

Polled



WORK ORDER

DATE CREATED: 10/4/2017 BY: CLAYTON REAM UNIT #: 331

MAKE / MODEL: 2015 Cat 303.5E2 MILEAGE: N/A HRS: 1786

CIRCLE ONE CHANGE OIL SERVICE TRANS REPLACE TIRES REPLACE BRAKES REPAIR

DESCRIPTION OF PROBLEM

DUE NOW: Needs Engine service

DUE NOW: Change: Engine Oil(15w40), Oil Filter, Fuel Filters, and Outter Air Filter

ACTION TAKEN BY: Zack H. / John K. DATE COMPLETED: 10/18/17

DESCRIPTION OF ACTION TAKEN

Took Eng. oil Sample *filters: oil - B1434
Changed Eng. oil + filter fuel - BF7675-D
Changed fuel filter air - 415-2592(CAT)
Changed Outer Air filter
Checked Inner Air filter - good
Checked Hydro. oil level - good
Checked Coolant level - good
Greased Machine

Checked Track Slack - good
Checked final Drive oil levels - good
Washed Out Eng. Compartments



Lubricant Analysis Report

North America: +1-877-808-3750

0	1	2	3	4
NORMAL	ABNORMAL	ABNORMAL	ABNORMAL	CRITICAL

Overall report severity based on comments.

Account Information	Component Information	Sample Information
Account Number: 704500-0000-0000 Company Name: RESOURCE MANAGEMENT COMPANY Contact: BRENT JOHNSON/DENNIS JENNINGS Address: 3108 BRANDAU ROAD HERMITAGE, TN 37076 US Phone Number: 615-885-8903/615-456-2160	Component ID: 331 E Secondary ID: CAT 303.5 Component Type: DIESEL ENGINE Manufacturer: CATERPILLAR Model: C18 Application: OFF-HIGHWAY Sump Capacity: 2 gal	Tracking Number: 17265T07192 Lab Number: I-450333 Lab Location: Indianapolis Data Analyst: CXW Sampled: 25-Oct-2017 Submitted: 25-Oct-2017 Received: 06-Nov-2017 Completed: 07-Nov-2017

Filter Information	Miscellaneous Information	Product Information
Filter Type: FULLFLOW Micron Rating: 40		Product Manufacturer: PETRO-CANADA Product Name: DURON SHP 15W-40 Viscosity Grade: SAE 15W40

Comments Flagged data does not indicate an immediate need for maintenance action. Continue to observe the trend and monitor equipment and fluid conditions. Iron is at a MINOR LEVEL. IRON SOURCES in engines can be cylinder liners, iron pistons, hardened steel camshafts, crankshafts, gears, hardened rocker arms, valve bridges, alloyed steel cam follower rollers, etc. Flagged additive levels are different than what should be present for the lubricant identified for this component. This does not imply that the lubricant does not meet proper API, SAE, or ISO classifications. Lubricant and filter change acknowledged.

Sample #	Wear Metals (ppm)										Contaminant Metals (ppm)			Multi-Source Metals (ppm)					Additive Metals (ppm)					
	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
NL	0	0	0	0	0	0	0	0	0	0	5	2	0	0	60	0	0	0	4	936	1091	0	1106	1293
1	68	2	0	8	18	0	1	0	0	0	14	6	0	0	42	0	2	0	37	646	1406	4	835	955
2	53	1	0	6	4	0	0	0	0	0	6	5	0	0	7	0	0	0	54	99	2560	0	1057	1331
3	29	0	0	5	1	0	0	0	0	0	4	5	0	0	1	0	0	0	52	14	2319	0	976	1110
4	48	0	0	6	1	0	1	0	0	0	7	3	2	0	43	0	0	0	28	658	2218	0	1295	1543

Sample #	Sample Information								Contaminants			Fluid Properties					
	Date Sampled	Date Received	Lube Time	Unit Time	Lube Change	Lube Added	Filter Change	Fuel Dilution	Soot	Water	Viscosity 40°C	Viscosity 100 °C	Acid Number	Base Number	Oxidation	Nitration	
			h	h		gal		% Vol	% Vol	% Vol	cSt	cSt	mg KOH/g	mg KOH/g	abs/cm	abs/0.1 mm	
NL	21-Sep-2017	27-Sep-2017	0	0	No	0	No			<.1 - Hotplate		14.5		8.45	14	10	
1	03-Mar-2016	09-Mar-2016	436	436	Yes	0	Yes	0.4 - GC	0.2 - E2412	<.1 - FTIR		12.5		6.92	15	10	
2	31-Aug-2016	09-Sep-2016	450	886	Yes	0	Yes	<1 - Estimate	0.9 - E2412	<.1 - FTIR		15.5		5.82	13	8	
3	22-Feb-2017	06-Mar-2017	435	1321	Yes	0	Yes	<1 - Estimate	0.1 - E2412	<.1 - FTIR		16.2		7.19	12	8	
4	25-Oct-2017	06-Nov-2017	465	1786	Yes	0	Yes	<1 - Estimate	0.8 - E2412	<.1 - FTIR		15.3		6.37	12	8	

Sample #	Particle Count (particles/mL)										Test Method
	ISO Code	> 4 µm	> 6 µm	> 10 µm	> 14 µm	> 21 µm	> 38 µm	> 70 µm	> 100 µm		
NL	//										
1	//										
2	//										
3	//										
4	//										

Comments are advisory only and are based on the assumption that the sample and data submitted are valid. Missing fluid or component information limits the evaluation. No warranty is expressed or implied.

