

Lubricant Analysis Report

North America: +1-800-642-0085

0	1	2	3	4
NORMAL	ABNORMAL	ABNORMAL	ABNORMAL	CRITICAL

Overall report severity based on comments.

Account Information		Component Information		Sample Information	
Account Number: NPOWER-0400-0174 Company Name: WADENA TRUCK & TRAILER REPAIR Contact: MARK Address: P.O. BOX 21 WADENA, MN 56482 US Phone Number: 218-631-4332		Unit #: 1100 E Eng. Serial#: F12055 2KS12411 Component Type: DIESEL ENGINE Manufacturer: CATERPILLAR Model: C12 Application: O-T-R TRUCKING Sump Capacity: 0 gal		Tracking Number: 15043V05176 Lab Number: I-737543 Lab Location: Indianapolis Data Analyst: AC Sampled: 21-May-2015 Received: 29-May-2015 Completed: 03-Jun-2015	
Filter Information		Miscellaneous Information		Product Information	
Filter Type: Missing Information Micron Rating: 0				Product Manufacturer: CENEX Product Name: MAXTRON 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. Infrared results indicate beginning lube oxidation; Potassium is at a MINOR LEVEL; Potassium sources: coolant (antifreeze), lube additive or supplement, solder flux, coating on new bearings, rust preventive coating, or environmental. LEAD is at a MINOR LEVEL and may be OVERLAY METAL from MAIN/ROD BEARINGS; Lubricant and filter change acknowledged.				

