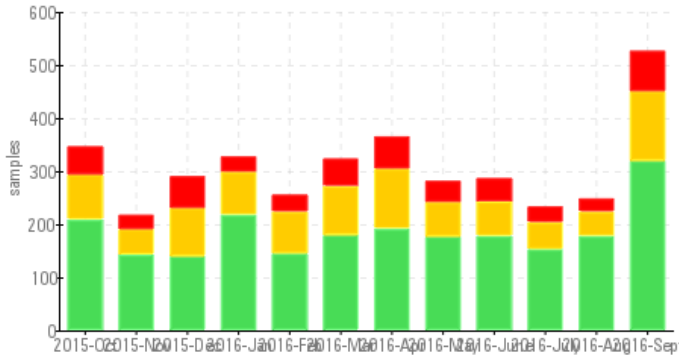
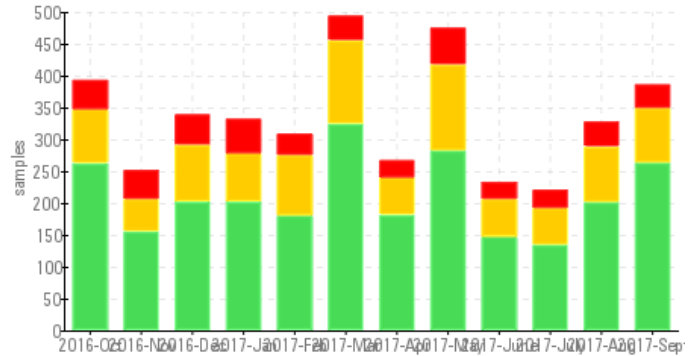


Date: September 29, 2017, 3:20 pm  
Generated By: Stephane Godere

**Previous Period - Sep 29 2015 - Sep 29 2016**



**Current Period - Sep 29 2016 - Sep 29 2017**

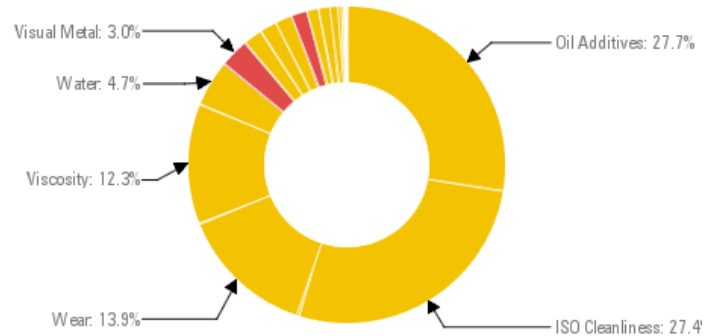
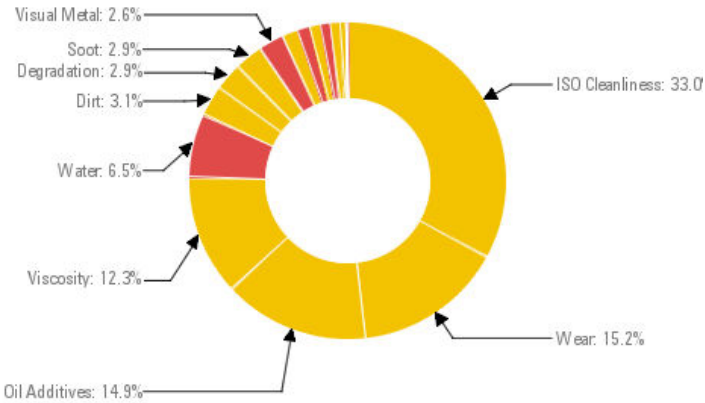


Sample Volume	Severe	Abnormal	Normal	Total	%	Severe	Abnormal	Normal	Total	%	Change
Oct	53	85	206	344	40.1	46	85	260	391	33.5	↓ -6.6%
Nov	27	48	140	215	34.9	46	51	153	250	38.8	↑ +3.9%
Dec	60	91	137	288	52.4	48	89	200	337	40.7	↓ -11.7%
Jan	29	81	215	325	33.8	54	76	200	330	39.4	↑ +5.6%
Feb	32	79	142	253	43.9	34	95	178	307	42.0	↓ -1.9%
Mar	52	92	177	321	44.9	39	131	322	492	34.6	↓ -10.3%
Apr	61	113	189	363	47.9	27	59	179	265	32.5	↓ -15.4%
May	40	65	174	279	37.6	58	135	280	473	40.8	↑ +3.2%
June	44	65	175	284	38.4	27	59	145	231	37.2	↓ -1.2%
July	30	51	150	231	35.1	29	58	132	219	39.7	↑ +4.6%
Aug	25	46	175	246	28.9	40	87	199	326	39.0	↑ +10.1%
Sept	76	131	317	524	39.5	37	86	261	384	32.0	↓ -7.5%
<b>Total Sample Volumes</b>	<b>529</b>	<b>947</b>	<b>2197</b>	<b>3673</b>	<b>40.2</b>	<b>485</b>	<b>1011</b>	<b>2509</b>	<b>4005</b>	<b>37.4</b>	<b>↓ -2.8%</b>

