



CONSTRUCTION EQUIPMENT

715482 VOLVO SD115B 236651 - DIESEL ENGINE



Sample No: VCP447427
Oil Type: VOLVO ULTRA DIESEL ENGINE OIL 15W40 VDS-3
Job No: 715482



SAMPLE INFORMATION

Sample Number	VCP447427	VCP411984	VCP350174	VCP322143
Sample Date	09 May 2024	17 Sep 2023	02 May 2022	15 Sep 2021
Machine Hours	4359	0	2754	2331
Oil Hours	500	0	500	1500
Oil Changed	Changed	Changed	Changed	Changed
Sample Status	NORMAL	NORMAL	NORMAL	ATTENTION

RIPA AND ASSOCIATES
 10149 FISHER AVENUE
 TAMPA, FL
 US 33619
 Contact: PM Services
 PMServices@ripaconstruction.com
 T:
 F:



OIL CONDITION

Visc @ 100°C	cSt	13.2	13.7	13.0	12.4
Base Number (BN)	mg KOH/g	10.2	8.3	12.1	---
Oxidation (PA)	%	76	64	82	78

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



CONTAMINATION

Water	%	NEG	NEG	NEG	NEG
Soot %	%	0.3	0.5	0.5	0.6
Nitration (PA)	%	66	75	74	84
Sulfation (PA)	%	57	53	62	60
Glycol	%	NEG	NEG	NEG	NEG
Fuel	%	<1.0	<1.0	<1.0	1.0
Silicon	ppm	7	7	7	9
Sodium	ppm	3	3	2	3
Potassium	ppm	4	3	8	5



WEAR METALS

Iron	ppm	14	17	35	37
Copper	ppm	1	4	2	3
Lead	ppm	0	0	2	<1
Tin	ppm	1	<1	1	2
Aluminum	ppm	5	5	4	8
Chromium	ppm	<1	1	2	2
Molybdenum	ppm	44	70	46	54
Nickel	ppm	0	<1	1	<1
Titanium	ppm	<1	5	<1	<1
Silver	ppm	0	0	<1	0
Manganese	ppm	<1	<1	<1	<1
Vanadium	ppm	0	<1	<1	0



ADDITIVES

Calcium	ppm	1695	2162	1638	1662
Magnesium	ppm	497	284	658	550
Zinc	ppm	1149	1299	1166	1187
Phosphorus	ppm	1042	1038	992	981
Barium	ppm	<1	0	0	0
Boron	ppm	45	34	20	14

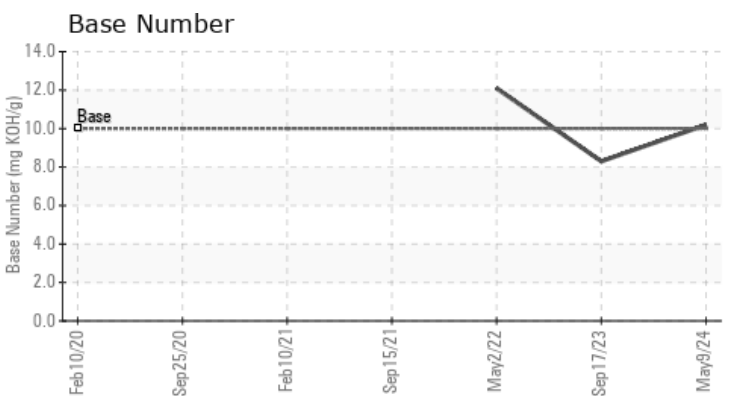
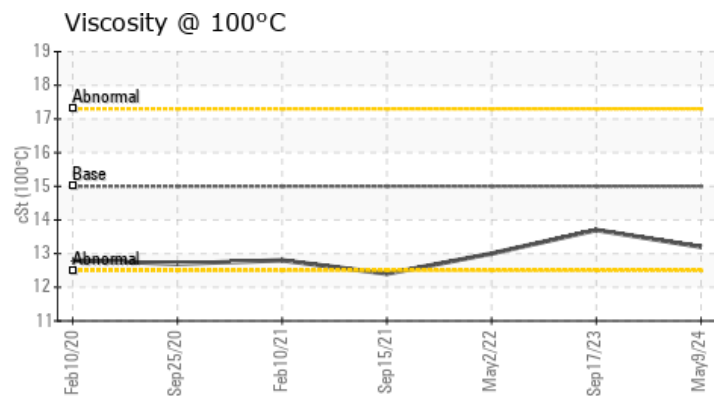
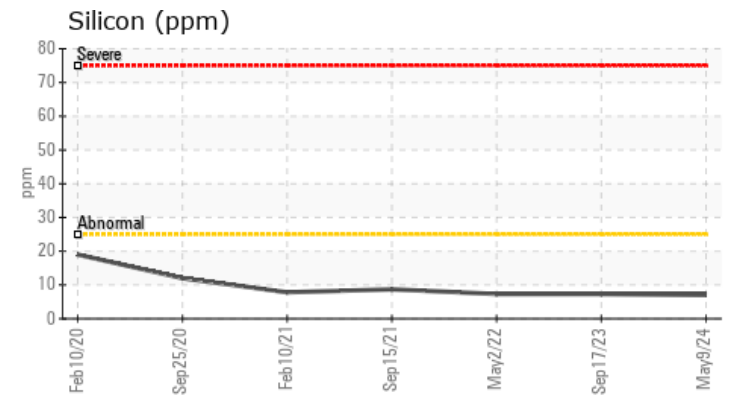
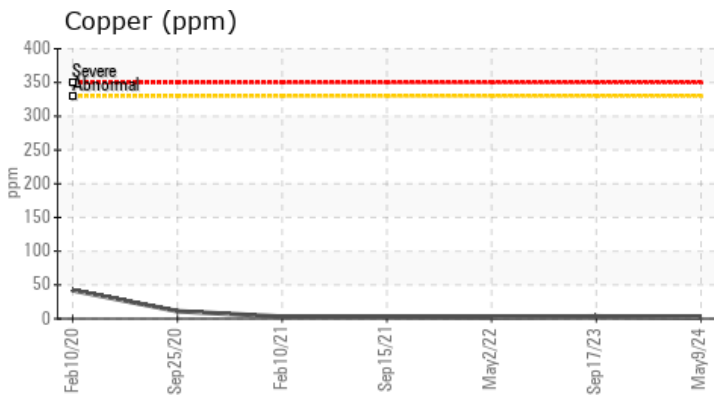
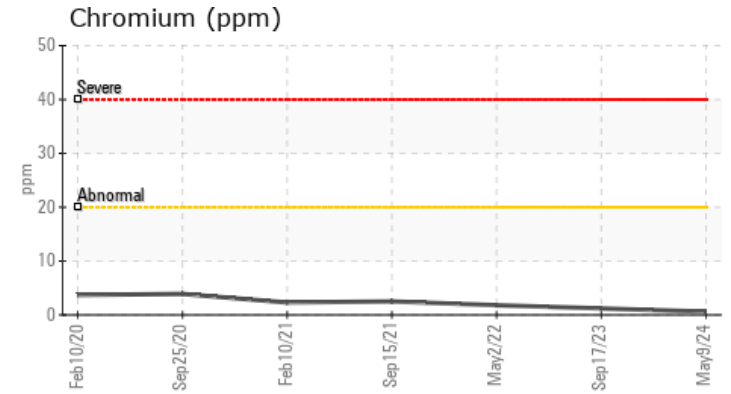
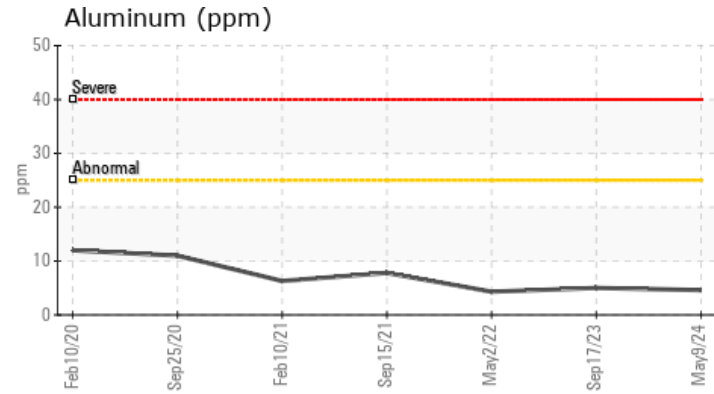
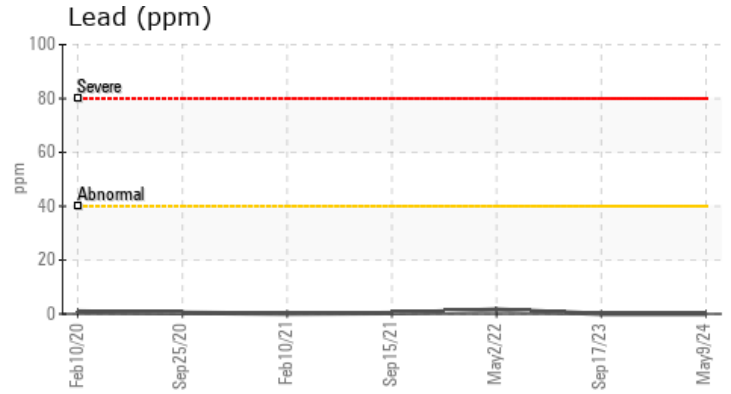
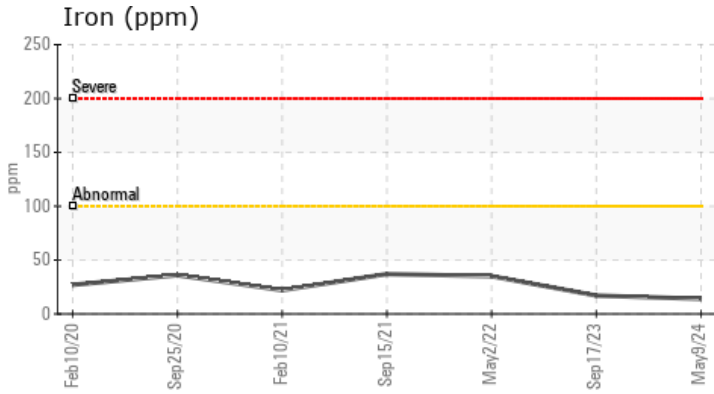
Depot: RIPTAM
Unique No: 11061893
Signed: Wes Davis
Report Date: 05 Jun 2024