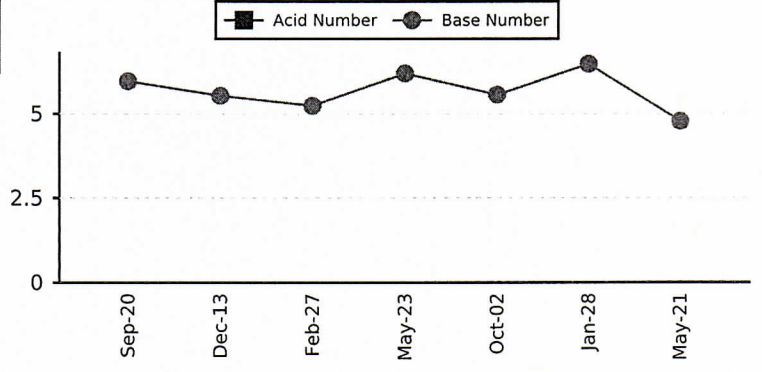
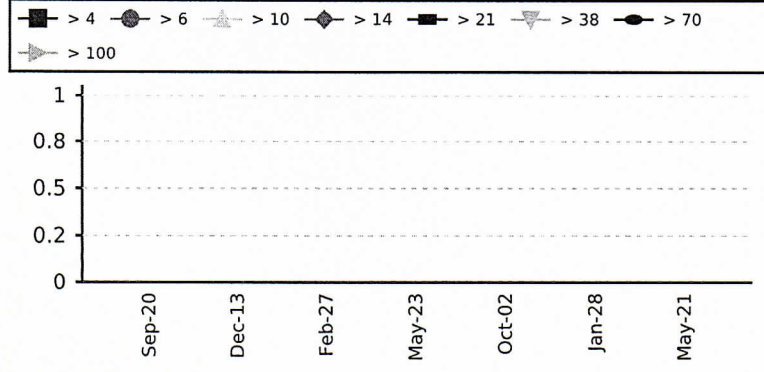
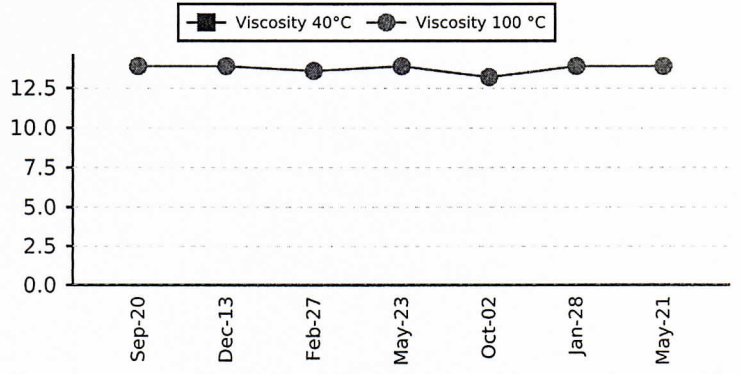
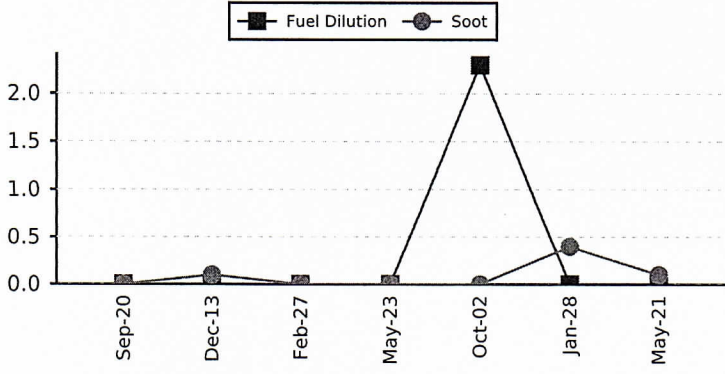
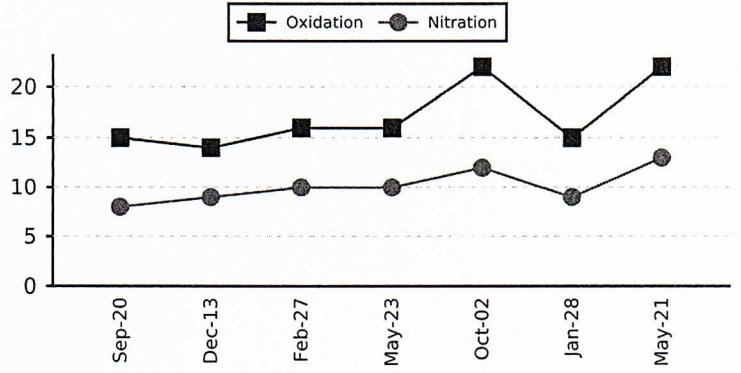
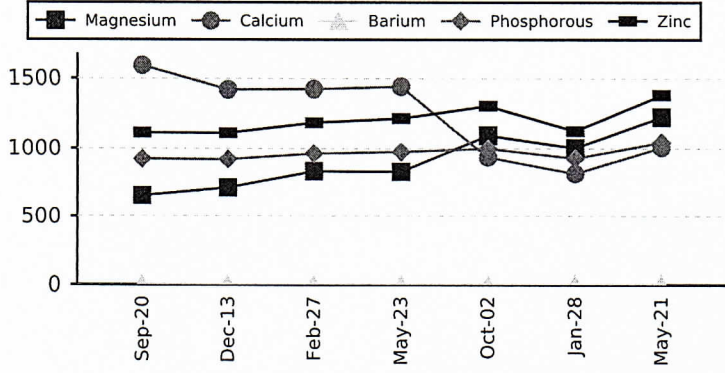
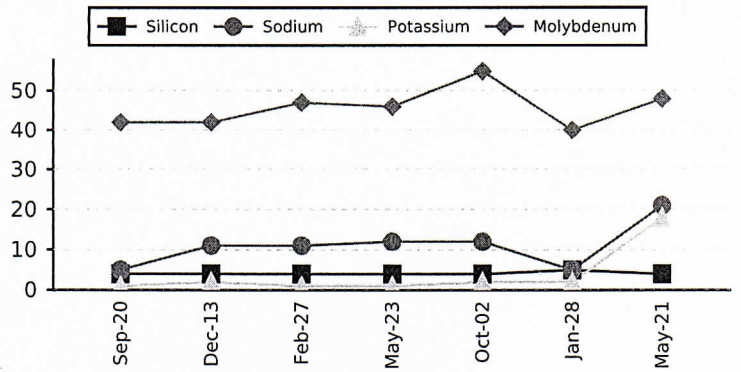
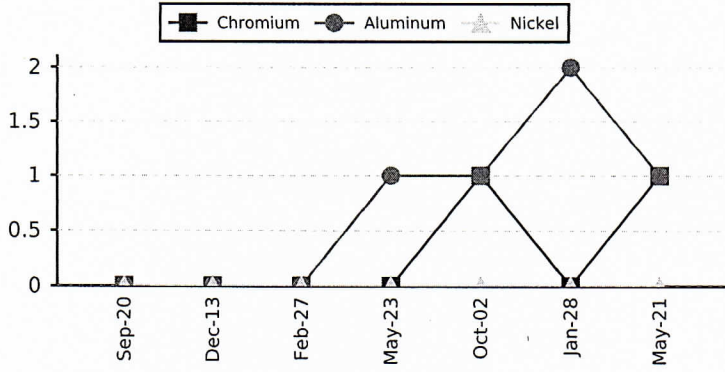
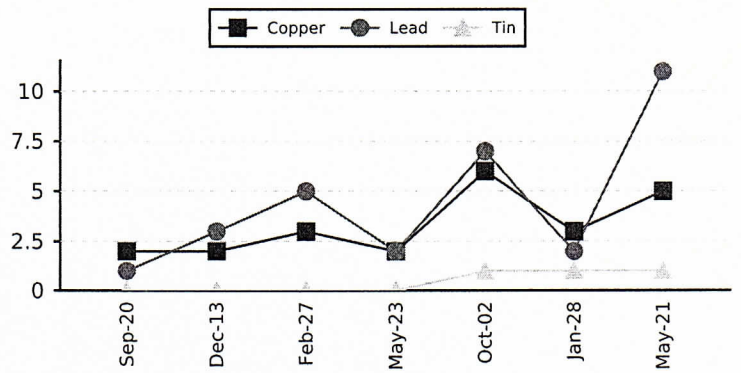
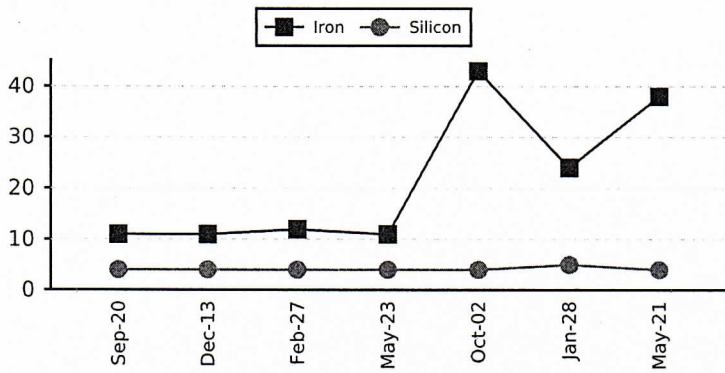
Sample #	Wear Metals (ppm)										Contaminant Metals (ppm)			Multi-Source Metals (ppm)					Additive Metals (ppm)					
	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorous	Zinc
3	12	0	0	0	3	5	0	0	0	0	4	11	1	0	47	2	0	0	25	832	1424	0	962	1185
4	11	0	0	1	2	2	0	0	0	0	4	12	1	0	46	0	0	0	24	828	1441	0	974	1215
5	43	1	0	1	6	7	1	0	0	0	4	12	2	0	55	18	0	0	19	1093	935	0	998	1305
6	24	0	0	2	3	2	1	0	0	0	5	5	2	0	40	17	0	0	26	1002	814	0	926	1124
7	38	1	0	1	5	11	1	0	1	0	4	21	18	0	48	23	0	0	17	1225	1006	0	1044	1382