Date: September 29, 2017, 3:20 pm  
Generated By: Stephane Godere

**Previous Period - Sep 29 2015 - Sep 29 2016**

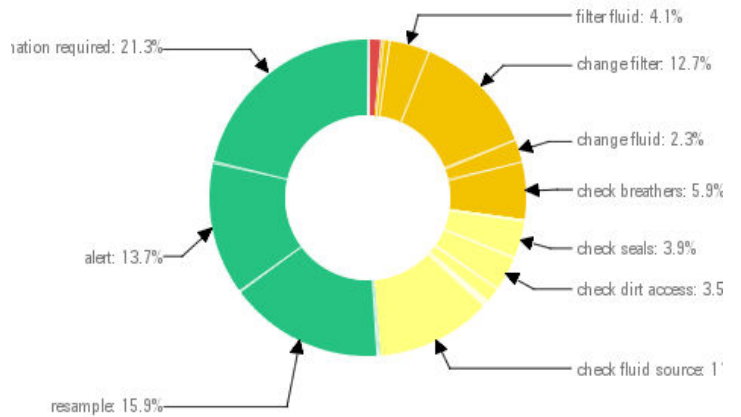
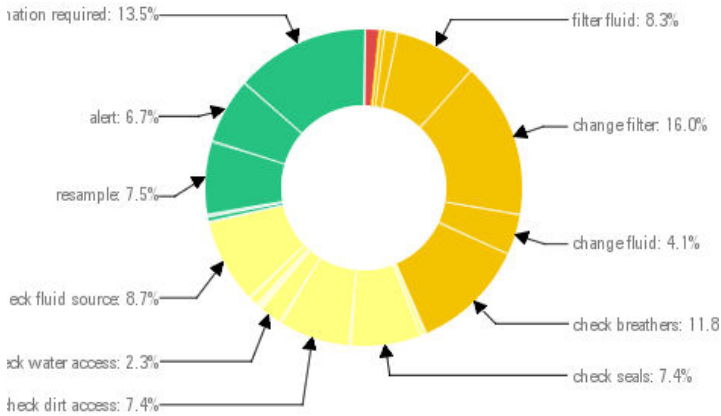
**Current Period - Sep 29 2016 - Sep 29 2017**



Problem	Severe	Abnormal	Total	%	Severe	Abnormal	Total	%	Change
Oil Additives	23	60	151	14.9	47	159	631	27.7	↑ +12.8%
ISO Cleanliness	150	185	335	33.0	214	411	625	27.4	↓ -5.6%
Wear	38	89	154	15.2	89	186	316	13.9	↓ -1.3%
Viscosity	27	86	125	12.3	46	199	280	12.3	0.0%
Water	38	28	66	6.5	44	64	108	4.7	↓ -1.8%
Visual Metal	13	13	26	2.6	36	32	68	3.0	↑ +0.4%
Degradation	11	15	29	2.9	17	27	44	1.9	↓ -1.0%
Dirt	9	22	31	3.1	12	27	39	1.7	↓ -1.4%
Visual Debris	7	6	13	1.3	18	21	39	1.7	↑ +0.4%
Contamination	9	1	10	1.0	20	17	37	1.6	↑ +0.6%
Glycol	2	14	16	1.6	2	24	27	1.2	↓ -0.4%
Soot	14	15	29	2.9	9	17	26	1.1	↓ -1.8%
Off Spec	5	6	11	1.1	6	12	18	0.8	↓ -0.3%
Fuel	2	8	10	1.0	1	7	8	0.4	↓ -0.6%
Wear Particles	1	0	1	0.1	1	4	6	0.3	↑ +0.2%
Sediment	0	0	0	0.0	2	1	3	0.1	↑ +0.1%
pH	0	6	6	0.6	1	1	2	0.1	↓ -0.5%
Combustion	0	1	1	0.1	0	1	1	0.0	↓ -0.1%
High level of insolubles	0	0	0	0.0	0	1	1	0.0	0.0%

**Previous Period - Sep 29 2015 - Sep 29 2016**

**Current Period - Sep 29 2016 - Sep 29 2017**



Action	Severe	Abnormal	Total	%	Severe	Abnormal	Total	%	Change
inspect wear source	2	0	2	0.1	6	0	6	0.1	0.0%
check for visual metal	11	12	23	1.5	36	28	64	1.3	↓ -0.2%
flush system	0	0	0	0.0	1	1	2	0.0	0.0%
service/change fluid	3	4	7	0.5	2	1	6	0.1	↓ -0.4%
water drain-off	20	0	20	1.3	29	1	30	0.6	↓ -0.7%
filter fluid	72	54	126	8.3	88	108	198	4.1	↓ -4.2%
change filter	77	164	241	16.0	186	423	615	12.7	↓ -3.3%
change fluid	32	30	62	4.1	47	64	111	2.3	↓ -1.8%
check breathers	144	34	178	11.8	201	84	286	5.9	↓ -5.9%
check glycol access	1	6	7	0.5	0	4	4	0.1	↓ -0.4%
check seals	94	18	112	7.4	138	50	188	3.9	↓ -3.5%
check dirt access	83	29	112	7.4	112	56	170	3.5	↓ -3.9%
check water access	16	19	35	2.3	27	53	80	1.7	↓ -0.6%
check	1	5	6	0.4	0	14	14	0.3	↓ -0.1%
check combustion	14	1	15	1.0	9	1	10	0.2	↓ -0.8%
check fluid source	12	55	132	8.7	37	123	575	11.9	↑ +3.2%
contact required	1	7	8	0.5	3	3	6	0.1	↓ -0.4%
monitor	3	0	3	0.2	5	0	5	0.1	↓ -0.1%
resample	32	80	113	7.5	262	501	770	15.9	↑ +8.4%
alert	43	51	101	6.7	73	220	662	13.7	↑ +7.0%
information required	71	91	204	13.5	111	291	1030	21.3	↑ +7.8%
check cooling system	0	2	2	0.1	0	0	0	0.0	↓ -0.1%
check for overheating	0	1	1	0.1	0	0	0	0.0	↓ -0.1%

