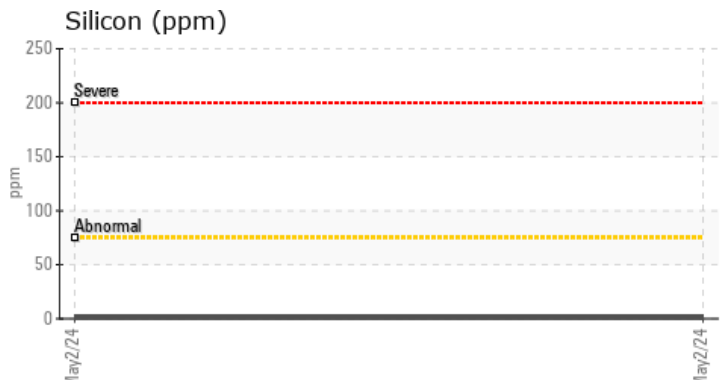
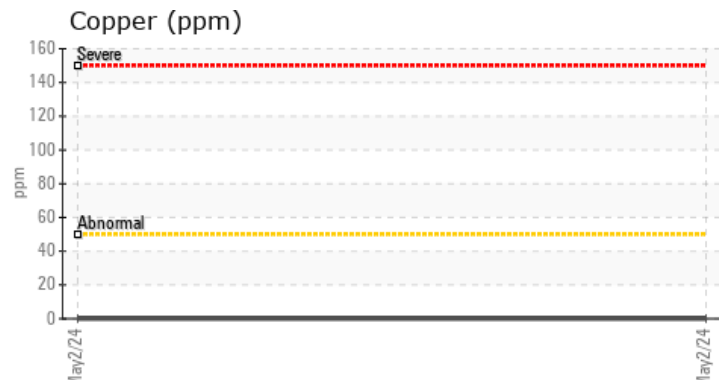
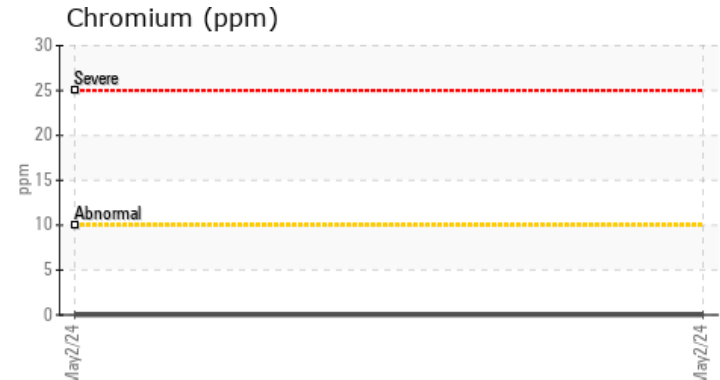
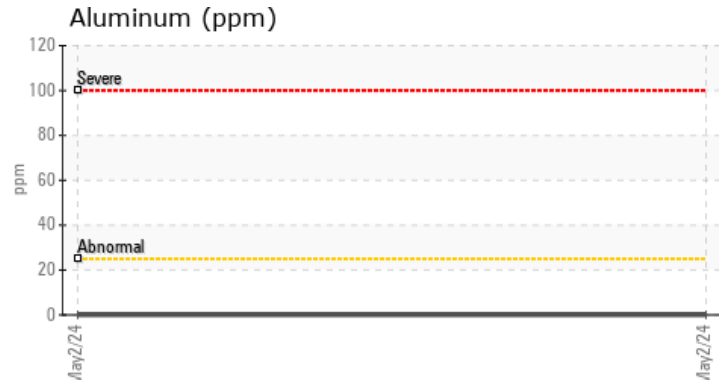
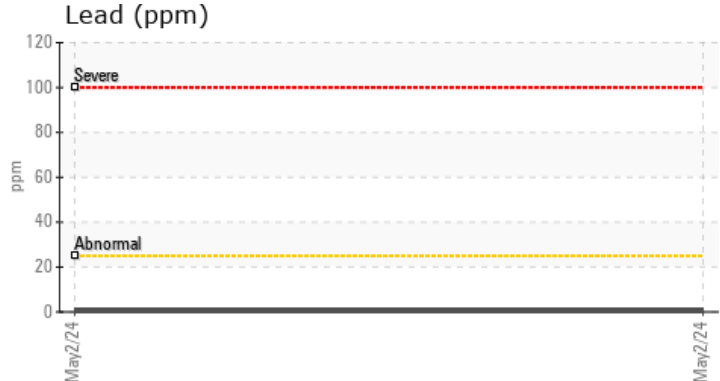
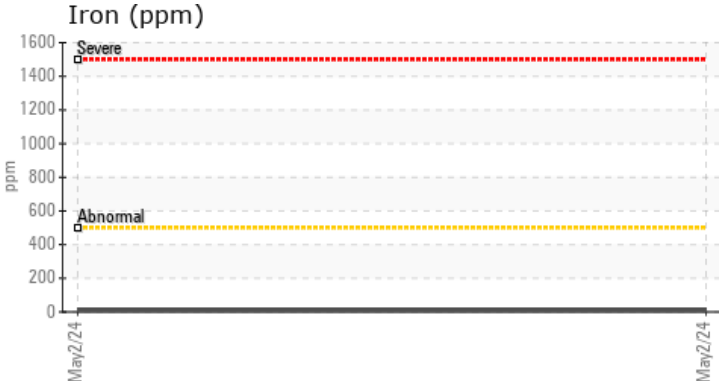
Depot: VOLVO6174
Unique No: 11020330
Signed: Angela Borella
Report Date: 13 May 2024