Polled



WORK ORDER

DATE CREATED: 2/20/2017 BY: CLAYTON REAM UNIT #: 331

MAKE / MODEL: 2015 Cat 303.5E2 MILEAGE: _____ HRS: 1321
1.306

*****CIRCLE ONE*****
CHANGE OIL SERVICE TRANS REPLACE TIRES REPLACE BRAKES REPAIR

DESCRIPTION OF PROBLEM

DUE NOW: Needs 1000HR service

REPAIR: Engine Service: Engine Oil(15w40), Fuel Filters, and Outer Air Filter.

REPAIR: Change: Final Drive Oil(T04) 50w

ACTION TAKEN BY: Tim VonSparlase DATE COMPLETED: 2/22/17

DESCRIPTION OF ACTION TAKEN

- ① Took Engin oil sample
- ② Drained Engin oil
- ③ Chanzed Engin oil Filter
- ④ Chanzed fuel Filter
- ⑤ Chanzed Outer Air Filter
- ⑥ Chanzed Final drives oil
- ⑦ Greased Machine

Booth

EQPT# 331 #332

MACHINE

CATERPILLAR 303.5E

12/28/2015

S/N BG800625 S/N BG800699

QTY	COMPARTMENT	FILTER	BALDWIN #	OTHER BRAND	P/N
1 ✓	ENGINE	OIL	B1434	Caterpillar	377-6969
1 ✓	ENGINE	FUEL PRIMARY	BF7675-D	Caterpillar	156-1200
1	ENGINE	O-Ring	Need this O-Ring for Fuel Primary	Caterpillar	128-8614
1 ✓	ENGINE	AIR OUTER	N/A	Caterpillar	415-2592
1	ENGINE	AIR INNER	N/A	Caterpillar	415-2593
1	HYDRAULIC	RETURN	N/A	Caterpillar	421-5481
1	HYDRAULIC	PILOT/LEAKAGE	N/A	Caterpillar	N/A
		Final Drive OIL	80W90		
		Hydraulic Oil	15W40		



Lubricant Analysis Report

North America: +1-877-808-3750

0	1	2	3	4
NORMAL	ABNORMAL	CRITICAL		

Overall report severity based on comments.

Account Information	Component Information	Sample Information
Account Number: 704500-0000-0000 Company Name: RESOURCE MANAGEMENT COMPANY Contact: BRENT JOHNSON Address: 3108 BRANDAU ROAD HERMITAGE, TN 37076 US Phone Number: 615-885-8903/615-456-2160	Component ID: 331 E Secondary ID: CAT 303.5 Component Type: DIESEL ENGINE Manufacturer: CATERPILLAR Model: C18 Application: OFF-HIGHWAY Sump Capacity: 2 gal	Tracking Number: 17020V03105 Lab Number: I-971035 Lab Location: Indianapolis Data Analyst: FLG Sampled: 22-Feb-2017 Submitted: 22-Feb-2017 Received: 06-Mar-2017 Completed: 07-Mar-2017
Filter Information	Miscellaneous Information	Product Information
Filter Type: FULLFLOW Micron Rating: 40		Product Manufacturer: PETRO-CANADA Product Name: DURON E XL SYNTHETIC BLEND Viscosity Grade: SAE 15W40
Comments Data indicates no abnormal findings. Resample at normal interval. Lubricant and filter change acknowledged.		