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
			mi	mi	Lube Change	gal	Filter Change	% Vol	% Vol	% Vol	cSt	cSt	mg KOH/g	mg KOH/g	abs/cm	abs/0.1 mm
3	27-Feb-2013	04-Mar-2013	13590	948724	Yes	2	Yes	<1 - Estimate	<.1	<.1 - FTIR		13.6		5.25	16	10
4	23-May-2013	29-May-2013	14850	463574	Yes	0	Yes	<1 - Estimate	<.1	<.1 - FTIR		13.9		6.23	16	10
5	02-Oct-2014	09-Oct-2014	28107	1020651	Yes	5	Yes	2.3 - GC	<.1	<.1 - FTIR		13.2		5.58	22	12
6	28-Jan-2015	04-Feb-2015	15000	1035347	No	0	No	<1 - Estimate	0.4 - FTIR	<.1 - FTIR		13.9		6.51	15	9
7	21-May-2015	29-May-2015	29905	1050556	Yes	5	Yes	<1 - Estimate	0.1 - FTIR	<.1 - FTIR		13.9		4.78	22	13

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	
3	//										
4	//										
5	//										
6	//										
7	//										

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	3	Data indicates no abnormal findings. Resample at normal interval. Lubricant and filter change acknowledged.
	4	Data indicates no abnormal findings. Resample at normal interval. Unit hours/miles/kilometers conflicts with time from previous sample; Lubricant and filter change acknowledged.
	5	Flagged data does not indicate an immediate need for maintenance action. Continue to observe the trend and monitor equipment and fluid conditions. FUEL DILUTION is at a MINOR LEVEL. FUEL DILUTION possibly caused by excessive idling; Infrared results indicate beginning lube oxidation; 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. Lubricant and filter change acknowledged.
	6	Data indicates no abnormal findings. Resample at normal interval.





NPower

Lubricant Analysis Report

North America: +1-800-642-0085

0	1	2	3	4
NORMAL		ABNORMAL		CRITICAL

Overall report severity based on comments.

Account Information	Component Information	Sample Information
Account Number: NPOWER-0400-0174 Company Name: WADENA TRUCK & TRAILER REPAIR Contact: MARK Address: P.O. BOX 21 WADENA, MN 56482 US Phone Number: 218-631-4332	Unit #: 1100 E Eng. Serial#: F12055 2KS12411 Component Type: DIESEL ENGINE Manufacturer: CATERPILLAR Model: C12 Application: O-T-R TRUCKING Sump Capacity: 0 gal	Tracking Number: 13236V02586 Lab Number: I-510720 Lab Location: Indianapolis Data Analyst: FLG Sampled: 28-Jan-2015 Received: 04-Feb-2015 Completed: 05-Feb-2015
Filter Information	Miscellaneous Information	Product Information
Filter Type: Missing Information Micron Rating: 0		Product Manufacturer: CENEX Product Name: MAXTRON Viscosity Grade: SAE 15W40
Comments Data indicates no abnormal findings. Resample at normal interval.		