CONSTRUCTION EQUIPMENT



GRAPHS





CONSTRUCTION EQUIPMENT

57867 VOLVO SD115B 236651 - DRUM GEARBOX



Sample No: VCP287298
Oil Type: MOBIL SHC 630
Job No: 57867



SAMPLE INFORMATION

Sample Number	VCP287298	---	---	---
Sample Date	25 Sep 2020	---	---	---
Machine Hours	1071	---	---	---
Oil Hours	1071	---	---	---
Oil Changed	Not Chngd	---	---	---
Sample Status	NORMAL	---	---	---

RIPA AND ASSOCIATES

10149 FISHER AVENUE
TAMPA, FL
US 33619
Contact: ROBERT TURNER
rturner@ripatampa.com
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F:



OIL CONDITION

Visc @ 40°C	cSt	█ 218	---	---	---
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CONTAMINATION

Water	%	NEG	---	---	---
Silicon	ppm	30	---	---	---
Sodium	ppm	█ <1	---	---	---
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	█ 6	---	---	---
Copper	ppm	<1	---	---	---
Lead	ppm	0	---	---	---
Tin	ppm	<1	---	---	---
Aluminum	ppm	<1	---	---	---
Chromium	ppm	█ 0	---	---	---
Molybdenum	ppm	█ 0	---	---	---
Nickel	ppm	█ <1	---	---	---
Titanium	ppm	0	---	---	---
Silver	ppm	0	---	---	---
Manganese	ppm	█ 0	---	---	---
Vanadium	ppm	0	---	---	---



ADDITIVES

Calcium	ppm	█ <1	---	---	---
Magnesium	ppm	█ <1	---	---	---
Zinc	ppm	█ 1	---	---	---
Phosphorus	ppm	█ 402	---	---	---
Barium	ppm	█ 0	---	---	---
Boron	ppm	█ 1	---	---	---

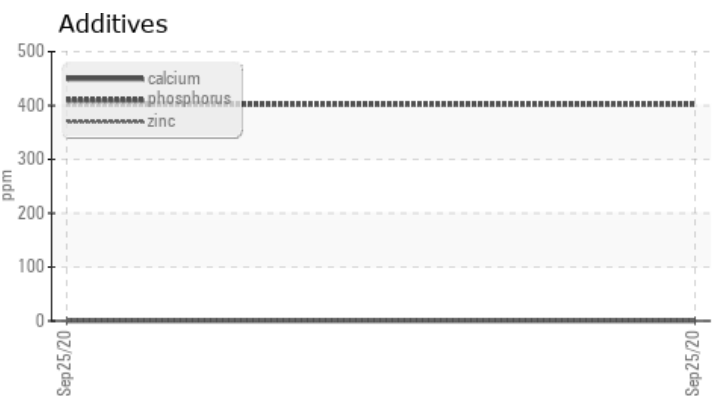
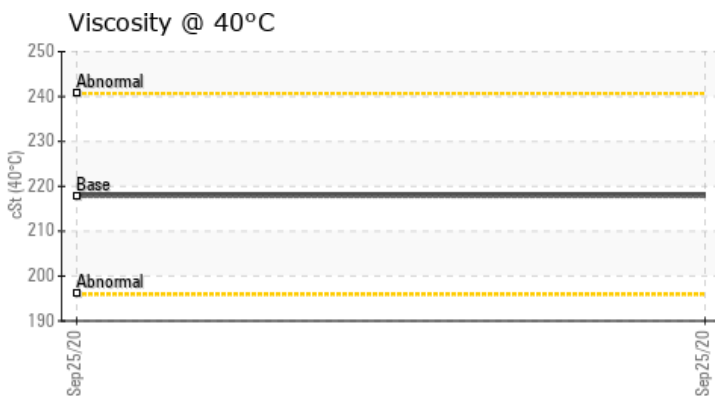
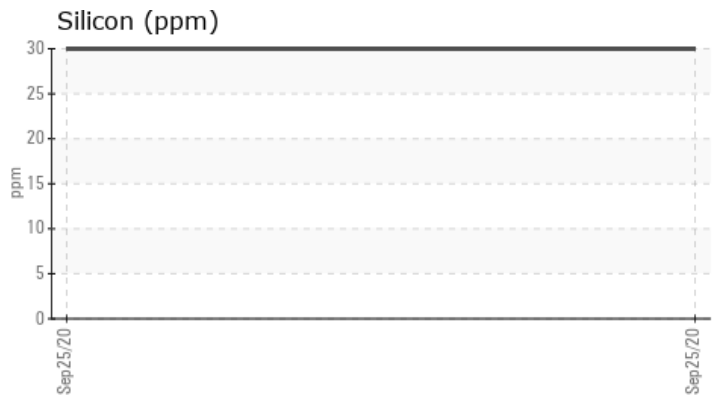
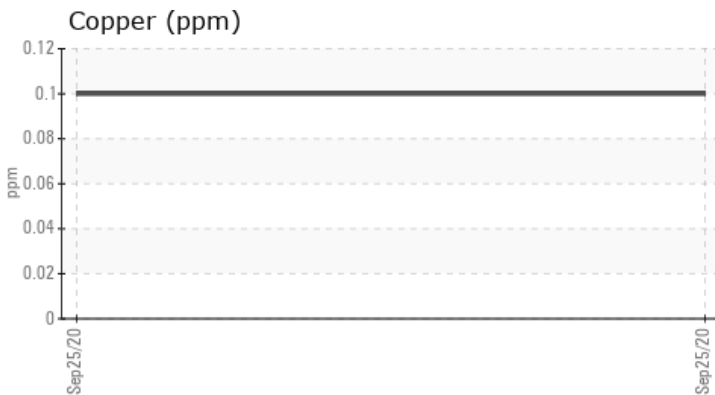
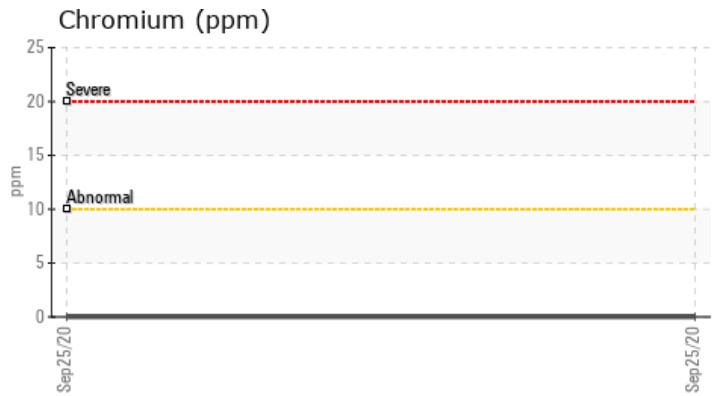
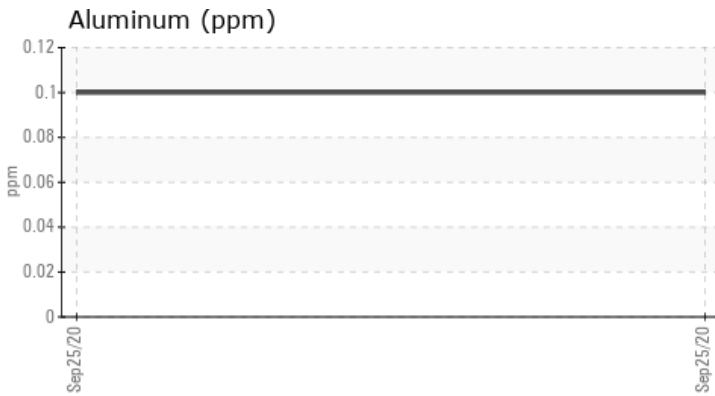
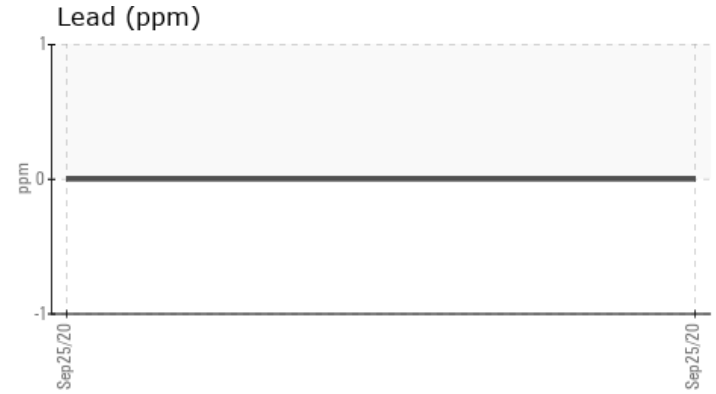
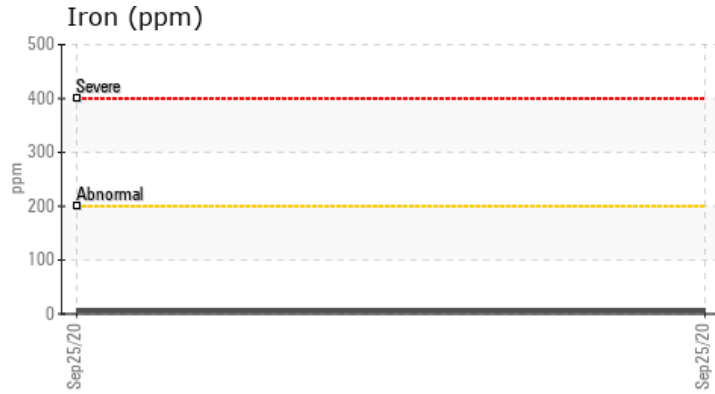
Depot: RIPTAM
Unique No: 9201874
Signed: Wes Davis
Report Date: 06 Oct 2020