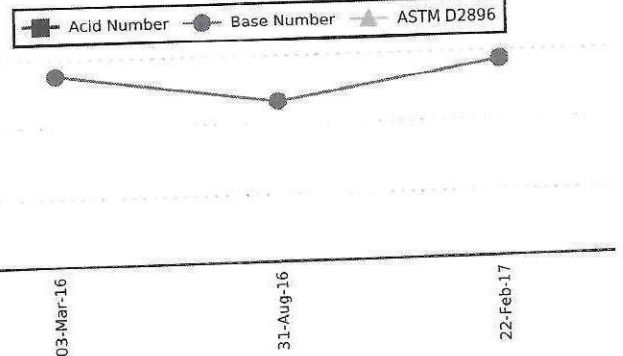
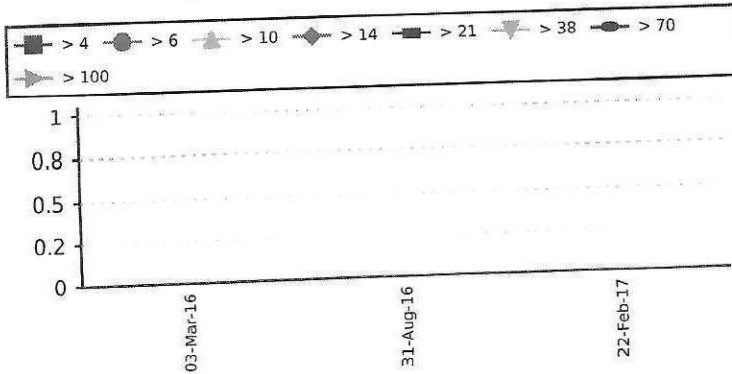
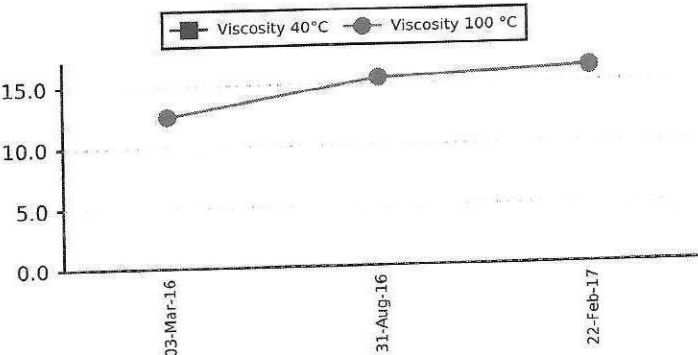
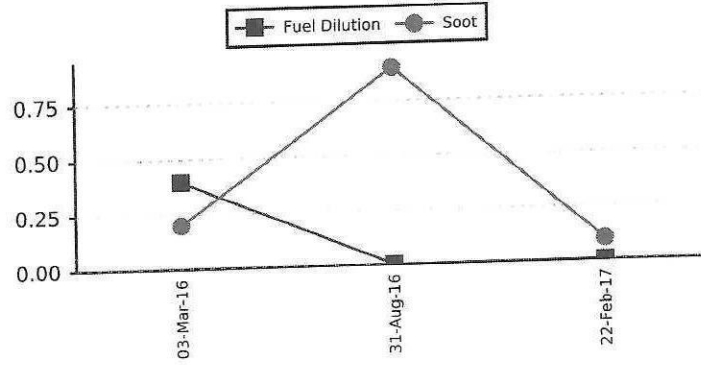
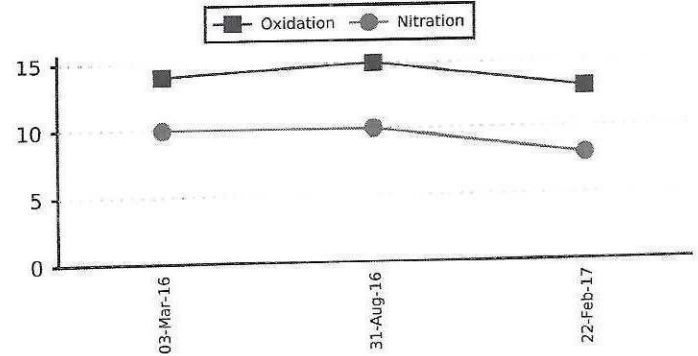
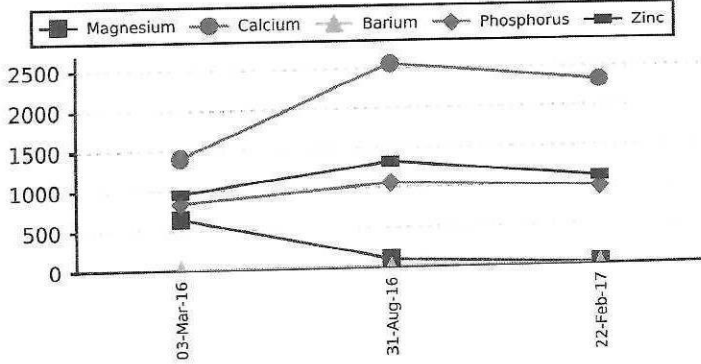
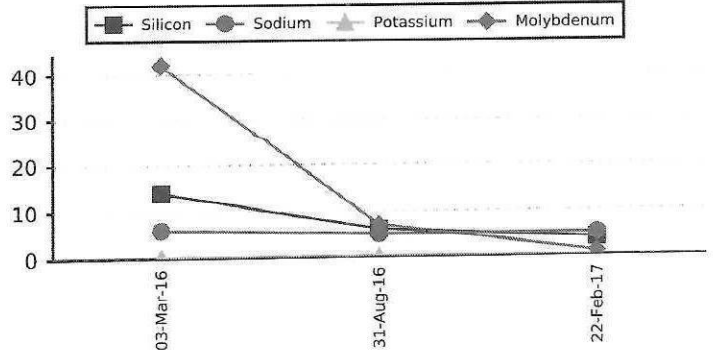
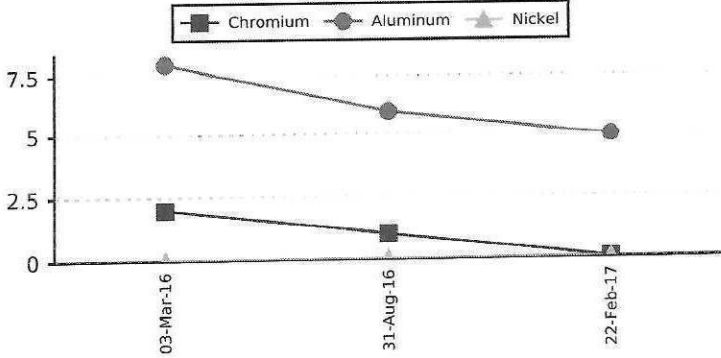
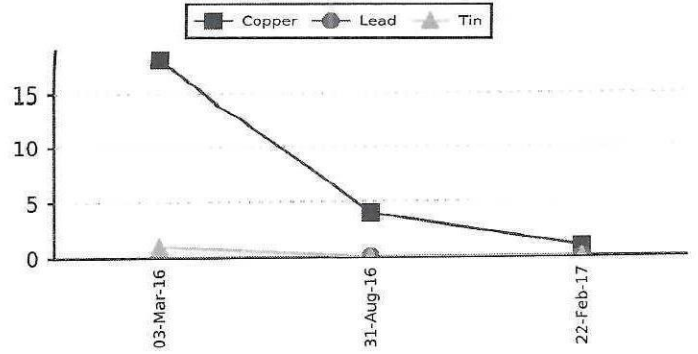
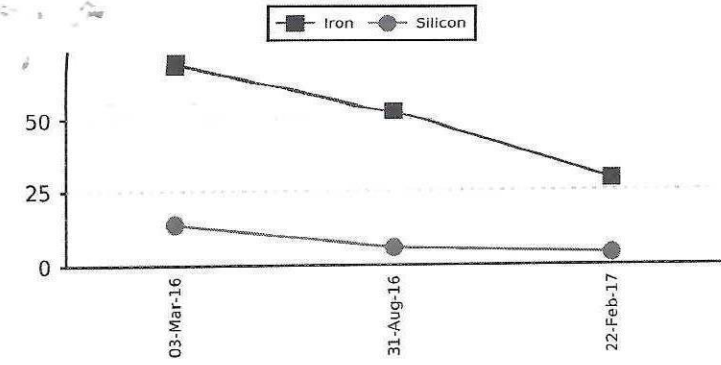
Sample #	Wear Metals (ppm)										Contaminant Metals (ppm)			Multi-Source Metals (ppm)					Additive Metals (ppm)					
	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
NL	2	0	0	1	0	0	0	0	0	0	5	4	0	0	0	0	0	0	81	10	2353	0	1033	1137
1	68	2	0	8	18	0	1	0	0	0	14	6	0	0	42	0	2	0	37	646	1406	4	835	955
2	53	1	0	6	4	0	0	0	0	0	6	5	0	0	7	0	0	0	54	99	2560	0	1057	1331
3	29	0	0	5	1	0	0	0	0	0	4	5	0	0	1	0	0	0	52	14	2319	0	976	1110