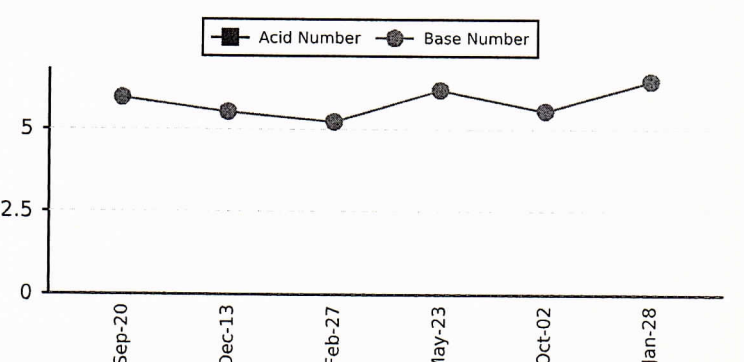
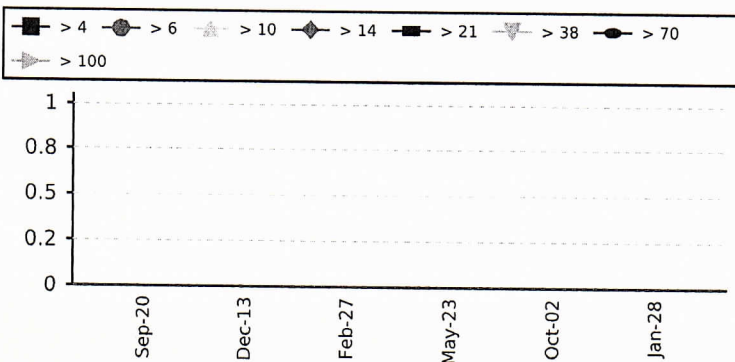
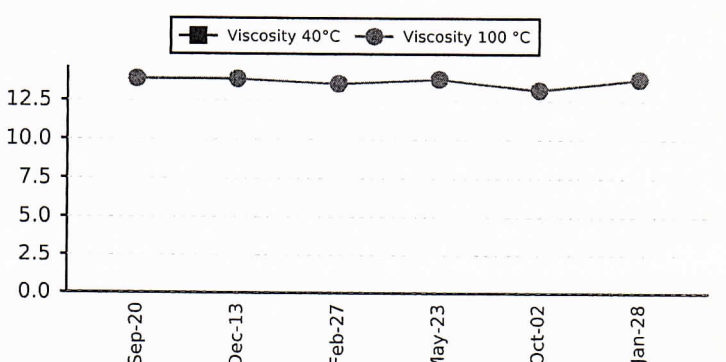
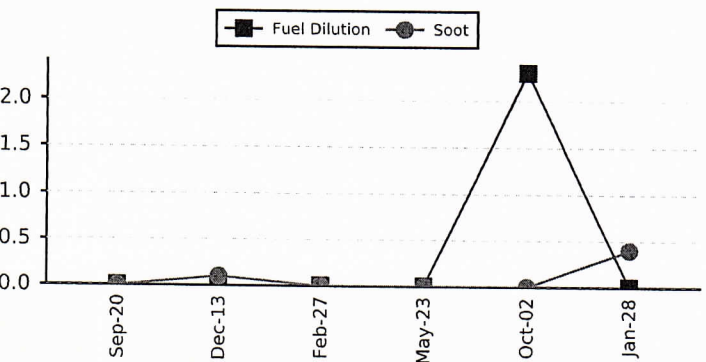
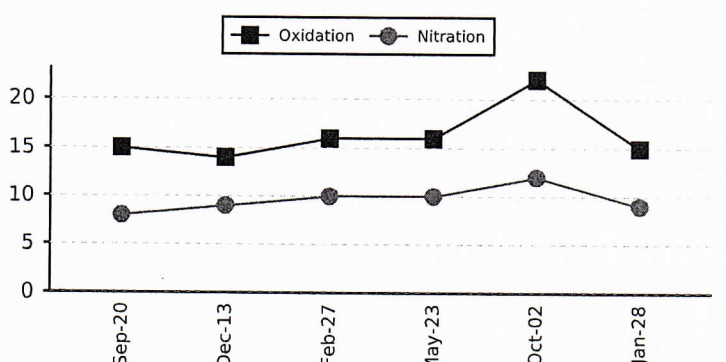
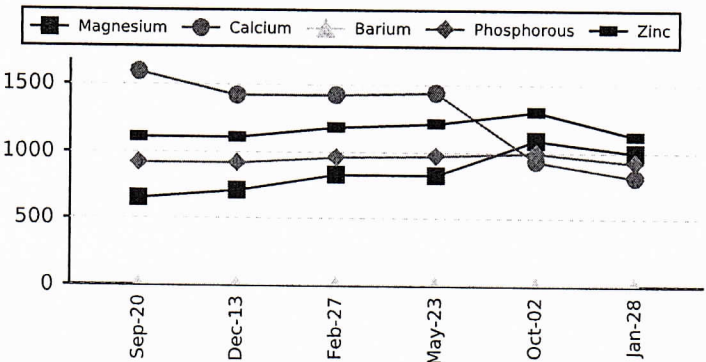
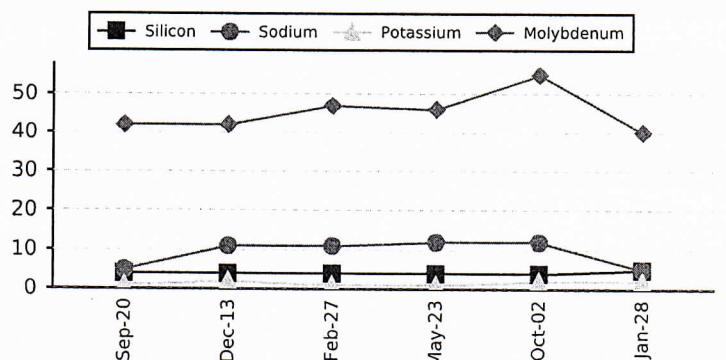
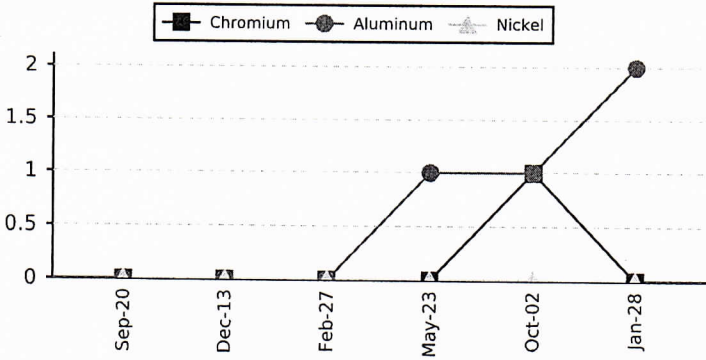
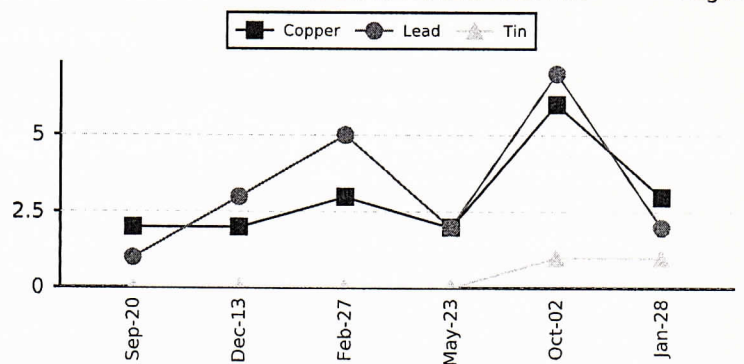
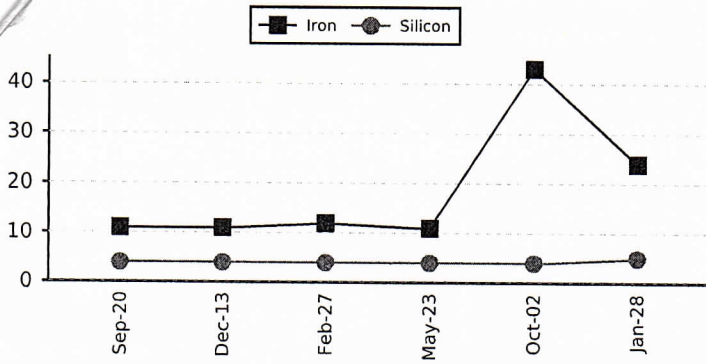
Sample #	Wear Metals (ppm)										Contaminant Metals (ppm)			Multi-Source Metals (ppm)					Additive Metals (ppm)					
	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorous	Zinc
2	11	0	0	0	2	3	0	0	0	0	4	11	2	0	42	0	0	0	22	711	1420	0	919	1111
3	12	0	0	0	3	5	0	0	0	0	4	11	1	0	47	2	0	0	25	832	1424	0	962	1185
4	11	0	0	1	2	2	0	0	0	0	4	12	1	0	46	0	0	0	24	828	1441	0	974	1215
5	43	1	0	1	6	7	1	0	0	0	4	12	2	0	55	18	0	0	19	1093	935	0	998	1305
6	24	0	0	2	3	2	1	0	0	0	5	5	2	0	40	17	0	0	26	1002	814	0	926	1124