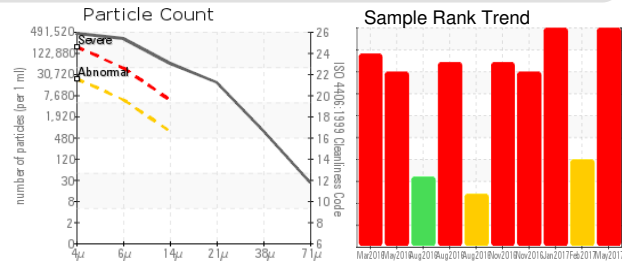
Date: September 29, 2017, 3:20 pm  
Generated By: Stephane Godere

**CRH Canada Group Inc. - 2391 Lakeshore Road W., Mississauga, ON L5J 1K1**

Machine Id **461-KL1 (BULL GEAR OIL)**  
Component **Gear Unit**  
Fluid **MOBILGEAR SHC 6800 (840 LTR)**



Sample No. : WC969440  
Lab Number : 02146158  
Test Package : IND 2  
Sampled : 16 May 2017



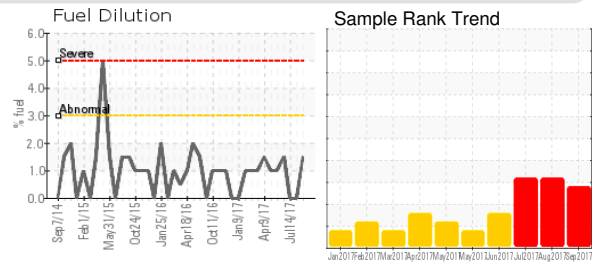
Latest Diagnosis: We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. Resample in 30-45 days to monitor this situation. All component wear rates are normal. Particles >14µm are severely high. Particles >21µm are severely high. Particles >38µm are severely high. Particles >6µm are severely high. Particles >4µm are severely high. Oil Cleanliness is severe. Particles >71µm are abnormally high. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

**MANITOU LIN TRANSPORT - 75 MUMFORD ROAD, LIVELY, ON P3Y 1L1**

Machine Id **55015**  
Component **DETROIT 60 Diesel Engine**  
Fluid **PETRO CANADA DURON-E 15W40 (--- GAL)**



Sample No. : WC0287339  
Lab Number : 02167955  
Test Package : MOB 1  
Sampled : 02 Sep 2017



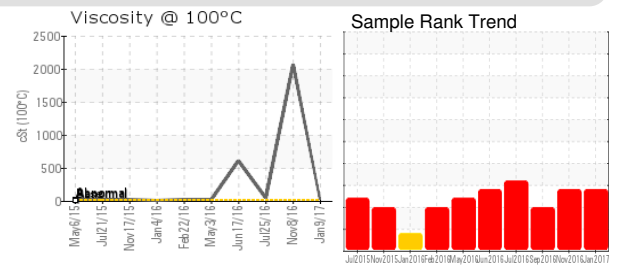
Latest Diagnosis: We advise that you check for faulty combustion, plugged air filters, or aftercoolers. No corrective action is recommended at this time. The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition. All component wear rates are normal. Light fuel dilution occurring. There is an abnormal amount of solids and carbon present in the oil. No other contaminants were detected in the oil. The oil is no longer serviceable due to the presence of contaminants.

**MANITOU LIN TRANSPORT - 161 MAIN STREET, THUNDER BAY, ON P7B 6S5**

Machine Id **55011**  
Component **DETROIT DD14 60 SERIES Front Diesel Engine**  
Fluid **ESSO XD-3 EXTRA 15W40 CJ-4 (--- GAL)**



Sample No. : WC0281109  
Lab Number : 02126494  
Test Package : MOB 1  
Sampled : 09 Jan 2017



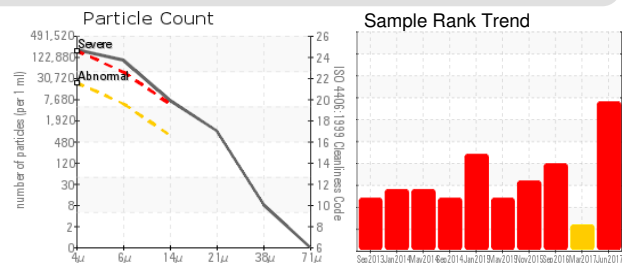
Latest Diagnosis: We advise that you check for faulty combustion, plugged air filters, or aftercoolers. The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition. All component wear rates are normal. There is an abnormal amount of solids and carbon present in the oil. The oil viscosity is higher than normal. Viscosity of sample indicates oil is within SAE 10W50 range, advise investigate. The oil is no longer serviceable due to the presence of contaminants.