Sample #	Sample Information				Contaminants					Fluid Properties						
	Date Sampled	Date Received	Lube Time	Unit Time	Lube Change	Lube Added	Filter Change	Fuel Dilution	Soot	Water	Viscosity 40°C	Viscosity 100°C	Acid Number	Base Number	Oxidation	Nitration
			h	h		gal		% Vol	% Vol	% Vol	cSt	cSt	mg KOH/g	mg KOH/g	abs/cm	abs/0.1 mm
NL	17-Aug-2016	24-Aug-2016	0	0	No	0	No			<.1 - Hotplate		15.2		8.67		
1	03-Mar-2016	09-Mar-2016	436	436	Yes	0	Yes	0.4 - GC	0.2 - E2412	<.1 - FTIR		12.5		6.92	14	10
2	31-Aug-2016	09-Sep-2016	450	886	Yes	0	Yes	<1 - Estimate	0.9 - E2412	<.1 - FTIR		15.5		5.82	15	10
3	22-Feb-2017	06-Mar-2017	435	1321	Yes	0	Yes	<1 - Estimate	0.1 - E2412	<.1 - FTIR		16.2		7.19	13	8

Sample #	Particle Count (particles/mL)										Test Method
	ISO Code	> 4 µm	> 6 µm	> 10 µm	> 14 µm	> 21 µm	> 38 µm	> 70 µm	> 100 µm		
NL	//										
1	//										
2	//										
3	//										

Comments are advisory only and are based on the assumption that the sample and data submitted are valid. Missing fluid or component information limits the evaluation. No warranty is expressed or implied.