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	
			mi	mi		gal		% Vol	% Vol	% Vol	cSt	cSt	mg KOH/g	mg KOH/g	abs/cm	abs/0.1 mm	
2	13-Dec-2012	20-Dec-2012	15940	935134	Yes	1	Yes	<1 - Estimate	0.1 - FTIR	<.1 - FTIR		13.9		5.55	14	9	
3	27-Feb-2013	04-Mar-2013	13590	948724	Yes	2	Yes	<1 - Estimate	<.1	<.1 - FTIR		13.6		5.25	16	10	
4	23-May-2013	29-May-2013	14850	463574	Yes	0	Yes	<1 - Estimate	<.1	<.1 - FTIR		13.9		6.23	16	10	
5	02-Oct-2014	09-Oct-2014	28107	1020651	Yes	5	Yes	2.3 - GC	<.1	<.1 - FTIR		13.2		5.58	22	12	
6	28-Jan-2015	04-Feb-2015	15000	1035347	No	0	No	<1 - Estimate	0.4 - FTIR	<.1 - FTIR		13.9		6.51	15	9	

Sample #	Particle Count (particles/mL)										Additional Testing
	ISO Code Based On 4/6/14	> 4 µm	> 6 µm	> 10 µm	> 14 µm	> 21 µm	> 38 µm	> 70 µm	> 100 µm	Test Method	
2	//										
3	//										
4	//										
5	//										
6	//										

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	2	Data indicates no abnormal findings. Resample at normal interval. Lubricant and filter change acknowledged.
	3	Data indicates no abnormal findings. Resample at normal interval. Lubricant and filter change acknowledged.
	4	Data indicates no abnormal findings. Resample at normal interval. Unit hours/miles/kilometers conflicts with time from previous sample; Lubricant and filter change acknowledged.
		Flagged data does not indicate an immediate need for maintenance action. Continue to observe the trend and monitor equipment and fluid conditions. FUEL DILUTION is at a MINOR LEVEL. FUEL DILUTION possibly caused by excessive idling;
	5	Infrared results indicate beginning lube oxidation; 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. Lubricant and filter change acknowledged.





0	1	2	3	4
NORMAL		ABNORMAL		CRITICAL

Overall report severity based on comments.