CONSTRUCTION EQUIPMENT



GRAPHS





CONSTRUCTION EQUIPMENT

715482 VOLVO SD115B 236651 - HYDRAULIC SYSTEM



Sample No: VCP451218
Oil Type: VOLVO SUPER HYDRAULIC OIL 46
Job No: 715482



SAMPLE INFORMATION

Sample Number	VCP451218	VCP411983	VCP350173	VCP322144
Sample Date	09 May 2024	23 Aug 2023	02 May 2022	15 Sep 2021
Machine Hours	4359	0	2754	2331
Oil Hours	2000	0	754	1500
Oil Changed	Changed	Not Changd	Not Changd	Not Changd
Sample Status	ABNORMAL	ABNORMAL	ABNORMAL	ABNORMAL

RIPA AND ASSOCIATES
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 US 33619
 Contact: PM Services
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 F:



OIL CONDITION

Visc @ 40°C	cSt	59.3	59.92	50.4	51.3
Acid Number (AN)	mg KOH/g	0.40	0.35	0.43	0.395



CONTAMINATION

Water	%	NEG	NEG	NEG	NEG
Particles >4µm		9789	128641	13186	16842
Particles >6µm		699	36804	2547	207
Particles >14µm		41	3487	186	3
ISO 4406:1999 (c)		20/17/13	24/22/19	21/19/15	21/15/9
Silicon	ppm	2	2	2	4
Sodium	ppm	1	1	<1	1
Potassium	ppm	2	<1	0	2

Diagnosis
 No corrective action is recommended at this time. Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor. The iron level is abnormal. All other component wear rates are normal. There is a moderate amount of silt (particulates < 6 microns in size) present in the oil. The oil viscosity is higher than normal. Confirm oil type. The AN level is acceptable for this fluid.



WEAR METALS

Iron	ppm	39	42	13	35
Copper	ppm	19	17	8	18
Lead	ppm	4	3	<1	4
Tin	ppm	<1	0	<1	0
Aluminum	ppm	0	0	<1	<1
Chromium	ppm	0	<1	0	<1
Molybdenum	ppm	<1	0	4	0
Nickel	ppm	0	0	0	<1
Titanium	ppm	0	0	0	0
Silver	ppm	0	0	<1	0
Manganese	ppm	1	<1	<1	<1
Vanadium	ppm	0	0	0	0



ADDITIVES

Calcium	ppm	61	65	108	87
Magnesium	ppm	7	9	8	<1
Zinc	ppm	429	436	387	345
Phosphorus	ppm	390	259	345	390
Barium	ppm	<1	0	0	0
Boron	ppm	0	0	4	4

Depot: RIPTAM
Unique No: 11062158
Signed: Jonathan Hester
Report Date: 07 Jun 2024

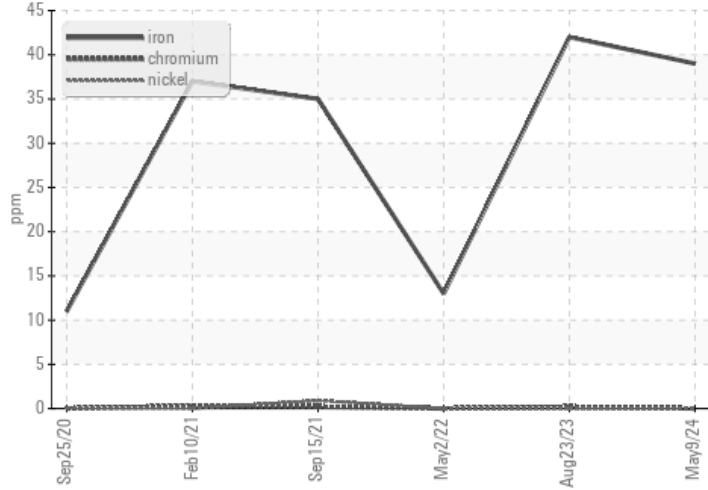


CONSTRUCTION EQUIPMENT

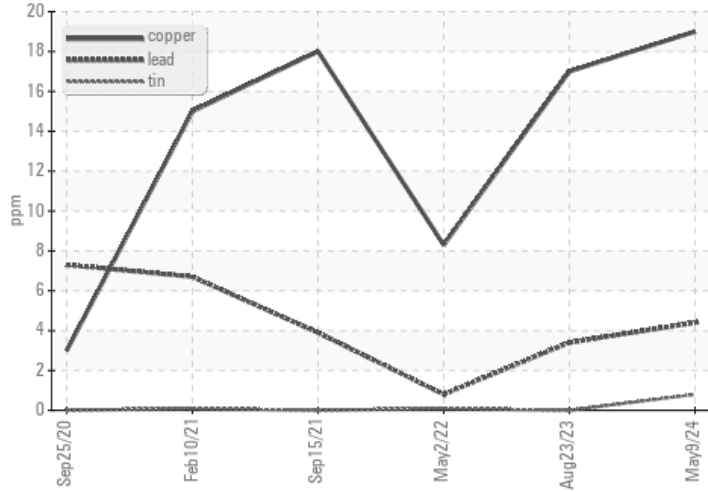


VOLVO GRAPHS

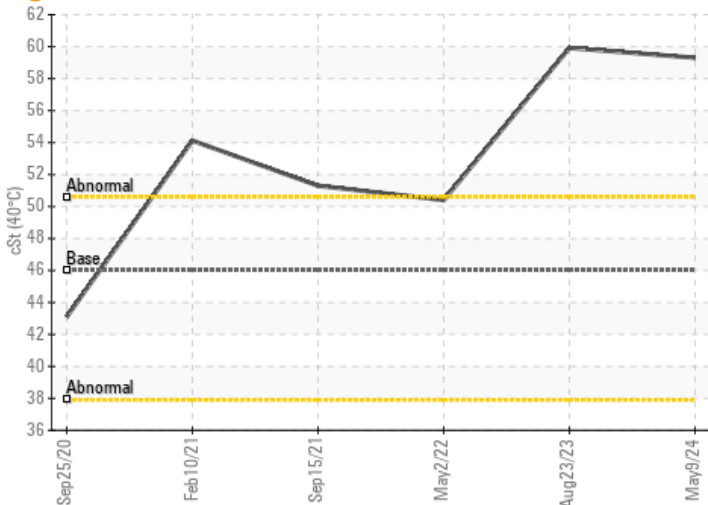
▲ Ferrous Alloys



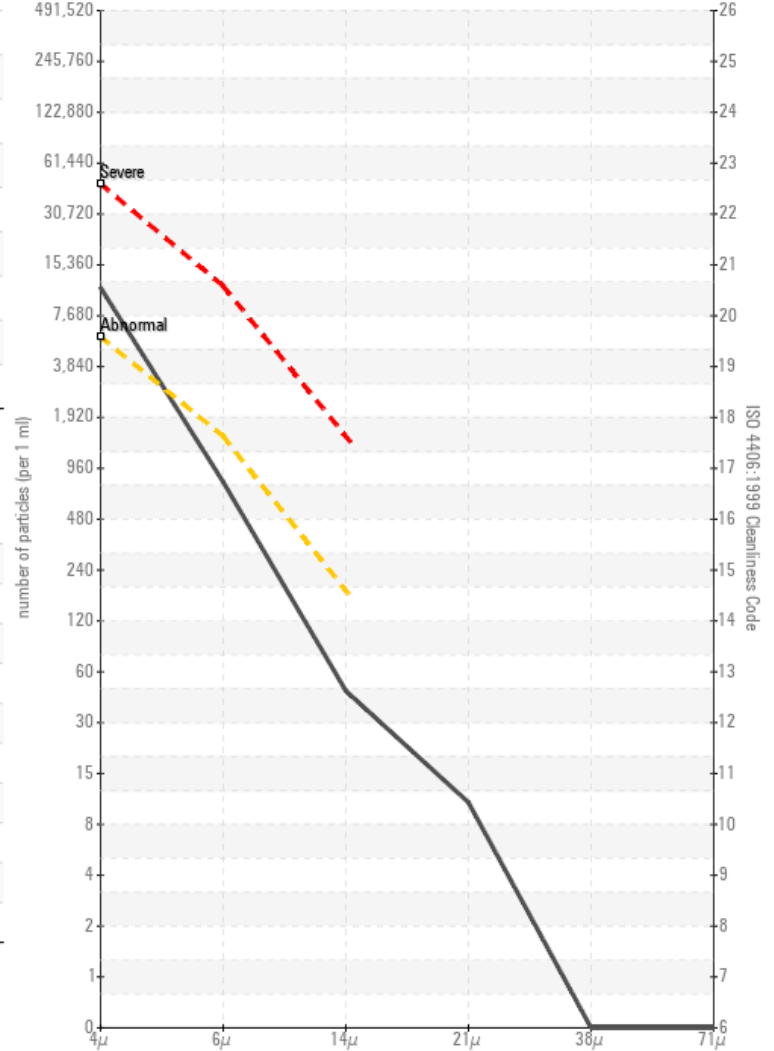
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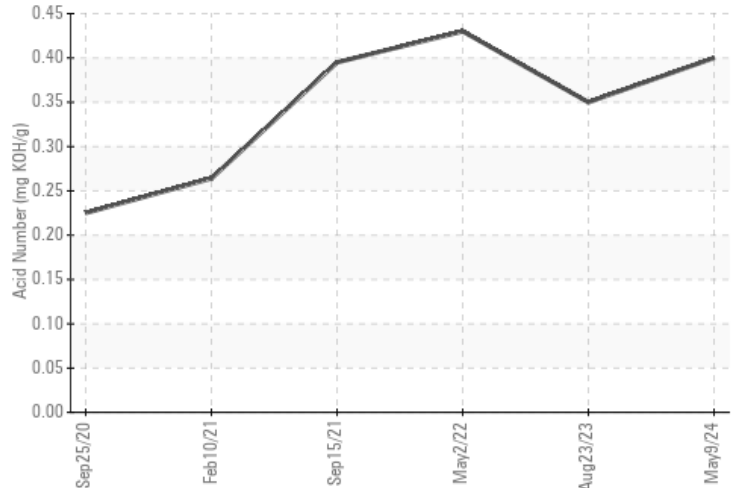
● Viscosity @ 40°C