Historical Comments	1	Flagged data does not indicate an immediate need for maintenance action. Continue to observe the trend and monitor equipment and fluid conditions. Cylinder region metals (pistons, rings, liners etc.) are at a MODERATE LEVEL; Flagged <i>additive levels are different than what should be present for the lubricant identified for this component. This does not imply that the lubricant does not meet proper API, SAE, or ISO classifications. Lubricant and filter change acknowledged.</i>
	2	Flagged data does not indicate an immediate need for maintenance action. Continue to observe the trend and monitor equipment and fluid conditions. Iron is at a MINOR LEVEL. IRON SOURCES in engines can be cylinder liners, iron pistons, hardened steel camshafts, crankshafts, gears, hardened rocker arms, valve bridges, alloyed steel cam follower rollers, etc. Magnesium is slightly high for this lubricant. Lubricant and filter change acknowledged.





WORK ORDER

DATE CREATED: 8/23/2016 BY: _____ UNIT #: 331

MAKE / MODEL 2015 Cat 303.5E2 MILEAGE: _____ HRS: 886
865

*****CIRCLE ONE*****

CHANGE OIL SERVICE TRANS REPLACE TIRES REPLACE BRAKES REPAIR

DESCRIPTION OF PROBLEM

DUE NOW: Needs Engine service

ACTION TAKEN BY: Zack H. / John K. DATE COMPLETED: 8/30/16

DESCRIPTION OF ACTION TAKEN

*Filters: All CAT filters.

- Took Eng. oil sample
- Changed Eng. oil & filter
- Changed fuel filter
- Changed outer Air filter
- Checked Inner Air filter — good
- Checked Coolant level — good
- Checked Hydro. oil level — good
- Checked final Drive oil levels — good

- Checked Track Slack — good
- Washed Out Eng. Compartments
- Greased Machine



Lubricant Analysis Report

North America: +1-877-808-3750

0	1	2	3	4
NORMAL	ABNORMAL	ABNORMAL	ABNORMAL	CRITICAL

Overall report severity based on comments.

Account Information		Component Information		Sample Information	
Account Number: 704500-0000-0000 Company Name: RESOURCE MANAGEMENT COMPANY Contact: BRENT JOHNSON Address: 3108 BRANDAU ROAD HERMITAGE, TN 37076 US Phone Number: 615-885-8903/615-456-2160		Component ID: 331 E Secondary ID: CAT 303.5 Component Type: DIESEL ENGINE Manufacturer: CATERPILLAR Model: C18 Application: OFF-HIGHWAY Sump Capacity: 2 gal		Tracking Number: 16237R02934 Lab Number: I-639711 Lab Location: Indianapolis Data Analyst: RNM Sampled: 31-Aug-2016 Submitted: 31-Aug-2016 Received: 09-Sep-2016 Completed: 13-Sep-2016	
Filter Information		Miscellaneous Information		Product Information	
Filter Type: FULLFLOW Micron Rating: 40				Product Manufacturer: PETRO-CANADA Product Name: DURON E XL SYNTHETIC BLEND Viscosity Grade: SAE 15W40	
Comments	Flagged data does not indicate an immediate need for maintenance action. Continue to observe the trend and monitor equipment and fluid conditions. Iron is at a MINOR LEVEL. IRON SOURCES in engines can be cylinder liners, iron pistons, hardened steel camshafts, crankshafts, gears, hardened rocker arms, valve bridges, alloyed steel cam follower rollers, etc. Magnesium is slightly high for this lubricant. Lubricant and filter change acknowledged.				