Account Information	Component Information	Sample Information
Account Number: NPOWER-0400-0174 Company Name: WADENA TRUCK & TRAILER REPAIR Contact: MARK Address: P.O. BOX 21 WADENA, MN 56482 US Phone Number: 218-631-4332	Component ID: 1100 E Secondary ID: F12055 2KS12411 Component Type: DIESEL ENGINE Manufacturer: CATERPILLAR Model: C12 Application: O-T-R TRUCKING Sump Capacity: 0 gal	Tracking Number: 14228M02448 Lab Number: I-300446 Lab Location: Indianapolis Data Analyst: KM Sampled: 02-Oct-2014 Received: 09-Oct-2014 Completed: 10-Oct-2014

Filter Information	Miscellaneous Information	Product Information
Filter Type: Missing Information Micron Rating: 0		Product Manufacturer: CENEX Product Name: MAXTRON 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. FUEL DILUTION is at a MINOR LEVEL. FUEL DILUTION possibly caused by excessive idling; Infrared results indicate beginning lube oxidation; 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. 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
1	11	0	0	0	2	1	0	0	0	0	4	5	1	0	42	0	0	0	35	652	1592	0	922	1113
2	11	0	0	0	2	3	0	0	0	0	4	11	2	0	42	0	0	0	22	711	1420	0	919	1111
3	12	0	0	0	3	5	0	0	0	0	4	11	1	0	47	2	0	0	25	832	1424	0	962	1185
4	11	0	0	1	2	2	0	0	0	0	4	12	1	0	46	0	0	0	24	828	1441	0	974	1215
5	43	1	0	1	6	7	1	0	0	0	4	12	2	0	55	18	0	0	19	1093	935	0	998	1305

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	
			mi	mi		gal		% Vol	% Vol	% Vol	cSt	cSt	mg KOH/g	mg KOH/g	abs/cm	abs/0.1 mm	
1	20-Sep-2012	01-Oct-2012	14547	919194	Yes		Yes	<1 - Estimate	<.1	<.1 - FTIR		13.9		5.99	15	8	
2	13-Dec-2012	20-Dec-2012	15940	935134	Yes	1	Yes	<1 - Estimate	0.1 - FTIR	<.1 - FTIR		13.9		5.55	14	9	
3	27-Feb-2013	04-Mar-2013	13590	948724	Yes	2	Yes	<1 - Estimate	<.1	<.1 - FTIR		13.6		5.25	16	10	
4	23-May-2013	29-May-2013	14850	463574	Yes	0	Yes	<1 - Estimate	<.1	<.1 - FTIR		13.9		6.23	16	10	
5	02-Oct-2014	09-Oct-2014	28107	1020651	Yes	5	Yes	2.3 - GC	<.1	<.1 - FTIR		13.2		5.58	22	12	

