

**City Council Budget Meetings Agenda
May 18, 2017
6:30p– 9:00p
City Council Chambers, City Hall, Bethel, AK**

Rick Robb
Mayor
Term Expires 2017
rrobb@cityofbethel.net

Leif Albertson
Council Member
Term Expires 2017
labertson@cityofbethel.net

Alisha Welch
Council Member
Term Expires 2017
arwelch@cityofbethel.net

Fred Watson
Council Member
Term Expires 2018
fwatson@cityofbethel.net

Norman Ayagalria
Council Member
Term Expires 2018
nayagalria@cityofbethel.net

Mark Springer
Council Member
Term Expires 2017
mspringer@cityofbethel.net

Naim Shabani
Council Member
Term Expires 2017
nshabanie@cityofbethel.net

Pete Williams
City Manager
pwilliams@cityofbethel.net

Lori Strickler
City Clerk
lstrickler@cityofbethel.net

Patty Burley
City Attorney

Mary Sattler
Lobbyist

I. CALL TO ORDER

II. PLEDGE OF ALLEGIANCE

III. ROLL CALL

IV. PEOPLE TO BE HEARD – Five minutes per person

v. APPROVAL OF AGENDA

VI. UNFINISHED BUSINESS

- a) Reviewing/Amending the Proposed Fiscal Year 2018 City of Bethel Budget
- b) Public Hearing Of Budget Ordinance 16-17 (n): Amending The Adopted FY 2017 Budget To Purchase A Dumpster Truck (City Manager Williams)

VIII. ADJOURNMENT

Action:
 Vote:

CITY OF BETHEL, ALASKA

ORDINANCE # 16-17 (n)

An Ordinance of the Bethel City Council Amending the Adopted Annual FY 2017 Budget

Be it Enacted by the Bethel City Council that the FY 2017 Annual Budget be amended as follows:

Section 1. That the following sums of money as may be needed or deemed necessary to provide for increased expenses and liabilities of the City of Bethel are hereby appropriated for the corporate purposes and objects of the City hereinafter specified for Fiscal Year 2017, July 1, 2016 to June 30, 2017.

Section 2. The following is a summary of the changes by fund and department:

Hauled Refuse

Change to SOLID WASTE ENTERPRISE FUND

	Increases	
50-16600	Capital Expenditure -Hauled Refuse - Fixed Assets - Vehicles	307,970
	Total Increases	307,970
	Decreases	
	Total Decreases	0
TOTAL	Net Change to Solid Waste Fund Appropriations	307,970

	TOTAL CHANGE TO SOLID WASTE FUND REVENUES	
	Total Increases	0
	Total Decreases	0
	Cumulative Change to SOLID WASTE Revenues	0

	TOTAL CHANGE TO SOLID WASTE FUND APPROPRIATIONS	
	Total Increases	307,970
	Total Decreases	0
	Cumulative Change to APPROPRIATIONS	307,970

	TOTAL CHANGE TO SOLID WASTE FUND BALANCE	
	Change to Solid Waste Fund Revenues	0
	Change to General Fund Appropriations	307,970
	Cumulative Increase/Decrease to Fund Balance	(307,970)

TOTAL CHANGE TO OVERALL CITY BUDGET

	<i>Change to Revenues Increase/(Decrease)</i>	0
	<i>Change to Appropriations Increase/(Decrease)</i>	307,970
	These changes <u>INCREASE</u> the overall expenditures/expenses of the City by	307,970

Section 3. Effective Date. This ordinance becomes effective immediately upon adoption.

PASSED AND APPROVED THIS ___ DAY OF May 2017 BY A VOTE OF ___ IN FAVOR AND ___ OPPOSED.