**PATRIOT FORGE INC. - 280 HENRY STREET, P. O. BOX 996, BRANTFORD, ON N3T 5S7**

Machine Id **ROCKFORD TABLE B382**  
Component **Gearbox**  
Fluid **GEAR OIL ISO 150 (400 LTR)**



Sample No. : WC9819276  
Lab Number : 02154174  
Test Package : IND 2  
Sampled : 22 Jun 2017



Latest Diagnosis: We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. Confirm the source of the lubricant being utilized for top-up/fill. Resample in 30-45 days to monitor this situation. Please specify the brand, type, and viscosity of the oil on your next sample. Iron ppm levels are noted. A sharp increase in the iron level is noted. All other component wear rates are normal. Particles >14µm are severely high. Particles >6µm are severely high. Particles >4µm are severely high. Oil Cleanliness is severe. Particles >21µm are abnormally high. The oil viscosity is higher than normal. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

Date: September 29, 2017, 3:20 pm  
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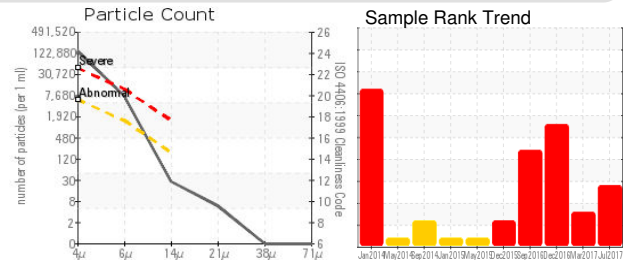
**PATRIOT FORGE INC. - 100 CONSOLIDATED DR., PARIS, ON N3L 3H6**

Machine Id **151 MANIPULATOR 732-13 (S/N 10088004)**  
Component **DANGO & DIENENTHAL 15.1 Hydraulic System**  
Fluid **PETRO CANADA ATF DEXRON III/MERCON (205 LTR)**



Sample No. : WC7845451  
Lab Number : 02155516  
Test Package : IND 2  
Sampled : 03 Jul 2017

Latest Diagnosis: Check seals and/or filters for points of contaminant entry. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend you service the filters on this component. Resample in 30-45 days to monitor this situation. We suspect that there is a high level of varnish present in the oil. As a result we recommend that you contact us at 1-800-268-2131 and provide a purchase order for \$95 + HST in order to conduct MPC testing to determine the varnish levels of the oil. Iron ppm levels are noted. All other component wear rates are normal. Particles >4µm are severely high. Oil Cleanliness is severe. Particles >6µm are abnormally high. The water content is negligible. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.



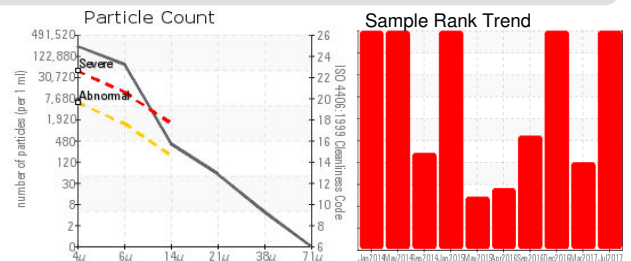
**PATRIOT FORGE INC. - 100 CONSOLIDATED DR., PARIS, ON N3L 3H6**

Machine Id **C 128 PUMA 700L DOOSAN SPINDLE**  
Component **DOOSAN Hydraulic System**  
Fluid **AW HYDRAULIC OIL ISO 32 (--- GAL)**



Sample No. : WC2842995  
Lab Number : 02155526  
Test Package : IND 2  
Sampled : 03 Jul 2017

Latest Diagnosis: Check seals and/or filters for points of contaminant entry. We advise that you check for visible metal particles in the oil. We recommend either performing an oil change or oil filtration. We cannot recommend specific action as we have limited information with regards to reservoir capacity and/or lubricant type. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend you service the filters on this component. Resample in 30-45 days to monitor this situation. Re-sampling is suggested to confirm test results prior to significant maintenance activities being performed. Please indicate that this is a resample on your Sample Information Form (SIF). NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Please specify the brand, type, and viscosity of the oil on your next sample. Moderate concentration of visible metal present. Particles >6µm are severely high. Particles >4µm are severely high. Oil Cleanliness is severe. Particles >14µm are abnormally high. The AN level is acceptable for this fluid. The oil is no longer serviceable as a result of the abnormal and/or severe wear.