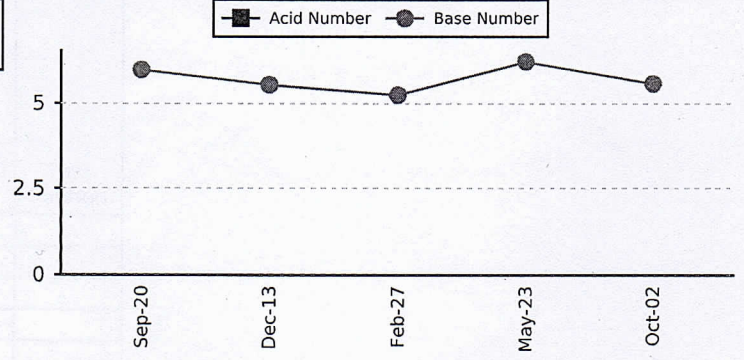
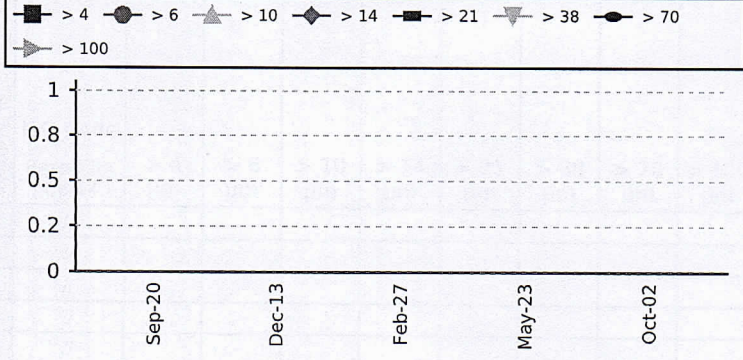
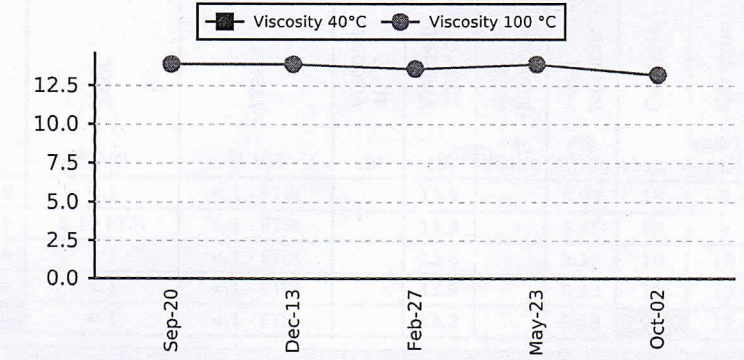
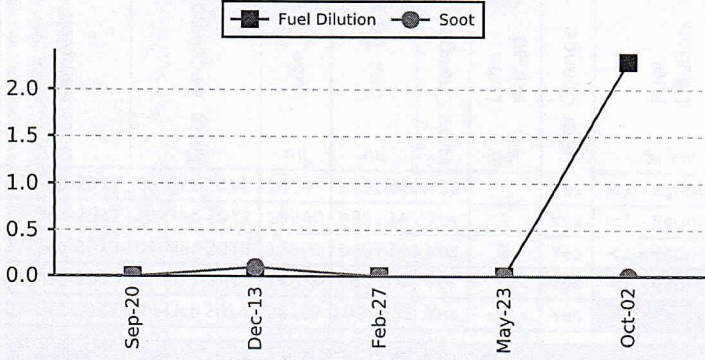
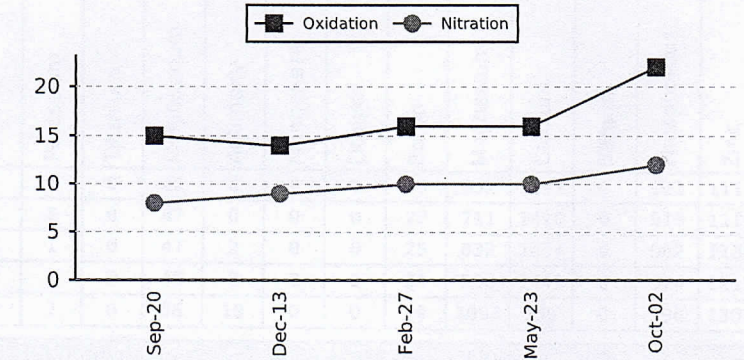
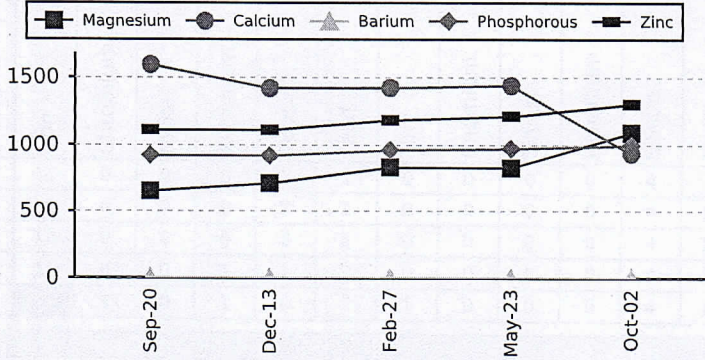
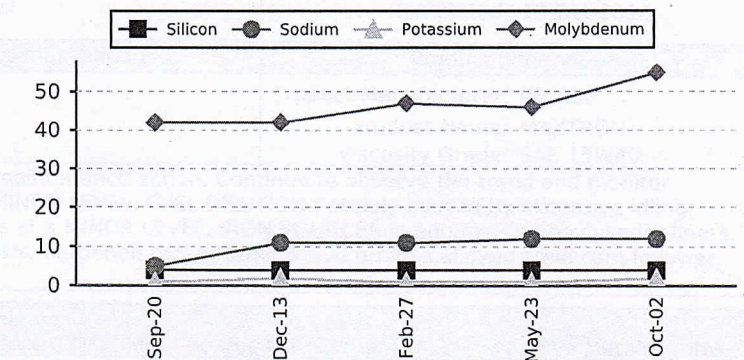
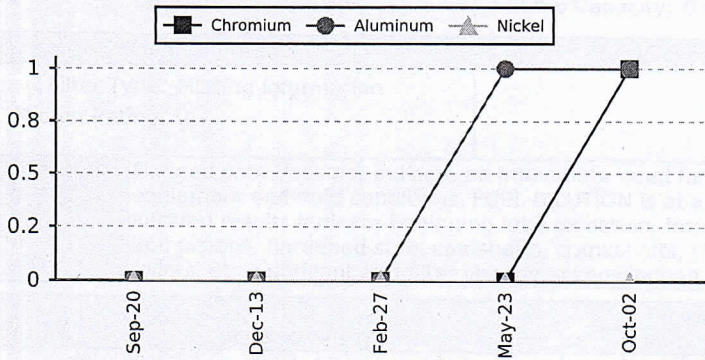
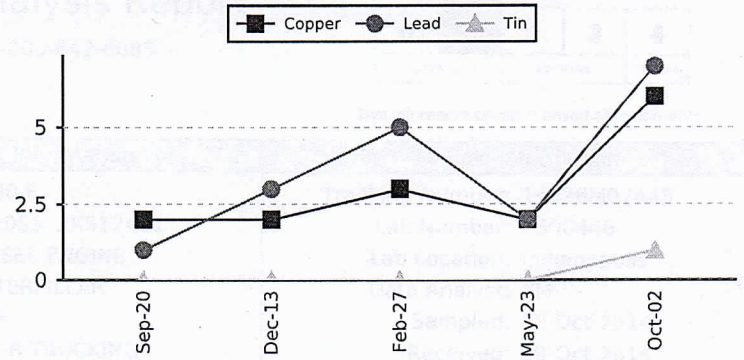
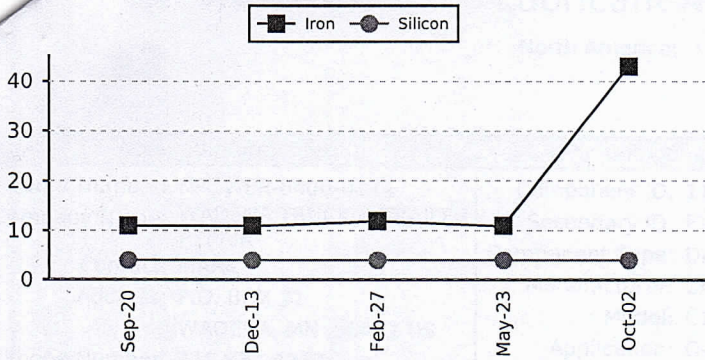
Sample #	Particle Count (particles/mL)										Additional Testing					
	ISO Code Based On 4/6/14	> 4 µm	> 6 µm	> 10 µm	> 14 µm	> 21 µm	> 38 µm	> 70 µm	> 100 µm	Test Method						
1	//															
2	//															
3	//															
4	//															
5	//															