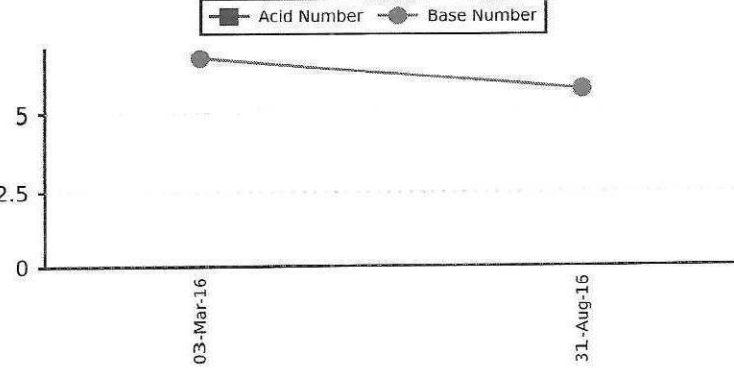
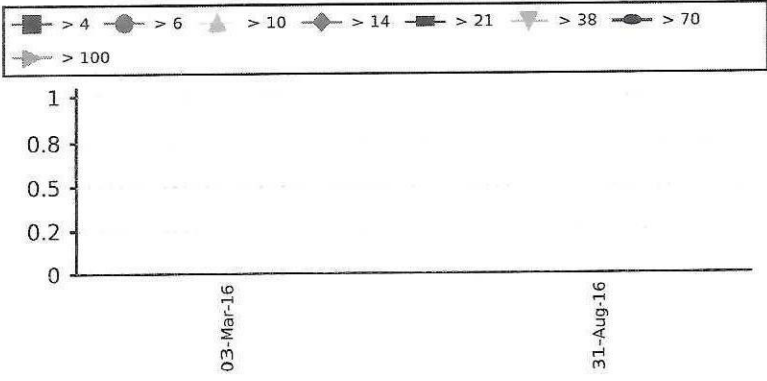
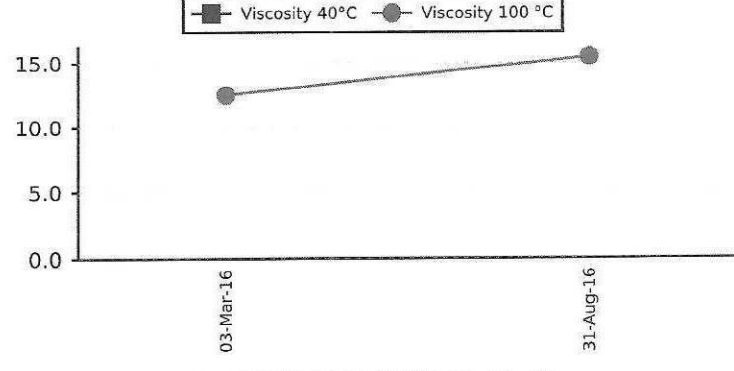
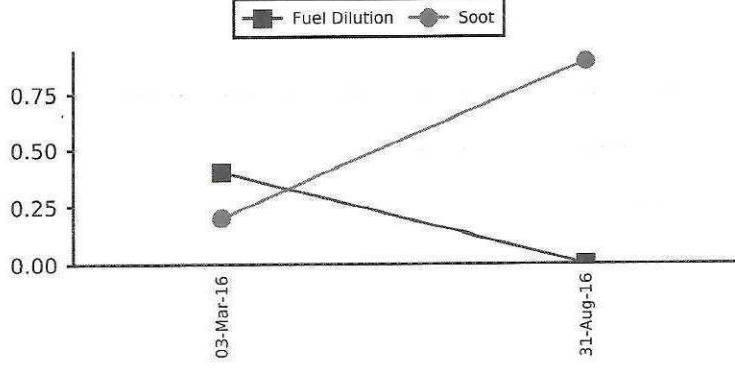
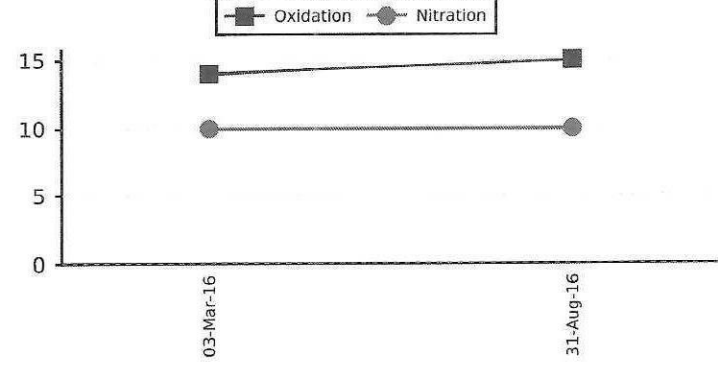
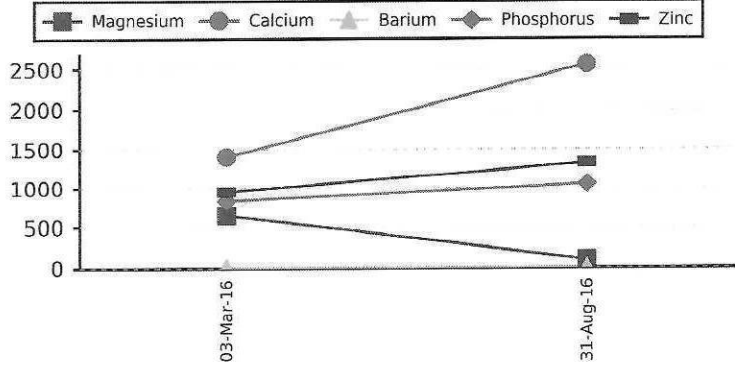
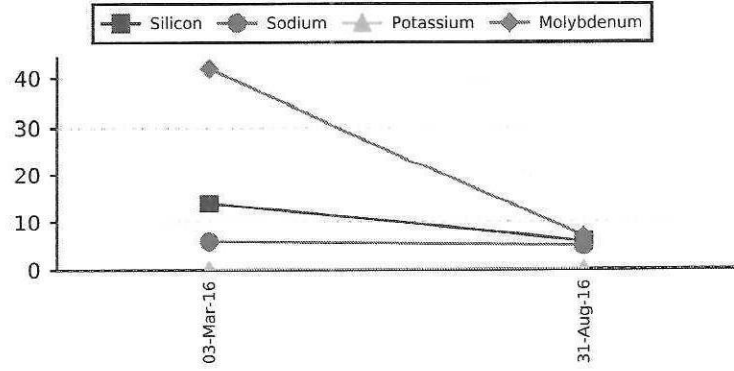
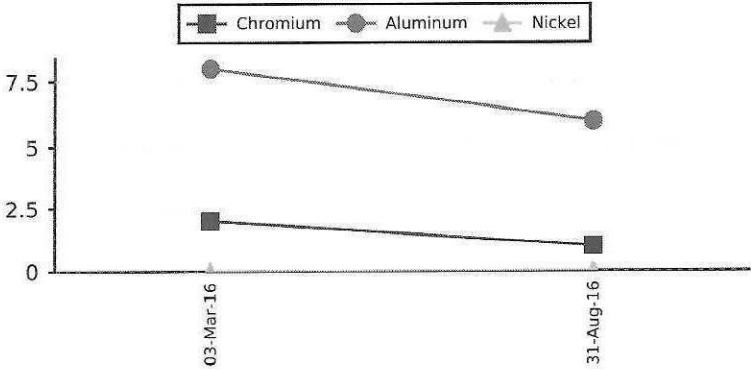
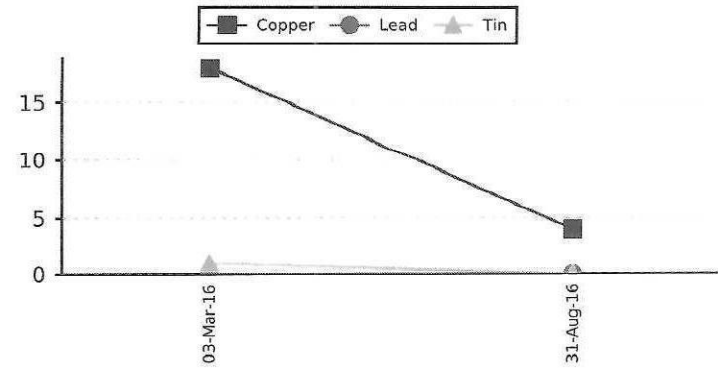