● Particle Count



Acid Number





CONSTRUCTION EQUIPMENT

296167 VOLVO SD115B 236651 - BOGIE/CENTER LEFT FINAL DRIVE



Sample No: VCP322142
Oil Type: VOLVO PREMIUM GEAR OIL 80W-90 GL-5
Job No: 296167



SAMPLE INFORMATION

Sample Number	VCP322142	---	---	---
Sample Date	15 Sep 2021	---	---	---
Machine Hours	2331	---	---	---
Oil Hours	1500	---	---	---
Oil Changed	Not Chngd	---	---	---
Sample Status	NORMAL	---	---	---

RIPA AND ASSOCIATES

10149 FISHER AVENUE
TAMPA, FL
US 33619
Contact: ROBERT TURNER
rtturner@ripatampa.com

T:
F:



OIL CONDITION

Visc @ 40°C	cSt	█ 138	---	---	---
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CONTAMINATION

Water	%	NEG	---	---	---
Silicon	ppm	█ 7	---	---	---
Sodium	ppm	█ 4	---	---	---
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	█ 234	---	---	---
Copper	ppm	█ <1	---	---	---
Lead	ppm	█ <1	---	---	---
Tin	ppm	█ <1	---	---	---
Aluminum	ppm	█ 1	---	---	---
Chromium	ppm	█ 2	---	---	---
Molybdenum	ppm	█ <1	---	---	---
Nickel	ppm	█ 0	---	---	---
Titanium	ppm	<1	---	---	---
Silver	ppm	<1	---	---	---
Manganese	ppm	█ 9	---	---	---
Vanadium	ppm	<1	---	---	---



ADDITIVES

Calcium	ppm	█ 50	---	---	---
Magnesium	ppm	█ 7	---	---	---
Zinc	ppm	█ 57	---	---	---
Phosphorus	ppm	█ 1120	---	---	---
Barium	ppm	█ 0	---	---	---
Boron	ppm	█ 150	---	---	---

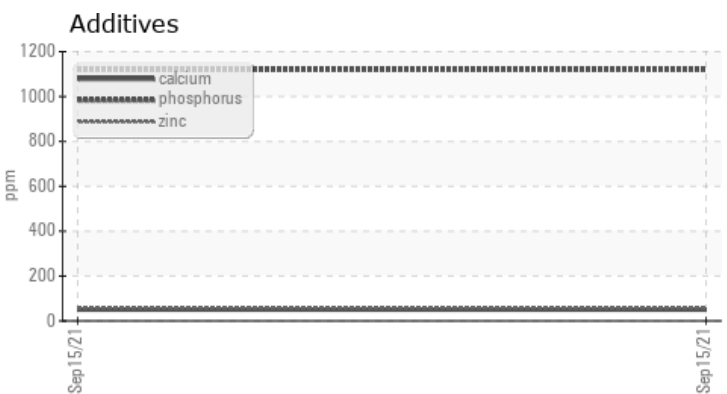
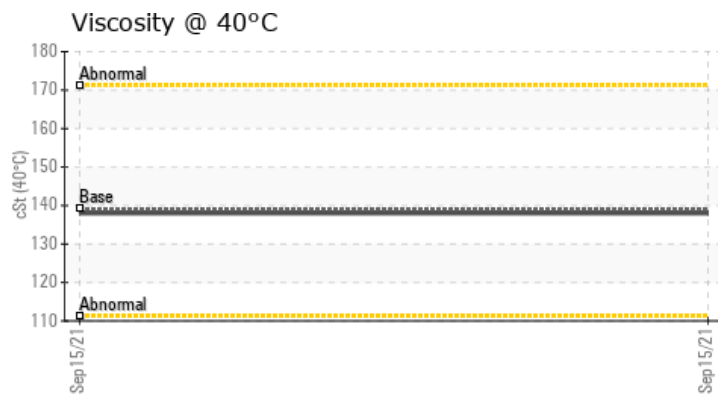
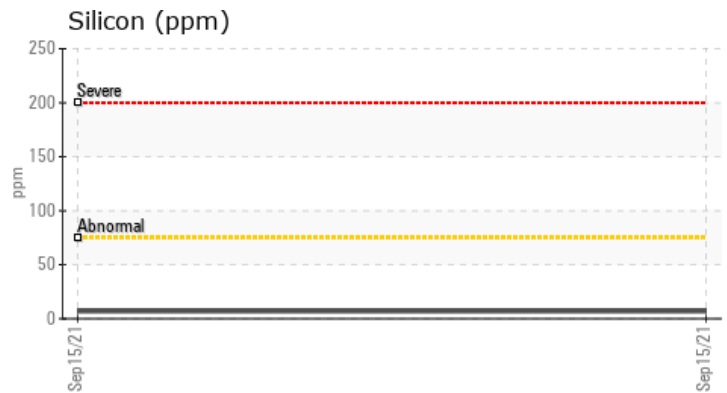
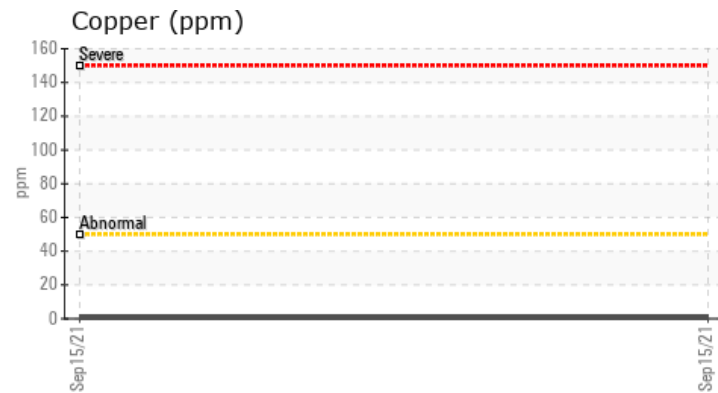
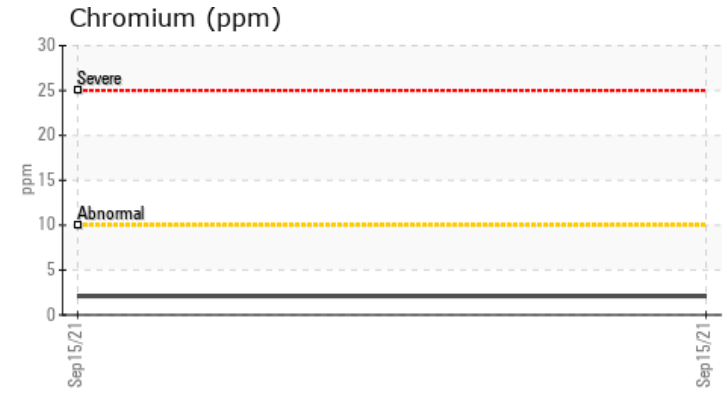
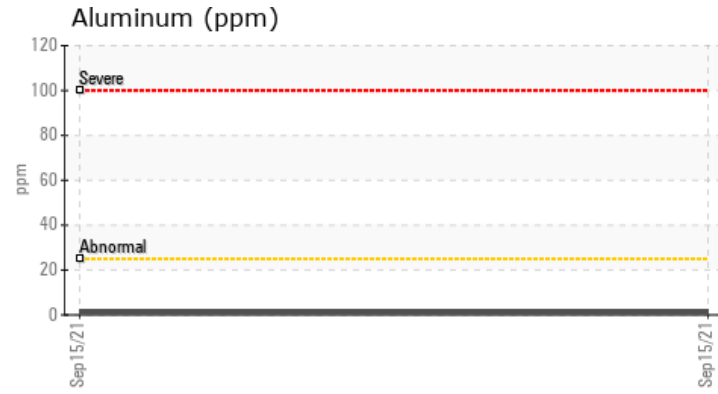
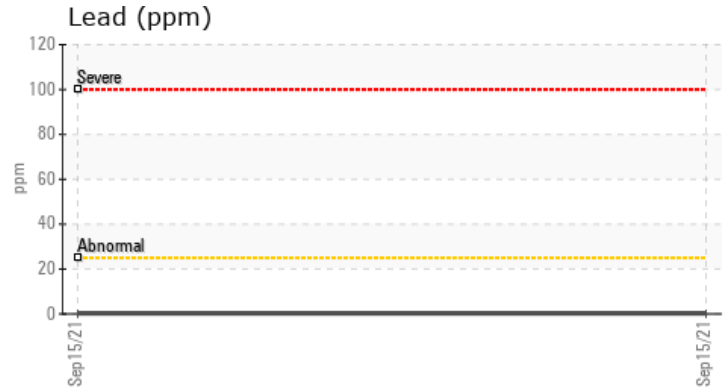
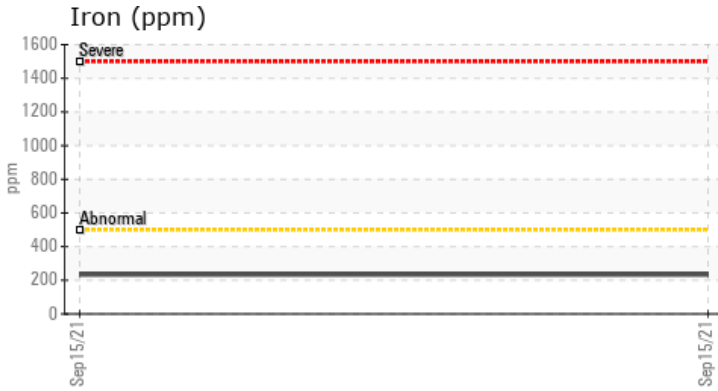
Depot: RIPTAM
Unique No: 9668579
Signed: Wes Davis
Report Date: 21 Sep 2021



CONSTRUCTION EQUIPMENT



GRAPHS





CONSTRUCTION EQUIPMENT

296167 VOLVO SD115B 236651 - BOGIE/CENTER AXLE



Sample No: VCP316773
Oil Type: VOLVO PREMIUM GEAR OIL 80W-90 GL-5
Job No: 296167



SAMPLE INFORMATION

Sample Number	VCP316773	---	---	---
Sample Date	15 Sep 2021	---	---	---
Machine Hours	2331	---	---	---
Oil Hours	1500	---	---	---
Oil Changed	Not Chngd	---	---	---
Sample Status	NORMAL	---	---	---