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 Data indicates no abnormal findings. Resample at normal interval. Lubricant and filter change acknowledged.
- 2 Data indicates no abnormal findings. Resample at normal interval. Lubricant and filter change acknowledged.
- 3 Data indicates no abnormal findings. Resample at normal interval. Lubricant and filter change acknowledged.
- 4 Data indicates no abnormal findings. Resample at normal interval. Unit hours/miles/kilometers conflicts with time from previous sample; Lubricant and filter change acknowledged.







Lubricant Analysis Report

800-642-0085

0	1	2	3	4
NORMAL	ABNORMAL	ABNORMAL	ABNORMAL	CRITICAL

Overall report severity based on comments.

Account Information		Component Information		Sample Information	
Account Number: NPOWER-0400-0215 Company Name: WTR RDW Contact: MARK Address: PO BOX 21 WADENA, MN 56482 US Phone Number: 218-631-4332		Component ID: 1100 V#2KS12411 E Secondary ID: F12055 Component Type: DIESEL ENGINE Manufacturer: CATERPILLAR Model: C12 Application: TRANSPORTATION Sump Capacity: 40 qt		Tracking Number: 13302D00064 Lab Number: I-773653 Lab Location: Indianapolis Data Analyst: AC Sampled: 05-Dec-2013 Received: 13-Dec-2013 Completed: 20-Dec-2013	
Filter Information		Miscellaneous Information		Product Information	
Filter Type: Missing Information Micron Rating: 0				Product Manufacturer: CENEX Product Name: MAXTRON Viscosity Grade: SAE 5W40	
Comments	Flagged data does not indicate an immediate need for maintenance action. Continue to observe the trend and monitor equipment and fluid conditions. LEAD is at a MINOR LEVEL and may be OVERLAY METAL from MAIN/ROD BEARINGS;				

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
1	35	1	2	1	4	22	0	0	0	0	3	7	0	0	47	16	0	0	16	1063	1005	0	1130	1323

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		qt		% Vol	% Vol	% Vol	cSt	cSt	mg KOH/g	mg KOH/g	abs/cm	abs/0.1 mm	
1	05-Dec-2013	13-Dec-2013	28970	992544	Yes	3	Yes	<1 - Estimate	0.1 - FTIR	<.1 - FTIR		13.7		4.35	18	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		
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



NPower

Lubricant Analysis Report

800-642-0085

0	1	2	3	4
NORMAL	ABNORMAL		CRITICAL	

Overall report severity based on comments.

Account Information	Component Information	Sample Information
Account Number: NPOWER-0400-0174 Company Name: WADENA TRUCK & TRAILER REPAIR Contact: MARK Address: P.O. BOX 21 WADENA, MN 56482 US Phone Number: 218-631-4332	Unit #: 1100 E Eng. Serial#: F12055 2KS12411 Component Type: DIESEL ENGINE Manufacturer: CATERPILLAR Model: C12 Application: O-T-R TRUCKING Sump Capacity: 0 gal	Tracking Number: 13031L00214 Lab Number: I-252897 Lab Location: Indianapolis Data Analyst: FLG Sampled: 27-Feb-2013 Received: 04-Mar-2013 Completed: 05-Mar-2013
Filter Information	Miscellaneous Information	Product Information
Filter Type: Missing Information Micron Rating: 0	Work Order #:	Product Manufacturer: MOBIL Product Name: DELVAC SERIES 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	Phosphorous	Zinc
1	11	0	0	0	2	1	0	0	0	0	4	5	1	0	42	0	0	0	35	652	1592	0	922	1113
2	11	0	0	0	2	3	0	0	0	0	4	11	2	0	42	0	0	0	22	711	1420	0	919	1111
3	12	0	0	0	3	5	0	0	0	0	4	11	1	0	47	2	0	0	25	832	1424	0	962	1185

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
			mi	mi		gal		% Vol	% Vol	% Vol	cSt	cSt	mg KOH/g	mg KOH/g	abs/cm	abs/0.1 mm
1	20-Sep-2012	01-Oct-2012	14547	919194	Yes		Yes	<1 - Estimate	<.1	<.1 - FTIR		13.9		5.99	15	8
2	13-Dec-2012	20-Dec-2012	15940	935134	Yes	1	Yes	<1 - Estimate	0.1 - FTIR	<.1 - FTIR		13.9		5.55	14	9
3	27-Feb-2013	04-Mar-2013	13590	948724	Yes	2	Yes	<1 - Estimate	<.1	<.1 - FTIR		13.6		5.25	16	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	
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	Data indicates no abnormal findings. Resample at normal interval. Lubricant and filter change acknowledged;
	2	Data indicates no abnormal findings. Resample at normal interval. Lubricant and filter change acknowledged;