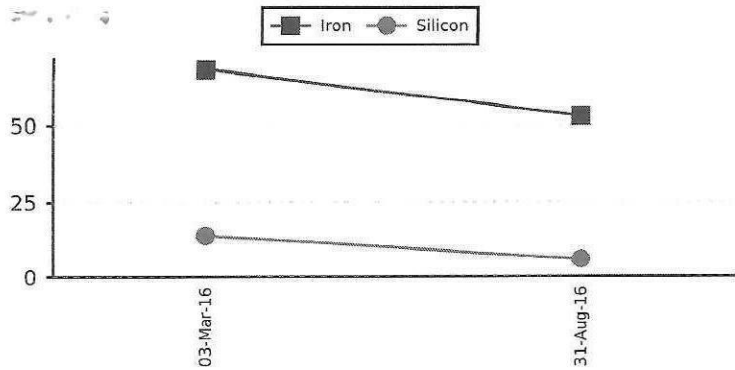
Sample #	Wear Metals (ppm)										Contaminant Metals (ppm)			Multi-Source Metals (ppm)					Additive Metals (ppm)					
	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
NL	2	0	0	1	0	0	0	0	0	0	5	4	0	0	0	0	0	0	81	10	2353	0	1033	1137
1	68	2	0	8	18	0	1	0	0	0	14	6	0	0	42	0	2	0	37	646	1406	4	835	955
2	53	1	0	6	4	0	0	0	0	0	6	5	0	0	7	0	0	0	54	99	2560	0	1057	1331