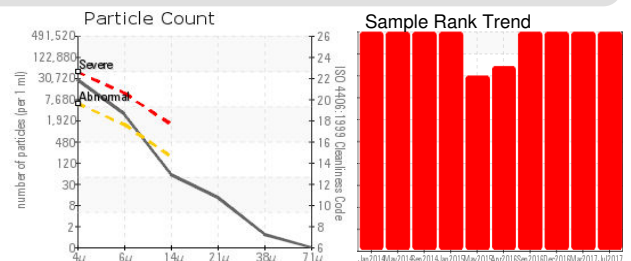
**PATRIOT FORGE INC. - 100 CONSOLIDATED DR., PARIS, ON N3L 3H6**

Machine Id **C106 - OMEGA SPINDLE**  
Component **Hydraulic System**  
Fluid **PETRO CANADA ATF DEXRON III/MERCON (--- GAL)**



Sample No. : WC7804316  
Lab Number : 02155472  
Test Package : IND 2  
Sampled : 03 Jul 2017

Latest Diagnosis: We recommend either performing an oil change or oil filtration. We cannot recommend specific action as we have limited information with regards to reservoir capacity and/or lubricant type. We recommend you service the filters on this component. We recommend an early resample to monitor this condition. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Copper and lead ppm levels are severe. Bearing wear is indicated. Particles >4µm are abnormally high. Particles >6µm are abnormally high. Oil Cleanliness is abnormal. The AN level is acceptable for this fluid. The oil is no longer serviceable as a result of the abnormal and/or severe wear.



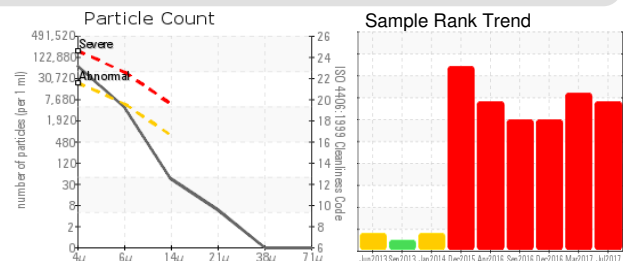
**PATRIOT FORGE INC. - 100 CONSOLIDATED DR., PARIS, ON N3L 3H6**

Machine Id **C117 BULLARD**  
Component **Gearbox**  
Fluid **SAE 10W (--- GAL)**



Sample No. : WC7823364  
Lab Number : 02155578  
Test Package : IND 2  
Sampled : 03 Jul 2017

Latest Diagnosis: Little or no information is provided as to the component and lubricant being tested. Recommendations are therefore generic in nature and may not apply to the current application. Please forward information as to equipment type, reservoir capacity, lubricant type and any pertinent information to allow for a more accurate assessment. We recommend you service the filters on this component. We recommend an early resample to monitor this condition. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Please specify the brand, type, and viscosity of the oil on your next sample. Lead ppm levels are severe. Oil Cleanliness is abnormal. Particles >4µm are abnormal. The AN level is acceptable for this fluid. The oil is no longer serviceable as a result of the abnormal and/or severe wear.




Date: September 29, 2017, 3:20 pm  
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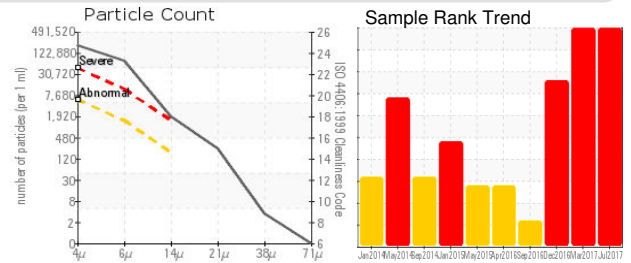
**PATRIOT FORGE INC. - 100 CONSOLIDATED DR., PARIS, ON N3L 3H6**

Machine Id **C129 DEEP HOLE**  
Component **Hydraulic System**  
Fluid **AW HYDRAULIC OIL ISO 32 (--- GAL)**

**WEAR**

**Sample No.** : WC8853717  
**Lab Number** : 02155528  
**Test Package** : IND 2  
**Sampled** : 03 Jul 2017





Latest Diagnosis: Little or no information is provided as to the component and lubricant being tested. Recommendations are therefore generic in nature and may not apply to the current application. Please forward information as to equipment type, reservoir capacity, lubricant type and any pertinent information to allow for a more accurate assessment. We advise that you check all areas where contaminants can enter the system. We advise that you check for visible metal particles in the oil. We recommend that you drain the oil from the component if this has not already been done. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. Confirm the source of the lubricant being utilized for top-up/fill. Resample in 30-45 days to monitor this situation. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Please specify the brand, type, and viscosity of the oil on your next sample. Iron ppm levels are severe. Nickel ppm levels are noted. Light concentration of visible metal present. The low ferrous density (PO) index indicates the wear metal levels are due to corrosion. Particles >14µm are severely high. Particles >6µm are severely high. Particles >4µm are severely high. Oil Cleanliness is severe. Particles >21µm are abnormally high. Viscosity of sample indicates oil is within ISO 100 range, advise investigate. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. The AN level is acceptable for this fluid. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

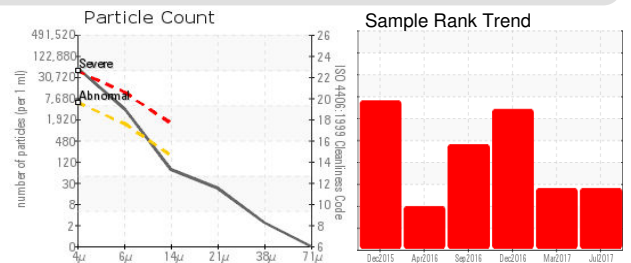
**PATRIOT FORGE INC. - 100 CONSOLIDATED DR., PARIS, ON N3L 3H6**

Machine Id **WARNER SWAYSE C110**  
Component **Hydraulic System**  
Fluid **DEXRON III (--- GAL)**