ATTEST:

 Richard Robb, Mayor

 Lori Strickler, City Clerk



**City
of
Bethel**

Jake Thompson <jthompson@cityofbethel.net>

Mack MRU613 Garbage Truck VIN: 1M2AV02C7DM009737

1 message

Ross Sullivan <ross.sullivan@cmiak.com>
To: Jake Thompson <jthompson@cityofbethel.net>
Cc: Cade Smith <c.smith@cmiak.com>

Wed, May 10, 2017 at 4:22 PM

Jake,

Just following up our conversation in an email per your request. Initially the truck had multiple Regeneration system (DPF & SCR) and Engine faults. I flew my Technician up, he troubleshot the truck. He replaced the ACM and cleared all of the Regen related fault codes. At this time the truck still had active engine faults. The Tech unplugged the engine harness for the ECM and found a significant amount of oil in the harness to ECM connector. Both were pretty saturated with oil, so It was recommended to replace the harness and ECM. Placed the harness and ECM on order. To avoid excessive stand-by time, technician left and flew back in a few days later. Replaced engine harness and ECM. Codes cleared and truck was placed back into service. Two days later the truck started coding with an active turbo charger fault. The fault code pertained to the turbo's actuator not sending electric signal to the ECM. Truck would not run through a service regen either. Flew technician back up to troubleshoot this code. Technician verified harness connections to turbo are good, and turbo is not sending signal to ECM. Technician jumped pins and the code changed to a Mechanical failure of the turbo actuator. Technician inspected actuator and found soot build up. While awaiting for plane I asked tech to inspect EGR system and that is in good serviceable condition. The turbo can inhibit regen if it isn't working properly. The VGT helps reduce NOx emissions along with the EGR system. If the Turbo isn't creating the boost it needs for the regen cycle, the regen will time out. I have placed a reman turbo on order. We should possibly see it tomorrow, if not it will be Friday. I will get it shipped to you as soon as it arrives.

Very Respectfully,

Ross Sullivan

Assistant Service Manager

C.M.I. Construction Machinery Industrial LLC.

Anchorage Service Department

5400 Homer Drive

Anchorage, Ak 99518

Tel: 1-(907)-261-0168

Fax: 1-(907)-261-0194

Ross.Sullivan@CMIAC.com



**City
of
Bethel**

Jake Thompson <jthompson@cityofbethel.net>

953B

2 messages

Leno, Peter <PLeno@ncmachinery.com>

Tue, May 2, 2017 at 9:48 AM

To: "jthompson@cityofbethel.net" <jthompson@cityofbethel.net>

Both side cylinders for clamshell grease seals popped out. Lack of grease through out machine . Fitting for hydraulic fitting broken customer in process of fixing. No back up alarm, no horn, no top cab work lites, dome lite in-op. Retainer bolts for clam shovel pins damaged and need replaced. Fuel cab needs reseal. Ripper left side barrel bearing completely gone. Right side pins & bushings need replaced. Possibly new cylinder. Rear windshield wiper in op. Operators door glass and door seal need to be replaced due to location of machine. A/C electric fans making noise in bearings. Radiator cap needs replaced , coolant very low. Radiator emulsified , possibly clean recommend replacing radiator. Precleaner and air filter completely clogged with de bree. All linkage for implements need bell cranks addressed . Adjustment is with in specs. Switch for directional position un hooked needs repaired. Coolant hard line from regulator housing interfering with exhaust stack. Track roller frame upper rollers need replaced as well as adjusting track tension. Exhaust flex pipe rotted , broken clamp. exhaust fumes are exiting into engine compartment. Battery negative post & cable show signs of being arched out., battery needs to be replaced. Alternator belt loose.

Jake Thompson <jthompson@cityofbethel.net>

Fri, May 5, 2017 at 1:01 PM

To: "William (Bill) Arnold" <warnold@cityofbethel.net>

[Quoted text hidden]