Sample #	Sample Information								Contaminants			Fluid Properties					
	Date Sampled	Date Received	Lube Time	Unit Time	Lube Change	Lube Added	Filter Change	Fuel Dilution	Soot	Water	Viscosity 40°C	Viscosity 100 °C	Acid Number	Base Number	Oxidation	Nitration	
			h	h		gal		% Vol	% Vol	% Vol	cSt	cSt	mg KOH/g	mg KOH/g	abs/cm	abs/0.1 mm	
NL	17-Aug-2016	24-Aug-2016	0	0	No	0	No			<.1 - Hotplate		15.2		8.67			
1	03-Mar-2016	09-Mar-2016	436	436	Yes	0	Yes	0.4 - GC	0.2 - E2412	<.1 - FTIR		12.5		6.92	14	10	
2	31-Aug-2016	09-Sep-2016	450	886	Yes	0	Yes	<1 - Estimate	0.9 - E2412	<.1 - FTIR		15.5		5.82	15	10	

Sample #	Particle Count (particles/mL)										Additional Testing	
	ISO Code	> 4 µm	> 6 µm	> 10 µm	> 14 µm	> 21 µm	> 38 µm	> 70 µm	> 100 µm	Test Method		
NL	//											
1	//											
2	//											

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Historical Comments	1	Flagged data does not indicate an immediate need for maintenance action. Continue to observe the trend and monitor equipment and fluid conditions. Cylinder region metals (pistons, rings, liners etc.) are at a MODERATE LEVEL; Flagged additive levels are different than what should be present for the lubricant identified for this component. This does not imply that the lubricant does not meet proper API, SAE, or ISO classifications. Lubricant and filter change acknowledged.
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WORK ORDER

DATE CREATED: 2/26/2016 BY: DENNIS JENNINGS UNIT #: 331

MAKE / MODEL 2015 Cat 303.5E2 MILEAGE: _____ HRS: 436

428

CIRCLE ONE

CHANGE OIL SERVICE TRANS REPLACE TIRES REPLACE BRAKES REPAIR

DESCRIPTION OF PROBLEM

DUE NOW: Needs initial 500 service

DUE NOW: Engine Service

DUE NOW: Change Final Drive Oil use 80w90 Oil

DUE NOW: Change Hydraulic Oil Filter use 15w40 oil for top off

ACTION TAKEN BY: Zack H./John K. DATE COMPLETED: 3/2/16

DESCRIPTION OF ACTION TAKEN

Took Eng. Oil Sample

Changed Eng. Oil + filter

Changed fuel filter

Changed both Air filters

Greased Machine

Changed Final Drive oils

Checked Coolant level — good

Changed Hydro. oil filters

*filters: oil — 377-6969

fuel — 156-1200

air — 415-2592

415-2593

Hydro. — 421-5481

(CAT)

Checked Hydro. oil level — good

Checked Track Slack — good



Lubricant Analysis Report

North America: +1-877-808-3750

0	1	2	3	4
NORMAL		ABNORMAL		CRITICAL

Overall report severity based on comments.

Account Information		Component Information		Sample Information	
Account Number: 704500-0000-0000 Company Name: RESOURCE MANAGEMENT COMPANY Contact: BRENT JOHNSON Address: 3108 BRANDAU ROAD HERMITAGE, TN 37076 US Phone Number: 615-885-8903/615-456-2160		Component ID: 331 E Secondary ID: CAT 303.5 Component Type: DIESEL ENGINE Manufacturer: CATERPILLAR Model: C18 Application: OFF-HIGHWAY Sump Capacity: 2 gal		Tracking Number: 16008C06009 Lab Number: I-290299 Lab Location: Indianapolis Data Analyst: RMF Sampled: 03-Mar-2016 Submitted: 03-Mar-2016 Received: 09-Mar-2016 Completed: 10-Mar-2016	
Filter Information		Miscellaneous Information		Product Information	
Filter Type: FULLFLOW Micron Rating: 40				Product Manufacturer: PETRO-CANADA Product Name: DURON E XL SYNTHETIC BLEND Viscosity Grade: SAE 15W40	
Comments	Flagged data does not indicate an immediate need for maintenance action. Continue to observe the trend and monitor equipment and fluid conditions. Cylinder region metals (pistons, rings, liners etc.) are at a MODERATE LEVEL; Flagged additive levels are different than what should be present for the lubricant identified for this component. This does not imply that the lubricant does not meet proper API, SAE, or ISO classifications. Lubricant and filter change acknowledged.				

Sample #	Wear Metals (ppm)										Contaminant Metals (ppm)			Multi-Source Metals (ppm)					Additive Metals (ppm)					
	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorous	Zinc
NL	1	0	0	2	0	0	0	0	0	0	5	2	2	0	0	0	0	0	75	11	2142	0	986	1059
1	68	2	0	8	18	0	1	0	0	0	14	6	0	0	42	0	2	0	37	646	1406	4	835	955

Sample #	Sample Information								Contaminants			Fluid Properties					
	Date Sampled	Date Received	Lube Time	Unit Time	Lube Change	Lube Added	Filter Change	Fuel Dilution	Soot	Water	Viscosity 40°C	Viscosity 100 °C	Acid Number	Base Number	Oxidation	Nitration	
			h	h		gal		% Vol	% Vol	% Vol	cSt	cSt	mg KOH/g	mg KOH/g	abs/cm	abs/0.1 mm	
NL	19-Feb-2015	26-Feb-2015	0	0	No	0	Unk										
1	03-Mar-2016	09-Mar-2016	436	436	Yes	0	Yes	0.4 - GC	0.2 - E2412	<.1 - FTIR		12.5		6.92	14	10	

Sample #	Particle Count (particles/mL)										Additional Testing	
	ISO Code	> 4 µm	> 6 µm	> 10 µm	> 14 µm	> 21 µm	> 38 µm	> 70 µm	> 100 µm	Test Method		
NL	//											
1	//											

Comments are advisory only and are based on the assumption that the sample and data submitted are valid. Missing fluid or component information limits the evaluation. No warranty is expressed or implied.

Historical Comments