**WEAR**

**Sample No.** : WC5834128  
**Lab Number** : 02155483  
**Test Package** : IND 2  
**Sampled** : 03 Jul 2017





Latest Diagnosis: Little or no information is provided as to the component and lubricant being tested. Recommendations are therefore generic in nature and may not apply to the current application. Please forward information as to equipment type, reservoir capacity, lubricant type and any pertinent information to allow for a more accurate assessment. Check seals and/or filters for points of contaminant entry. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend you service the filters on this component. Resample in 30-45 days to monitor this situation. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Please specify the brand, type, and viscosity of the oil on your next sample. Lead ppm levels are noted. All other component wear rates are normal. Particles >4µm are severely high. Oil Cleanliness is severe. Particles >6µm are abnormally high. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

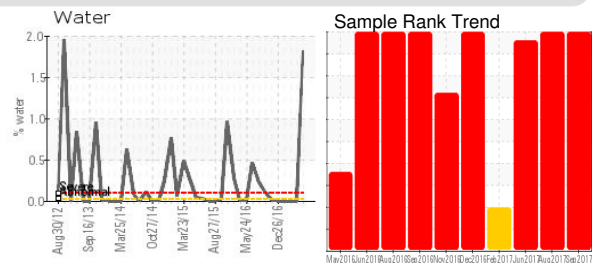
**Suncor Energy Inc. 402 - 385 Southdown Road, Mississauga, ON L5J 2Y3**

Area **1 White Oil/016 Hydrogen/C Compressor/501A Feed Gas Comp**  
Machine Id **16TC501A (Inboard)**  
Component **Inboard Turbine**  
Fluid **PETRO CANADA SYNDURO SHB ISO 68 (--- LTR)**

**WATER**

**Sample No.** : WC22125512  
**Lab Number** : 02171552  
**Test Package** : IND 2  
**Sampled** : 21 Sep 2017





Latest Diagnosis: Check seals and/or filters for points of contaminant entry. We advise that you check all areas where contaminants can enter the system. We recommend that you drain the oil from the component if this has not already been done. We advise that you follow the water drain-off procedure for this component, and use off-line filtration to improve the cleanliness of the system fluid. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. Resample in 30-45 days to monitor this situation. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Copper, iron and tin ppm levels are abnormal. Water and ppm water contamination levels are severe. Particles >14µm are severely high. Particles >21µm are severely high. Particles >38µm are severely high. Particles >6µm are severely high. Particles >4µm are severely high. There is a high concentration of water present in the oil. Free water present. The sample contained a visible layer of foreign fluid contaminant, the origin and/or type of fluid is unknown. The AN level is acceptable for this fluid. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

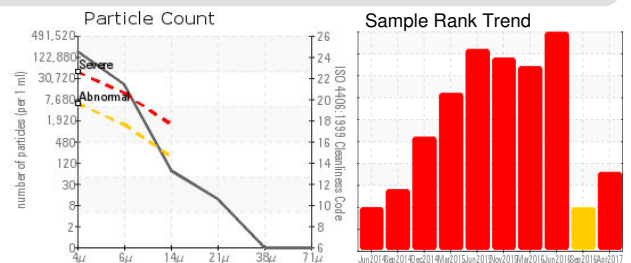
**Suncor Energy Inc. 402 - 385 Southdown Road, Mississauga, ON L5J 2Y3**

Area **1 White Oil/028 #1HTU/P Pump/202 Wash Water**  
Machine Id **N/A N/A 28P202 - (RECIP) (S/N WO-#1HTU)**  
Component **Union Pump 1 5/8X4 1/4TD120 Pump**  
Fluid **PETRO CANADA COMPRO COMPRESSOR OIL 150 (20 LTR)**

**ISO**

**Sample No.** : WC22125092  
**Lab Number** : 02144044  
**Test Package** : IND 2  
**Sampled** : 13 Apr 2017



Latest Diagnosis: Check seals and/or filters for points of contaminant entry. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend you service the filters on this component. Resample in 30-45 days to monitor this situation. All component wear rates are normal. Particles >6µm are severely high. Particles >4µm are severely high. Oil Cleanliness is severe. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

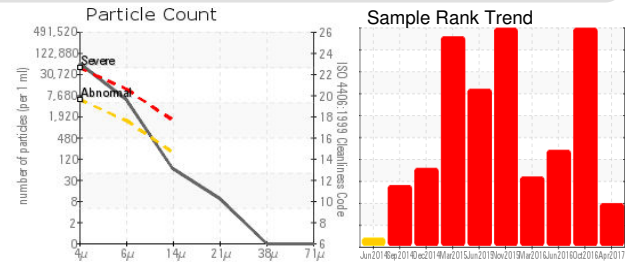
Date: September 29, 2017, 3:20 pm  
Generated By: Stephane Godere

**Suncor Energy Inc. 402 - 385 Southdown Road, Mississauga, ON L5J 2Y3**

Area **1 White Oil/028 #1HTU/P Pump/202B Wash Water (S)**  
Machine Id **28P202B (RECIP) (S/N WO-#1HTU)**  
Component **UNION Pump 1 5/8X4 1/4TDH120 Pump**  
Fluid **PETRO CANADA COMPRO COMPRESSOR OIL 150 (20 LTR)**