RIPA AND ASSOCIATES

10149 FISHER AVENUE
TAMPA, FL
US 33619
Contact: ROBERT TURNER
rturner@ripatampa.com

T:
F:



OIL CONDITION

Visc @ 40°C	cSt	█ 219	---	---	---
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CONTAMINATION

Water	%	NEG	---	---	---
Silicon	ppm	█ 19	---	---	---
Sodium	ppm	█ <1	---	---	---
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	█ 9	---	---	---
Copper	ppm	█ <1	---	---	---
Lead	ppm	█ 0	---	---	---
Tin	ppm	█ <1	---	---	---
Aluminum	ppm	█ <1	---	---	---
Chromium	ppm	█ 0	---	---	---
Molybdenum	ppm	█ <1	---	---	---
Nickel	ppm	█ 0	---	---	---
Titanium	ppm	█ 0	---	---	---
Silver	ppm	█ <1	---	---	---
Manganese	ppm	█ <1	---	---	---
Vanadium	ppm	█ 0	---	---	---



ADDITIVES

Calcium	ppm	█ 2	---	---	---
Magnesium	ppm	█ 0	---	---	---
Zinc	ppm	█ 0	---	---	---
Phosphorus	ppm	█ 421	---	---	---
Barium	ppm	█ 0	---	---	---
Boron	ppm	█ 3	---	---	---

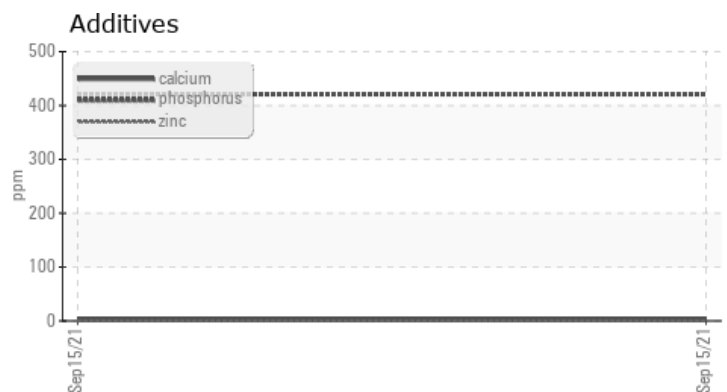
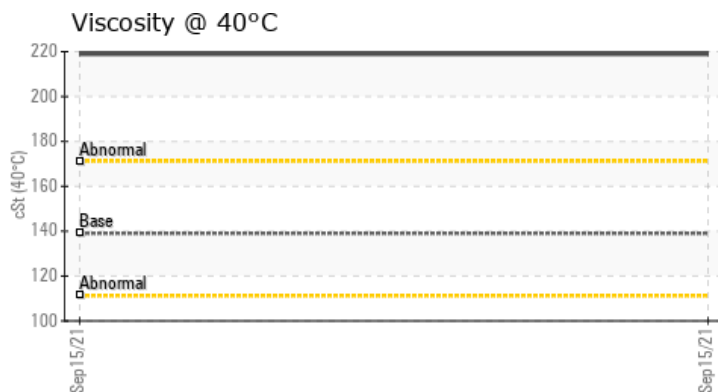
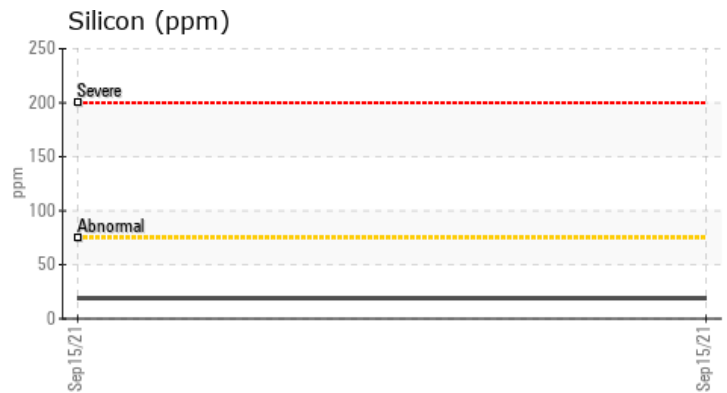
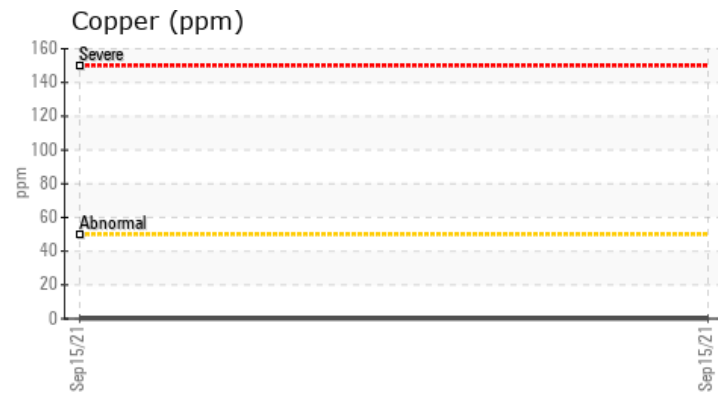
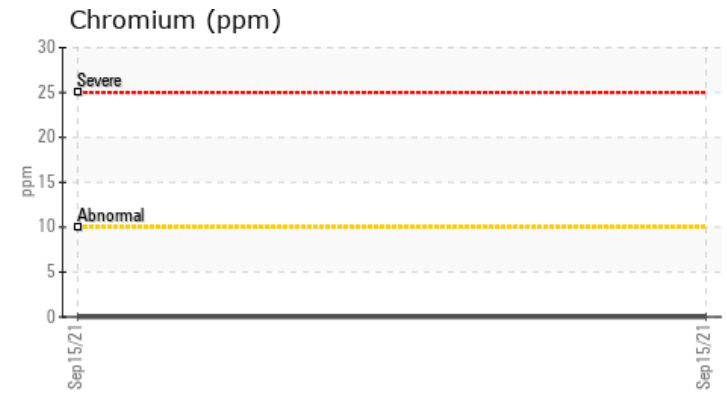
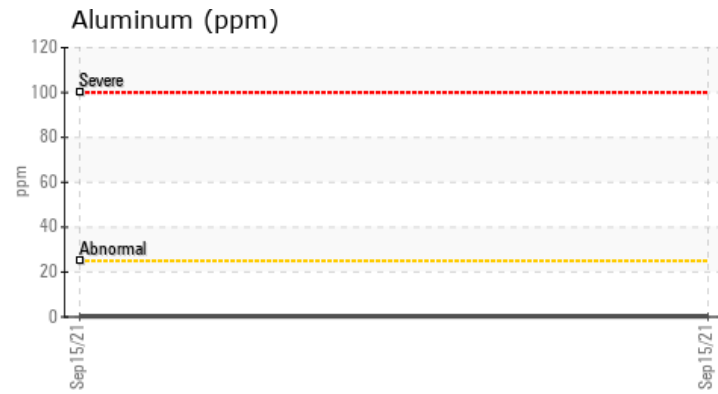
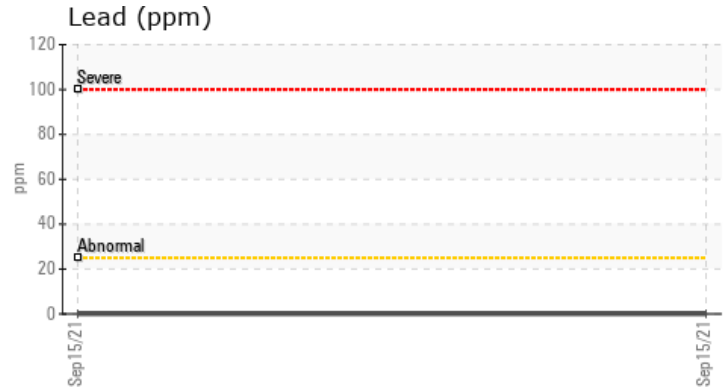
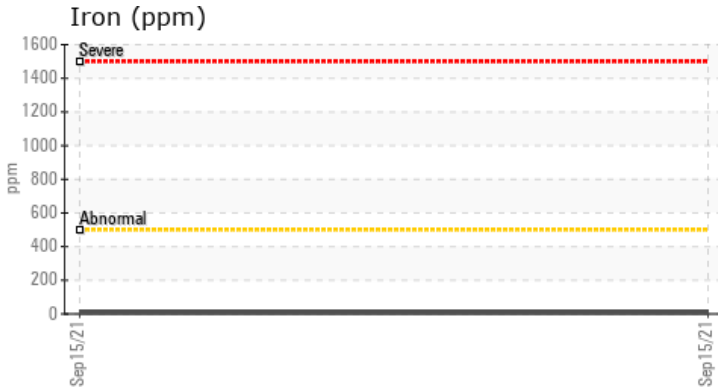
Depot: RIPTAM
Unique No: 9668578
Signed: Don Baldrige
Report Date: 22 Sep 2021



CONSTRUCTION EQUIPMENT



GRAPHS





CONSTRUCTION EQUIPMENT

VOLVO SD15B 236651 - BOGIE/CENTER RIGHT FINAL DRIVE



Sample No: VCP322145
Oil Type: VOLVO PREMIUM GEAR OIL 80W-90 GL-5
Job No:



SAMPLE INFORMATION

Sample Number	VCP322145	---	---	---
Sample Date	15 Sep 2021	---	---	---
Machine Hours	2331	---	---	---
Oil Hours	1500	---	---	---
Oil Changed	Not Chngd	---	---	---
Sample Status	NORMAL	---	---	---

RIPA AND ASSOCIATES
 10149 FISHER AVENUE
 TAMPA, FL
 US 33619
 Contact: ROBERT TURNER
 rturner@ripatampa.com
 T:
 F:



OIL CONDITION

Visc @ 40°C	cSt	█ 138	---	---	---
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CONTAMINATION