CONSTRUCTION EQUIPMENT



VOLVO GRAPHS





CONSTRUCTION EQUIPMENT

RANGO VOLVO A60H 340071 - REAR AXLE



Sample No: VCP382263
Oil Type: GEAR OIL SAE 90
Job No: RANGO



SAMPLE INFORMATION

Sample Number	VCP382263	---	---	---
Sample Date	02 May 2024	---	---	---
Machine Hours	9449	---	---	---
Oil Hours	0	---	---	---
Oil Changed	N/A	---	---	---
Sample Status	NORMAL	---	---	---

ARNOLD MACHINERY COMPANY
 4323 EAST WINSLOW AVENUE
 PHOENIX, AZ
 US 85040
 Contact: JAKE ZAYES
 jzayes@arnoldmachinery.com
 T: (602)414-1900
 F: (602)414-1904



OIL CONDITION

Visc @ 40°C	cSt	█ 107	---	---	---
-------------	-----	-------	-----	-----	-----



CONTAMINATION

Water	%	NEG	---	---	---
Silicon	ppm	█ <1	---	---	---
Sodium	ppm	█ 0	---	---	---
Potassium	ppm	█ 2	---	---	---

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	█ 16	---	---	---
Copper	ppm	█ 0	---	---	---
Lead	ppm	█ <1	---	---	---
Tin	ppm	█ 0	---	---	---
Aluminum	ppm	█ 0	---	---	---
Chromium	ppm	█ 0	---	---	---
Molybdenum	ppm	█ 0	---	---	---
Nickel	ppm	█ 0	---	---	---
Titanium	ppm	<1	---	---	---
Silver	ppm	0	---	---	---
Manganese	ppm	█ 0	---	---	---
Vanadium	ppm	0	---	---	---



ADDITIVES

Calcium	ppm	█ 40	---	---	---
Magnesium	ppm	█ 5	---	---	---
Zinc	ppm	█ 34	---	---	---
Phosphorus	ppm	█ 1245	---	---	---
Barium	ppm	█ 0	---	---	---
Boron	ppm	█ 215	---	---	---