Sample No. : WC22125094  
Lab Number : 02144043  
Test Package : IND 2  
Sampled : 13 Apr 2017



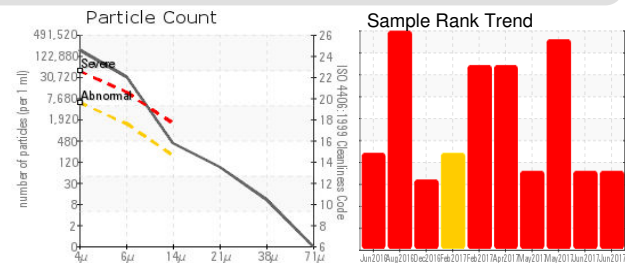
Latest Diagnosis: Check seals and/or filters for points of contaminant entry. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend you service the filters on this component. Resample in 30-45 days to monitor this situation. All component wear rates are normal. Particles >4µm are severely high. Oil Cleanliness is severe. Particles >6µm are abnormally high. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

**Suncor Energy Inc. 402 - 385 Southdown Road, Mississauga, ON L5J 2Y3**

Area **1 White Oil/029 #2HTU/T Turbine/401A**  
Machine Id **29TP401A Inboard Bearing**  
Component **N/A N/A Inboard Bearing**  
Fluid **PETRO CANADA TURBOFLO 68 (--- LTR)**



Sample No. : WC22125104  
Lab Number : 02164280  
Test Package : IND 2  
Sampled : 29 Jun 2017



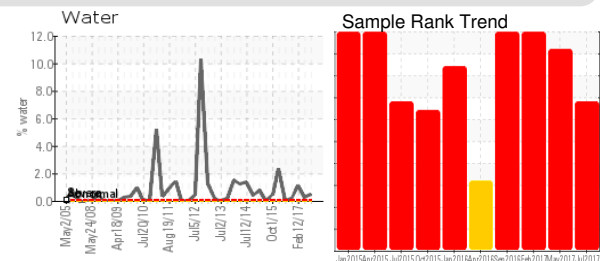
Latest Diagnosis: Check seals and/or filters for points of contaminant entry. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend you service the filters on this component. Resample in 30-45 days to monitor this situation. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. All component wear rates are normal. Particles >6µm are severely high. Particles >14µm are abnormally high. Particles >21µm are notably high. The system cleanliness code is much higher than the acceptable limit for the target ISO 4406 cleanliness code. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

**Suncor Energy Inc. 402 - 385 Southdown Road, Mississauga, ON L5J 2Y3**

Area **5 Utilities/030 Boiler House/B Blower/Fan/713 #13 FD East**  
Machine Id **N/A 30TB713 (S/N LUB-BLRHS)**  
Component **ELLIOTT 2BYRH Turbine**  
Fluid **PETRO CANADA TURBOFLO 68 (20 LTR)**



Sample No. : WC22126047  
Lab Number : 02162760  
Test Package : IND 2  
Sampled : 31 Jul 2017



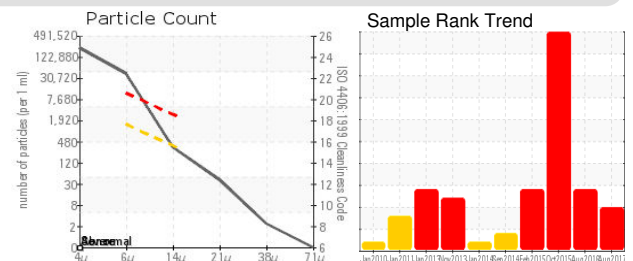
Latest Diagnosis: We advise that you check for the source of water entry. Check seals and/or filters for points of contaminant entry. We advise that you follow the water drain-off procedure for this component. We recommend you service the filters on this component. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition. All component wear rates are normal. Water Water and ppm water and ppm water contamination levels are severe. Particles >4µm are abnormally high. Particles >6µm are abnormally high. Particles >14µm are notably high. There is a high concentration of water present in the oil. Free water present. Additive levels indicate the addition of a different brand, or type of oil. The AN level is acceptable for this fluid. The oil is no longer serviceable due to the presence of contaminants. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

**TEMBEC INC. - P.O.BOX 6000, 33 KIPAWA ROAD, TEMISCAMING, QC J0Z 3R0**

Area **Specialty Cellulose**  
Machine Id **[AB-164-424-001] Extraction Tower Steam Mixer Shaft #2 (south)**  
Component **N/A N/A Case Drain Gearbox**  
Fluid **ESSO SPARTAN EP 220 (--- LTR)**



Sample No. : WC22126486  
Lab Number : 02161469  
Test Package : IND 2  
Sampled : 01 Aug 2017





Latest Diagnosis: Check seals and/or filters for points of contaminant entry. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend you service the filters on this component. Resample in 30-45 days to monitor this situation. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. All component wear rates are normal. Particles >6µm are severely high. The water content is negligible. The system cleanliness code is much higher than the acceptable limit for the target ISO 4406 cleanliness code. The viscosity of the oil is higher than normal, possibly indicating the addition of a heavier grade of oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