Water	%	NEG	---	---	---
Silicon	ppm	█ 9	---	---	---
Sodium	ppm	█ 5	---	---	---
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	█ 224	---	---	---
Copper	ppm	█ 3	---	---	---
Lead	ppm	█ 0	---	---	---
Tin	ppm	█ <1	---	---	---
Aluminum	ppm	█ 1	---	---	---
Chromium	ppm	█ 2	---	---	---
Molybdenum	ppm	█ 1	---	---	---
Nickel	ppm	0	---	---	---
Titanium	ppm	<1	---	---	---
Silver	ppm	0	---	---	---
Manganese	ppm	█ 7	---	---	---
Vanadium	ppm	0	---	---	---



ADDITIVES

Calcium	ppm	█ 58	---	---	---
Magnesium	ppm	█ 7	---	---	---
Zinc	ppm	█ 65	---	---	---
Phosphorus	ppm	█ 1121	---	---	---
Barium	ppm	█ 0	---	---	---
Boron	ppm	█ 127	---	---	---

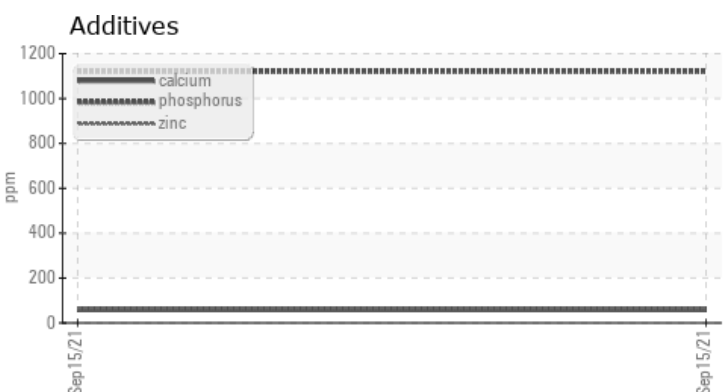
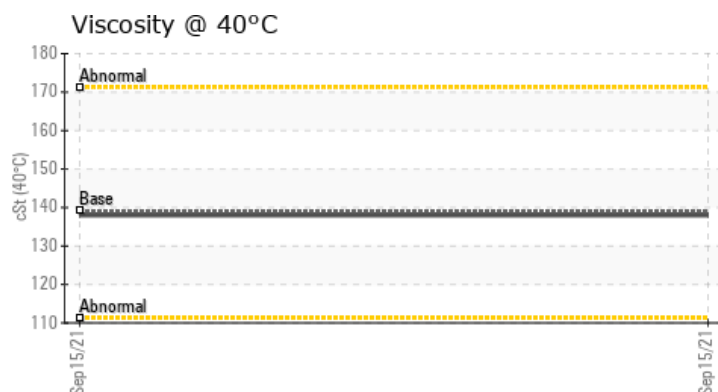
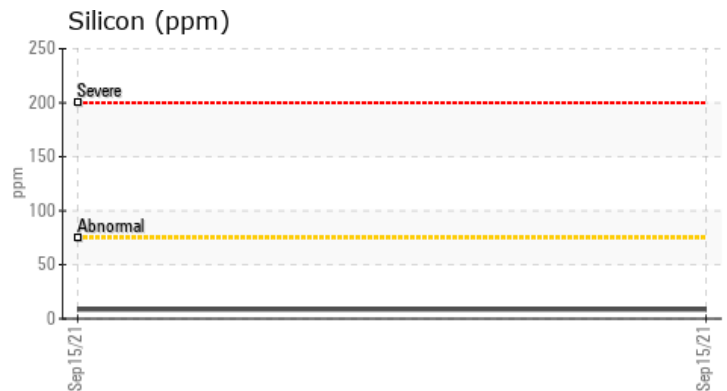
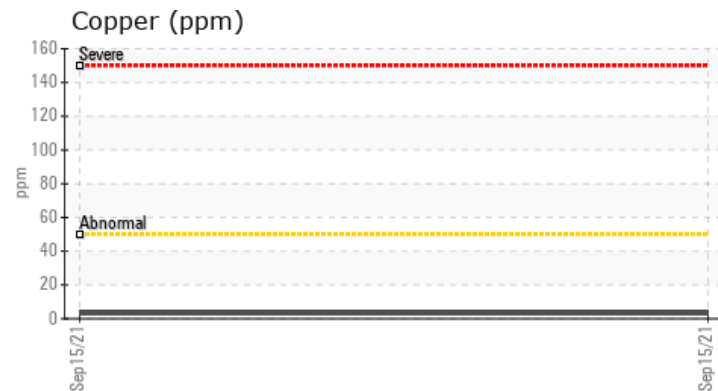
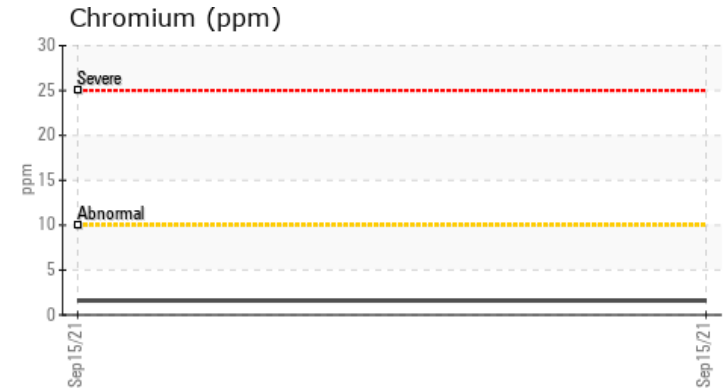
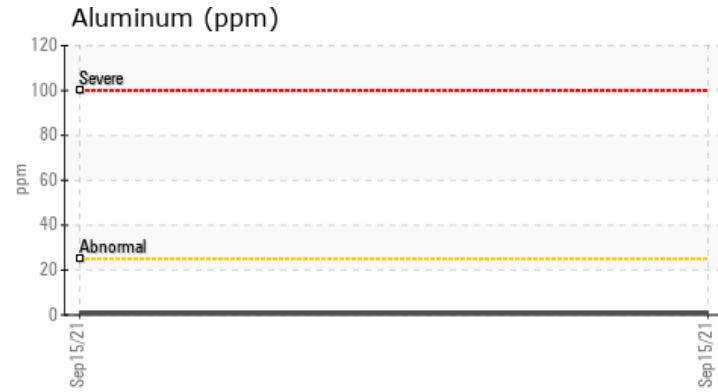
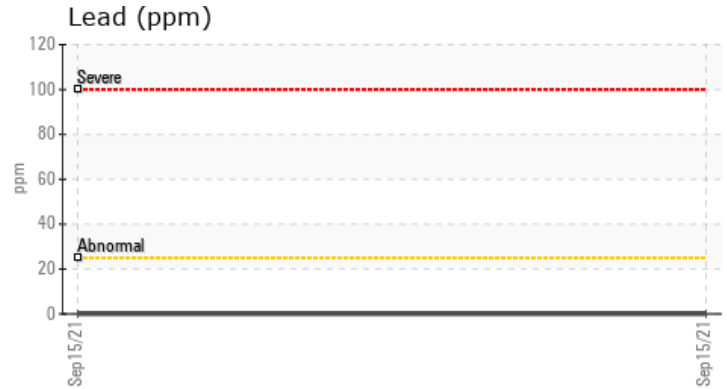
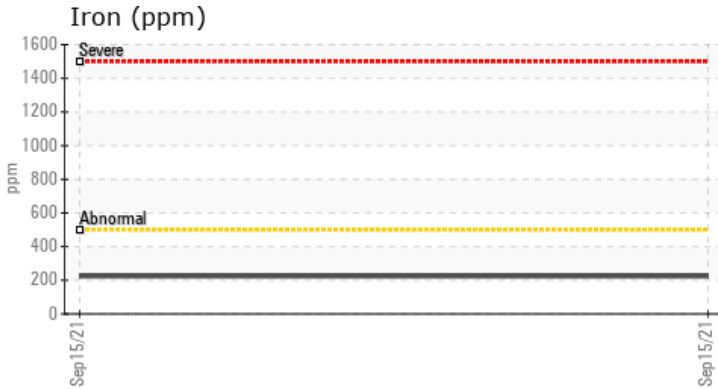
Depot: RIPTAM
Unique No: 9668549
Signed: Wes Davis
Report Date: 21 Sep 2021



CONSTRUCTION EQUIPMENT



GRAPHS





CONSTRUCTION EQUIPMENT

715482 VOLVO SD115B 236651 - REAR LEFT FINAL DRIVE



Sample No: VCP454870
Oil Type: VOLVO PREMIUM GEAR OIL 85W-140 GL-5
Job No: 715482



SAMPLE INFORMATION

Sample Number	VCP454870	VCP279204	---	---
Sample Date	09 May 2024	25 Sep 2020	---	---
Machine Hours	4359	1071	---	---
Oil Hours	1500	1071	---	---
Oil Changed	Changed	Not Changd	---	---
Sample Status	ABNORMAL	NORMAL	---	---

RIPA AND ASSOCIATES

10149 FISHER AVENUE
TAMPA, FL
US 33619
Contact: PM Services
PMServices@ripaconstruction.com
T:
F:



OIL CONDITION

Visc @ 40°C	cSt	138	140	---	---
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CONTAMINATION

Water	%	NEG	NEG	---	---
Silicon	ppm	12	6	---	---
Sodium	ppm	7	3	---	---
Potassium	ppm	3	0	---	---



WEAR METALS

Iron	ppm	581	152	---	---
Copper	ppm	<1	<1	---	---
Lead	ppm	<1	0	---	---
Tin	ppm	<1	0	---	---
Aluminum	ppm	1	<1	---	---
Chromium	ppm	4	1	---	---
Molybdenum	ppm	<1	0	---	---
Nickel	ppm	0	<1	---	---
Titanium	ppm	<1	<1	---	---
Silver	ppm	0	<1	---	---
Manganese	ppm	11	6	---	---
Vanadium	ppm	0	0	---	---



ADDITIVES

Calcium	ppm	43	45	---	---
Magnesium	ppm	8	6	---	---
Zinc	ppm	58	47	---	---
Phosphorus	ppm	1198	945	---	---
Barium	ppm	2	1	---	---
Boron	ppm	75	126	---	---

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.