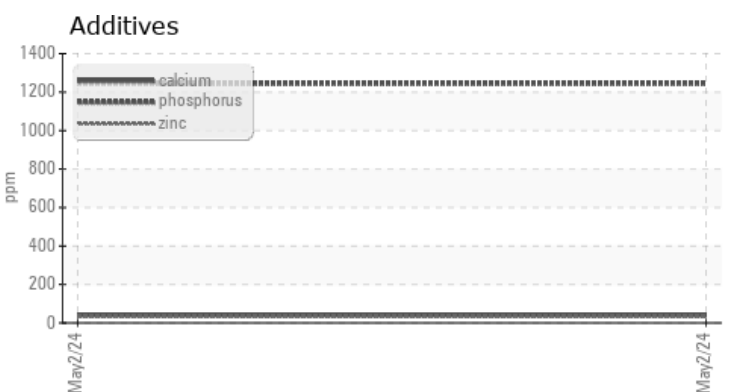
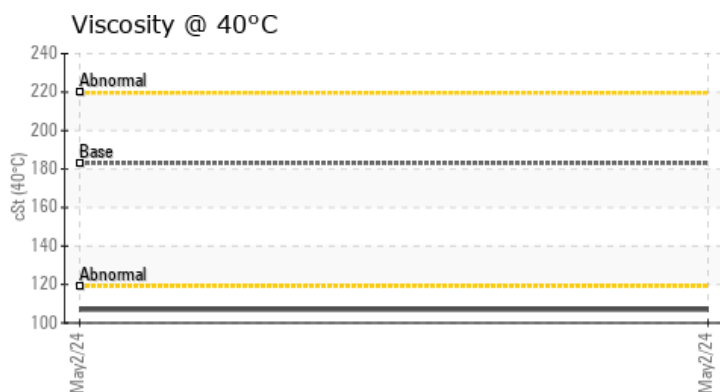
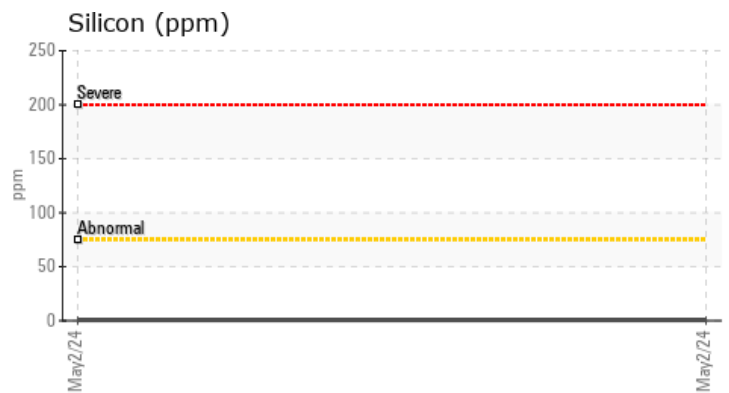
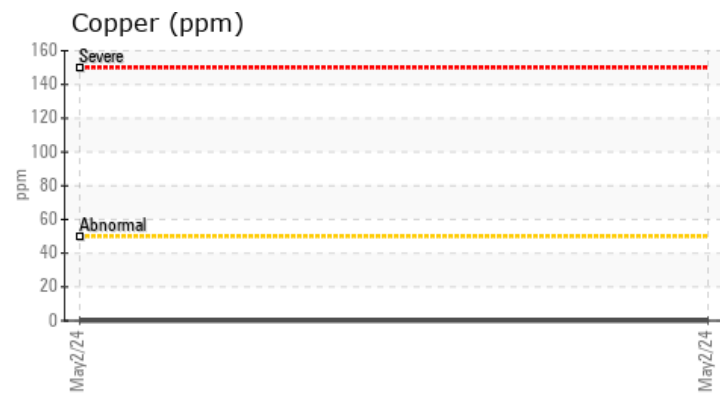
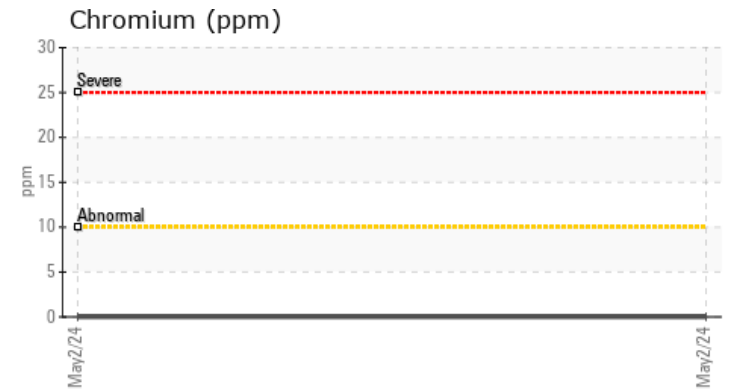
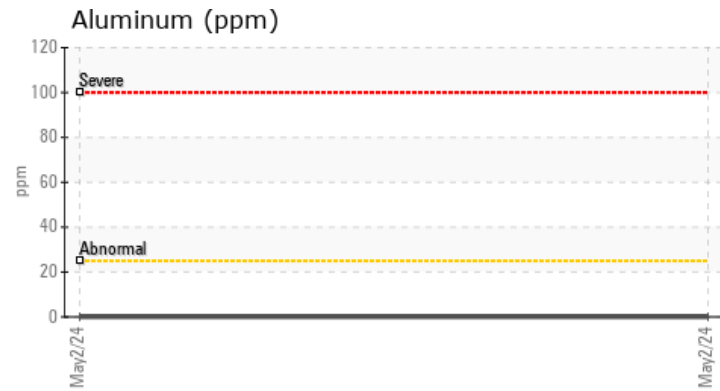
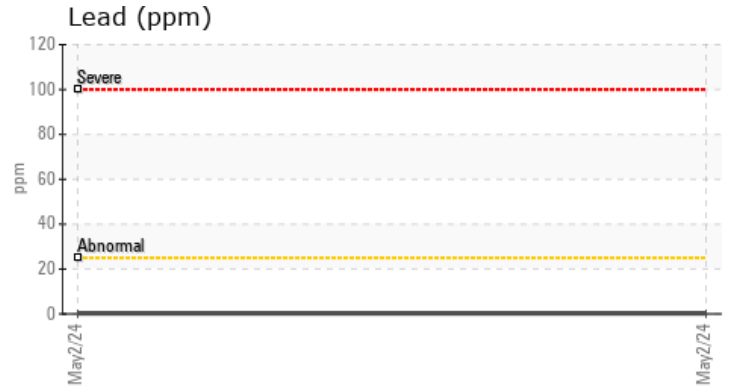
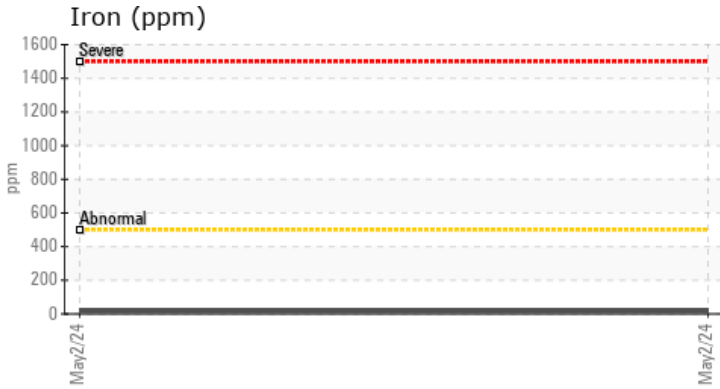
Depot: VOLVO6174
Unique No: 11020334
Signed: Angela Borella
Report Date: 13 May 2024