Date: September 29, 2017, 3:20 pm  
Generated By: Stephane Godere

**TEMBEC INC. - P.O.BOX 6000, 33 KIPAWA ROAD, TEMISCAMING, QC J0Z 3R0**

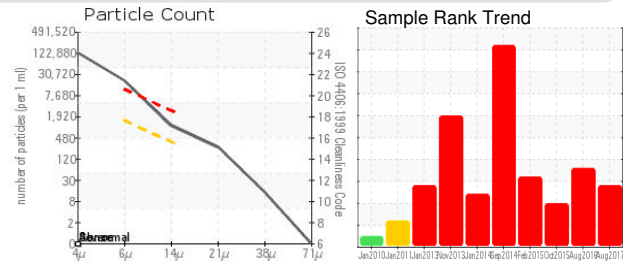
Area **Specialty Cellulose**  
Machine Id **[AB-164-424-002] Extraction Tower Steam Mixer Shaft #1 (north)**  
Component **N/A N/A Case Drain Gearbox**  
Fluid **ESSO SPARTAN EP 220 (2 GAL)**

**ISO**

**Sample No.** : WC22126487  
**Lab Number** : 02161470  
**Test Package** : IND 2  
**Sampled** : 01 Aug 2017


Latest Diagnosis: We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. Resample in 30-45 days to monitor this situation. All component wear rates are normal. Particles >6µm are severely high. Particles >14µm are abnormally high. Particles >21µm are abnormally high. The water content is negligible. The system cleanliness code is much higher than the acceptable limit for the target ISO 4406 cleanliness code. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.



**U.S. Steel BOSC - Basic Oxygen Slab Caster, NANTICOKE, ON N0A 1L0**

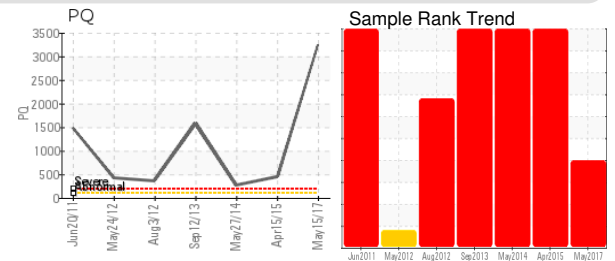
Machine Id **CRANE 709 MAIN HOIST**  
Component **Gearbox**  
Fluid **SHELL OMALA 320 (--- GAL)**

**WEAR**




**Sample No.** : WC971673  
**Lab Number** : 02163504  
**Test Package** : IND 2  
**Sampled** : 15 May 2017



Latest Diagnosis: We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. PQ levels are severe. The very high ferrous density (PQ) index indicates that severe wear is occurring. There is no indication of any contamination in the component. The AN level is acceptable for this fluid. The oil is no longer serviceable as a result of the abnormal and/or severe wear.



**U.S. Steel BOSC - Basic Oxygen Slab Caster, NANTICOKE, ON N0A 1L0**

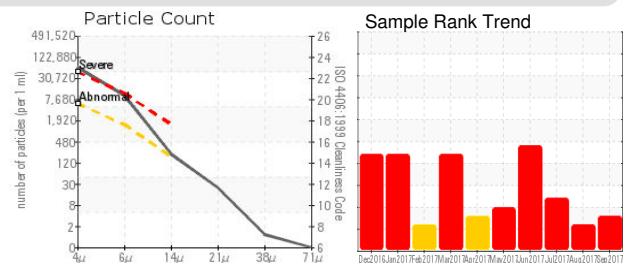
Area **BOF/OG SYSTEM**  
Machine Id **D - O.G. Fan Lube System # 7 (BOSCOGFLBS7)**  
Component **N/A Tank Lube System**  
Fluid **ESSO NUTO H ISO 100 (135 GAL)**

**ISO**

**Sample No.** : WC22127071  
**Lab Number** : 02170233  
**Test Package** : IND 2  
**Sampled** : 17 Sep 2017

Latest Diagnosis: Check seals and/or filters for points of contaminant entry. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend you service the filters on this component. Resample in 30-45 days to monitor this situation. All component wear rates are normal. Particles >4µm are severely high. Particles >6µm are abnormally high. Particles >14µm are notably high. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.



**Vale - Voisey's Bay Mine Site, P.O. Box 7001, Stn. C Happy Valley, Goose Bay, NL A0P 1C0**

Area **1311**  
Machine Id **TRAYLOR CRUSHER CRUSHER LUBE SYSTEM (1311-5671-3001)**  
Component **Trola Dyne FFE Lube System**  
Fluid **PETRO CANADA ENDURATEX EP 320 (1703 LTR)**

**ISO**




**Sample No.** : PC384892  
**Lab Number** : 02170352  
**Test Package** : IND 2  
**Sampled** : 26 Aug 2017

Latest Diagnosis: Check seals and/or filters for points of contaminant entry. We advise that you check all areas where contaminants can enter the system. We advise that you check for visible metal particles in the oil. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. Resample in 30-45 days to monitor this situation. We suspect that the abnormal contaminant(s) is the result of incorrect sampling technique. **DISCLAIMER:** Interpretation of laboratory tests is based on sample, as received from client. Source of sample and sampling technique cannot be verified. Light concentration of visible metal present. Particles >6µm are severely high. Particles >14µm are abnormally high. Particles >21µm are notably high. Moderate concentration of visible dirt/debris present in the oil. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