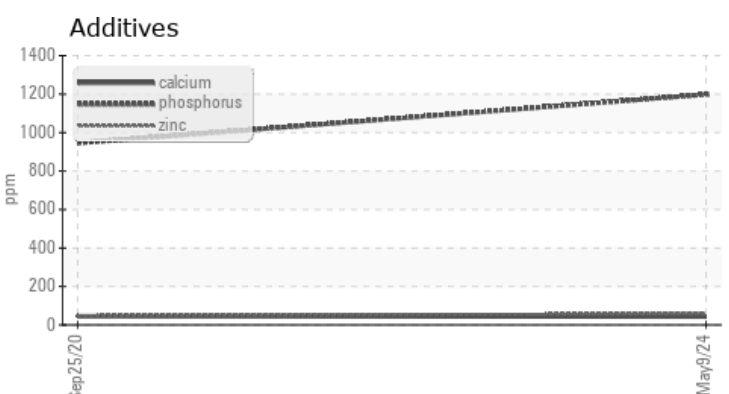
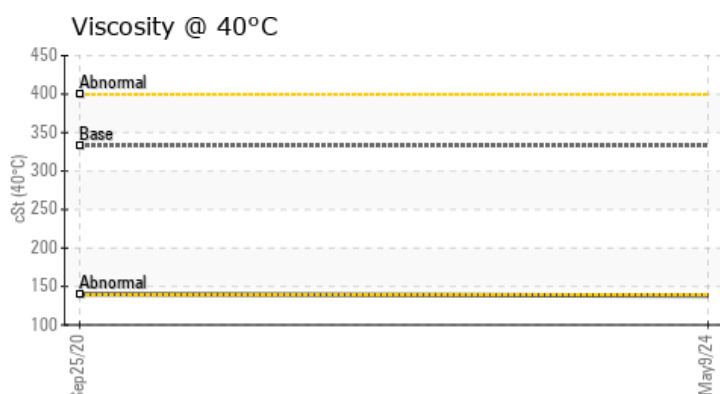
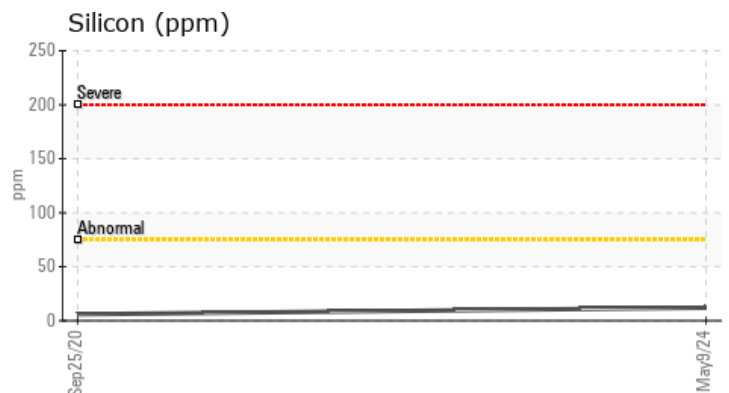
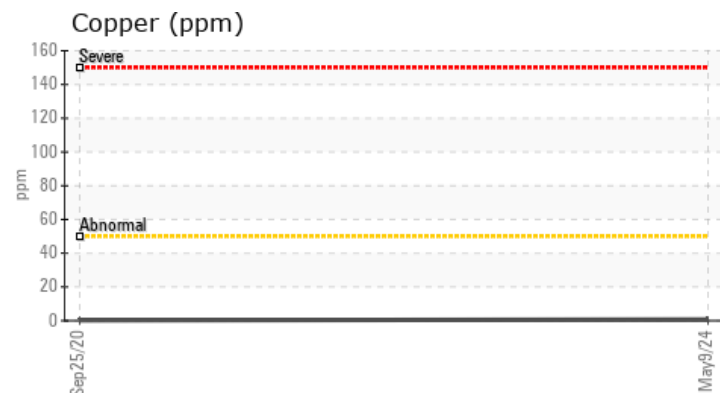
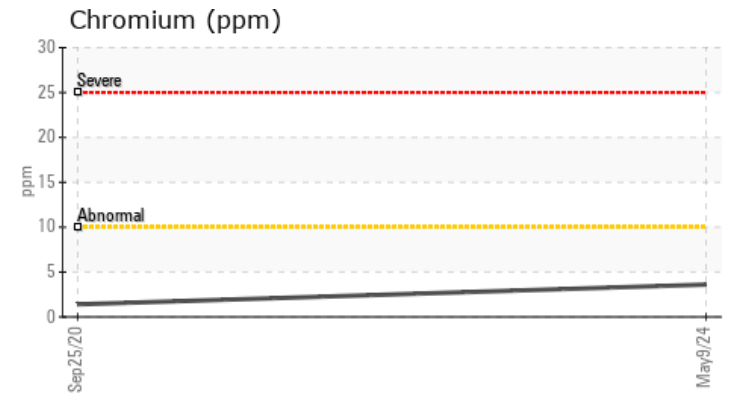
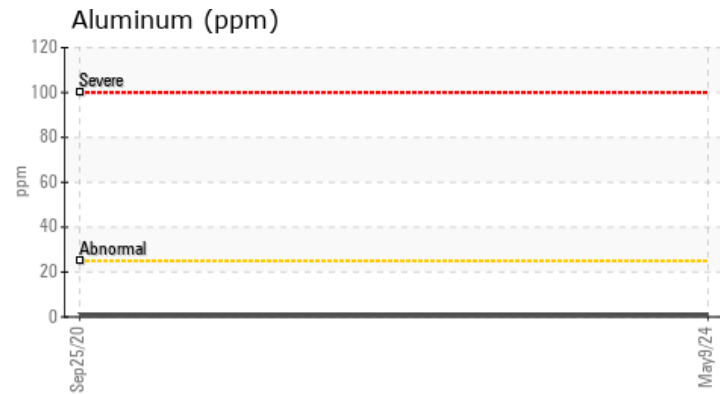
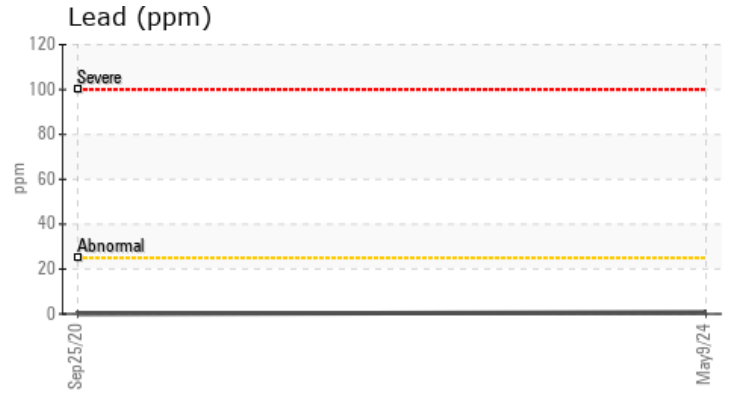
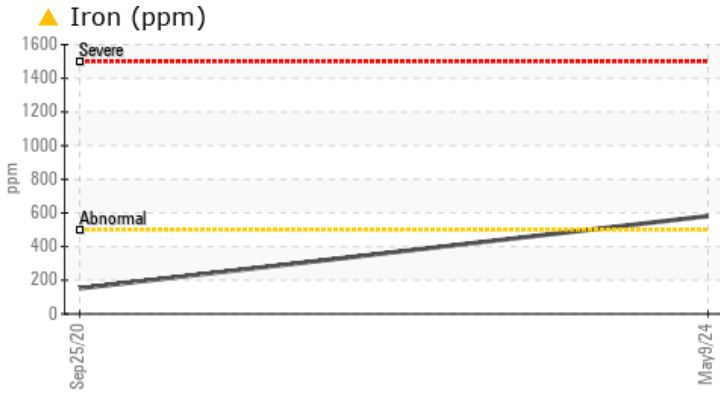
Depot: RIPTAM
Unique No: 11062665
Signed: Don Baldrige
Report Date: 07 Jun 2024



CONSTRUCTION EQUIPMENT



GRAPHS





CONSTRUCTION EQUIPMENT

715482 VOLVO SD115B 236651 - REAR AXLE



Sample No: VCP454869
Oil Type: VOLVO WB 102
Job No: 715482



SAMPLE INFORMATION

Sample Number	VCP454869	VCP322146	VCP287293	---
Sample Date	09 May 2024	15 Sep 2021	25 Sep 2020	---
Machine Hours	4359	2331	1071	---
Oil Hours	1000	1500	1071	---
Oil Changed	Changed	Not Changd	Changed	---
Sample Status	ATTENTION	NORMAL	NORMAL	---

RIPA AND ASSOCIATES

10149 FISHER AVENUE
TAMPA, FL
US 33619
Contact: PM Services
PMServices@ripaconstruction.com
T:
F:



OIL CONDITION

Visc @ 40°C	cSt	149	143	144	---
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CONTAMINATION

Water	%	NEG	NEG	NEG	---
Silicon	ppm	15	8	9	---
Sodium	ppm	12	6	5	---
Potassium	ppm	4	0	0	---



WEAR METALS

Iron	ppm	455	62	26	---
Copper	ppm	3	1	<1	---
Lead	ppm	<1	0	0	---
Tin	ppm	<1	0	0	---
Aluminum	ppm	2	2	<1	---
Chromium	ppm	2	<1	<1	---
Molybdenum	ppm	2	<1	<1	---
Nickel	ppm	0	0	<1	---
Titanium	ppm	<1	<1	<1	---
Silver	ppm	0	0	0	---
Manganese	ppm	8	4	2	---
Vanadium	ppm	0	0	0	---



ADDITIVES

Calcium	ppm	53	33	27	---
Magnesium	ppm	17	6	5	---
Zinc	ppm	118	34	26	---
Phosphorus	ppm	1095	1191	1064	---
Barium	ppm	2	0	1	---
Boron	ppm	63	67	66	---

Diagnosis

Resample at the next service interval to monitor. All component wear rates are normal. Iron noted. There is no indication of any contamination in the oil. The oil viscosity is higher than normal. This plus the additive levels indicates the addition of a different brand, or type of oil. Confirm oil type.