CONSTRUCTION EQUIPMENT



GRAPHS





CONSTRUCTION EQUIPMENT

RANGO VOLVO A60H 340071 - DROP BOX



Sample No: VCP382259
Oil Type: GEAR OIL SAE 90
Job No: RANGO



SAMPLE INFORMATION

Sample Number	VCP382259	---	---	---
Sample Date	02 May 2024	---	---	---
Machine Hours	9449	---	---	---
Oil Hours	0	---	---	---
Oil Changed	N/A	---	---	---
Sample Status	NORMAL	---	---	---

ARNOLD MACHINERY COMPANY
 4323 EAST WINSLOW AVENUE
 PHOENIX, AZ
 US 85040
 Contact: JAKE ZAYES
 jzayes@arnoldmachinery.com
 T: (602)414-1900
 F: (602)414-1904



OIL CONDITION

Visc @ 40°C	cSt	█ 109	---	---	---
-------------	-----	-------	-----	-----	-----



CONTAMINATION

Water	%	NEG	---	---	---
Silicon	ppm	█ 2	---	---	---
Sodium	ppm	█ 3	---	---	---
Potassium	ppm	█ <1	---	---	---

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	█ 69	---	---	---
Copper	ppm	█ 3	---	---	---
Lead	ppm	█ <1	---	---	---
Tin	ppm	█ 0	---	---	---
Aluminum	ppm	█ 0	---	---	---
Chromium	ppm	█ <1	---	---	---
Molybdenum	ppm	█ 2	---	---	---
Nickel	ppm	█ 0	---	---	---
Titanium	ppm	0	---	---	---
Silver	ppm	0	---	---	---
Manganese	ppm	█ 1	---	---	---
Vanadium	ppm	0	---	---	---



ADDITIVES

Calcium	ppm	█ 39	---	---	---
Magnesium	ppm	█ 3	---	---	---
Zinc	ppm	█ 63	---	---	---
Phosphorus	ppm	█ 1121	---	---	---
Barium	ppm	█ 0	---	---	---
Boron	ppm	█ 174	---	---	---

Depot: VOLVO6174
Unique No: 11020337
Signed: Wes Davis
Report Date: 10 May 2024



CONSTRUCTION EQUIPMENT



GRAPHS