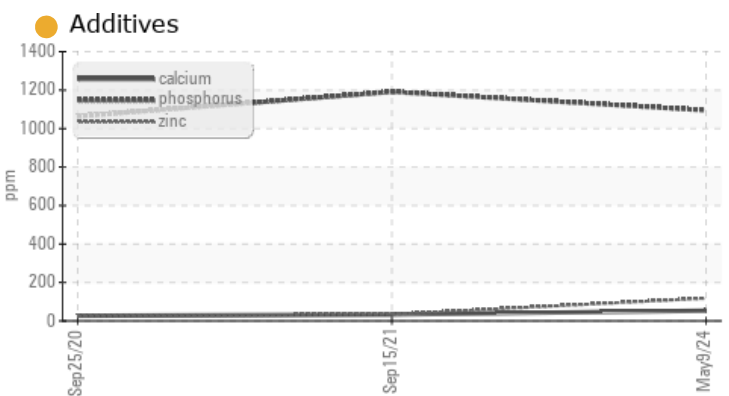
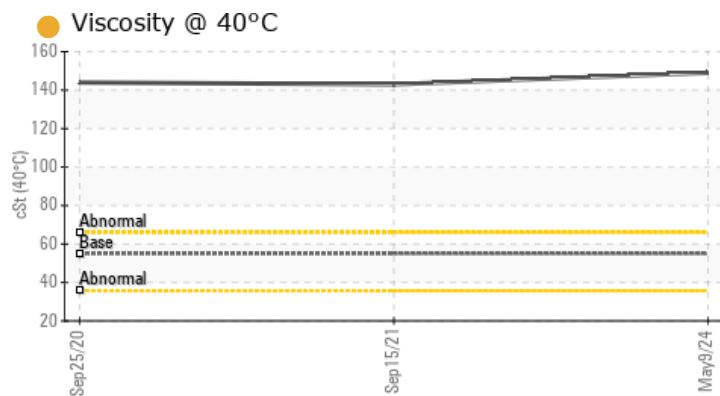
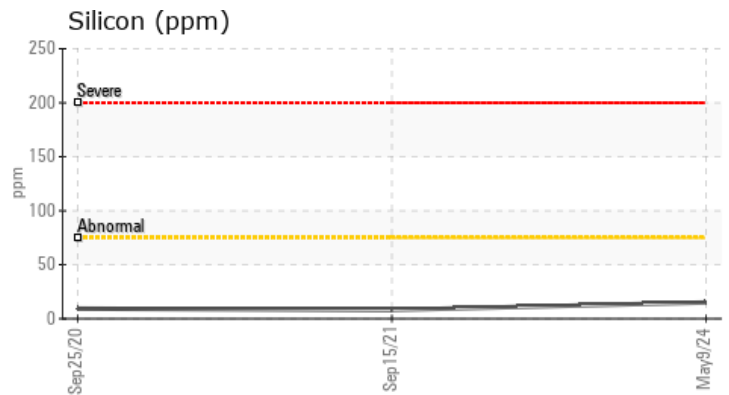
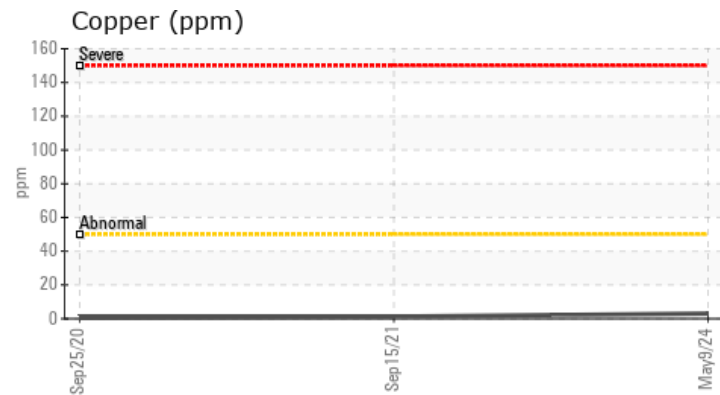
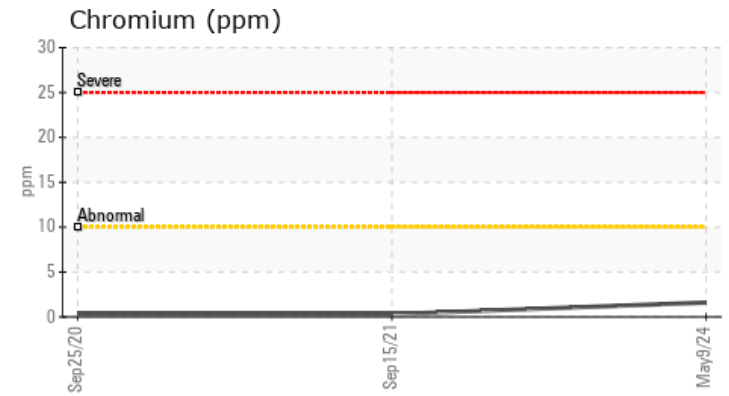
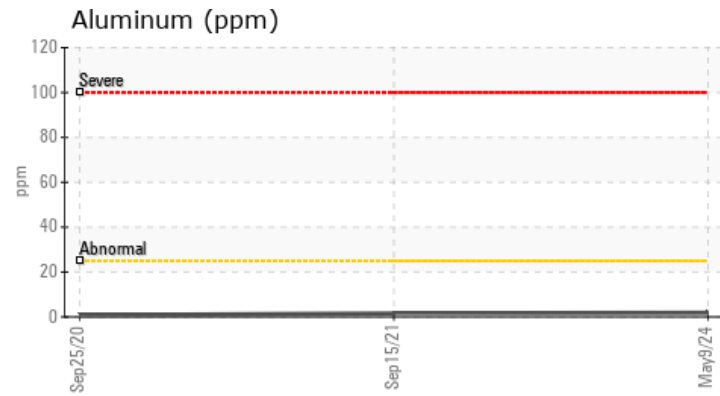
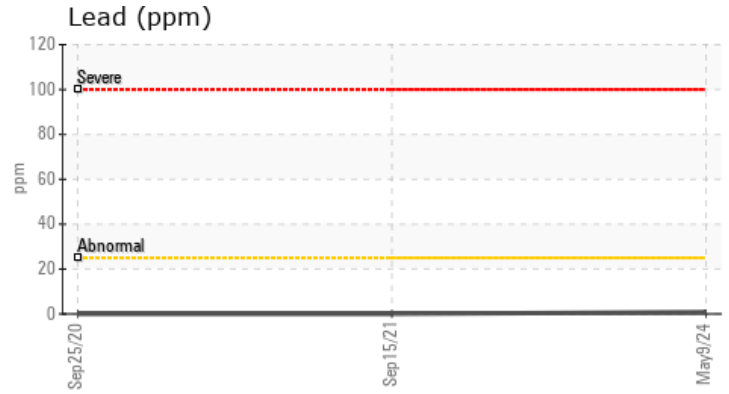
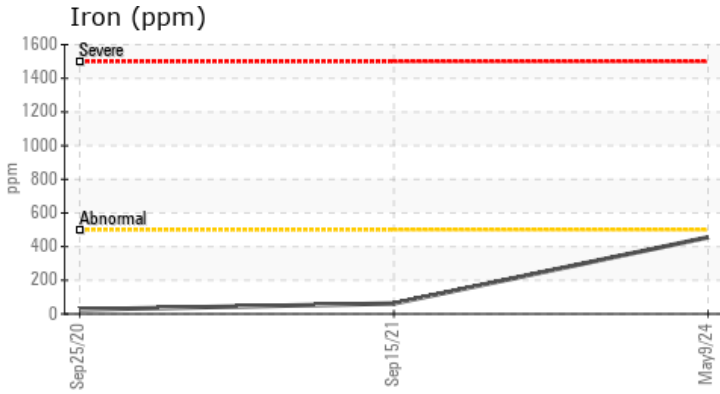
Depot: RIPTAM
Unique No: 11062660
Signed: Don Baldrige
Report Date: 07 Jun 2024



CONSTRUCTION EQUIPMENT



GRAPHS





CONSTRUCTION EQUIPMENT

715482 VOLVO SD115B 236651 - REAR RIGHT FINAL DRIVE



Sample No: VCP451492
Oil Type: VOLVO PREMIUM GEAR OIL 85W-140 GL-5
Job No: 715482



SAMPLE INFORMATION

Sample Number	VCP451492	VCP279205	---	---
Sample Date	09 May 2024	25 Sep 2020	---	---
Machine Hours	4359	1071	---	---
Oil Hours	1500	500	---	---
Oil Changed	Changed	Changed	---	---
Sample Status	ABNORMAL	NORMAL	---	---

RIPA AND ASSOCIATES

10149 FISHER AVENUE
TAMPA, FL
US 33619
Contact: PM Services
PMServices@ripaconstruction.com
T:
F:



OIL CONDITION

Visc @ 40°C	cSt	148	138	---	---
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CONTAMINATION

Water	%	NEG	NEG	---	---
Silicon	ppm	18	8	---	---
Sodium	ppm	11	4	---	---
Potassium	ppm	4	5	---	---



WEAR METALS

Iron	ppm	607	185	---	---
Copper	ppm	2	3	---	---
Lead	ppm	<1	0	---	---
Tin	ppm	<1	0	---	---
Aluminum	ppm	2	1	---	---
Chromium	ppm	3	1	---	---
Molybdenum	ppm	2	0	---	---
Nickel	ppm	<1	<1	---	---
Titanium	ppm	<1	<1	---	---
Silver	ppm	0	0	---	---
Manganese	ppm	11	7	---	---
Vanadium	ppm	0	0	---	---



ADDITIVES

Calcium	ppm	82	63	---	---
Magnesium	ppm	12	7	---	---
Zinc	ppm	99	58	---	---
Phosphorus	ppm	1159	998	---	---
Barium	ppm	2	<1	---	---
Boron	ppm	72	142	---	---

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.

Depot: RIPTAM
Unique No: 11062656
Signed: Don Baldrige
Report Date: 07 Jun 2024



CONSTRUCTION EQUIPMENT



VOLVO GRAPHS