City
of
Bethel

Jake Thompson <jthompson@cityofbethel.net>

950g

1 message

Leno, Peter <PLeno@ncmachinery.com>

Tue, May 2, 2017 at 9:42 AM

To: "jthompson@cityofbethel.net" <jthompson@cityofbethel.net>

Front axle oil level low found right front duo cone seal leaking, filled oil to appropriate level monitor front axle oil level. Hydraulic oil level was not even in site glass. Need to investigate further for external leak. Not sure if oil level is low due to recent service recommend monitor oil level. Coolant level 3 plus gallons low on coolant. Need to pressurize cooling system to locate leak. Idler hub pulley has chunks missing from pulley as well as hub needs to be removed and bearings packed. Radiator cores need to be cleaned full of sand etc. Radiator cap needs replaced. Recommend valve lash adjustment. Muffler outlet section rotted and exhaust fumes not exiting exhaust pipe leaking into engine compartment. Exhaust bracket from turbo to muffler bolts loose and missing. Bolts missing for waste gate valve on turbo. Turbo leaking oil at compressor oil seal external leak present. Muffler mounting bolts only one in place muffler loose and moving around. Left steer cylinder as well as right cylinder wiper seals leaking. Pins and bushings for both steer cylinders need replaced. Right hand neutralizer hydraulic line leaking. Found rubber & metal, foreign material in transmission screen, found screen installed back wards. I had to remove lower belly pan in order to remove transmissions screen.

Dog bone bearings, possibly pins. need replaced possibly line boring required. Rear trunnion bearings front, rear need to be replaced. Quick coupler hydraulic lines damaged, cylinder leaking as well. No turn signals/hazard lights/ no right rear lights at all. Only left rear tail light and brake light working. Checked front and rear brake pressures. Found the differential from front to rear differences are correct but the pressure themselves are off by 500 psi. Recommend troubleshooting brake valve further. Took transmission pressures found all pressures roughly 30 to 60 psi off. second pressure is the worst. talked with customer and found that operators are not using neutralizer when operating into the pile. Transmission oil pump with in specs. Torque converter outlet pressure is roughly 60 to 70 psi high, possibly torque converter excessive leakage. completed paper work and cleaned work area as required.



**City
of
Bethel**

Jake Thompson <jthompson@cityofbethel.net>

D8N

2 messages

Leno, Peter <PLeno@ncmachinery.com>

Tue, May 2, 2017 at 9:42 AM

To: "jthompson@cityofbethel.net" <jthompson@cityofbethel.net>

Upon inspection found #1 cylinder fuel line, possibly fitting need to be replaced as well. Upper hydraulic line to hydraulic cooler bracket broken has wear and bubbles needs to be replaced and bracket replaced as well. Fuel specs low idle 42 psi high idle 46.

Alternator belt loose, needs replaced ASAP. #6 exhaust port missing attaching hardware on exhaust manifold. Cab heater lines laying on exhaust manifold, address asap. Left lift cylinder leaking from wiper seal customer explained that it was installed temporarily. Left lift cylinder has drift issues as well. Right lift cylinder beginning to leak as well. Recommend dealing with both lift cylinders at the same time.

Engine oil pressure low idle 64 psi. High idle 80 psi. Pivot balls for push arms left side needs to be replaced as well as new cup welded onto push arm. Once repairs are completed install and shim as needed. Need to disassembly right hand side to inspect further. Pivot shaft resevier over filled. Hard bar is damaged beyond repairs options have it machine or re man replacement. I would recommend not operating machine due to the fact that if it breaks at current location equipment not available to complete repairs in a safe manner including additional damage to machine. Completed paper work as required.

Jake Thompson <jthompson@cityofbethel.net>

Fri, May 5, 2017 at 1:01 PM

To: "William (Bill) Arnold" <warnold@cityofbethel.net>

[Quoted text hidden]



**City
of
Bethel**

Jake Thompson <jthompson@cityofbethel.net>

160M Inspection Notes

3 messages

Leno, Peter <PLeno@ncmachinery.com>

Fri, Apr 28, 2017 at 9:00 AM

To: "jthompson@cityofbethel.net" <jthompson@cityofbethel.net>

Hooked up caterpillar electronic technician and performed product status report as well as cylinder cut out test see attached fields. Cylinder cut out test results passed. Engine oil filter housing leaking, appears to be for cooler relief valves (plug). Technician took picture prior to replacing engine oil filter for reference. Checked all pressures, cycle times per caterpillar service guidelines as well as TA2 inspection forms. Moldboard table needs new wear plates, shims. Wear plates are broken, cracked need replaced. Circle needs adjustment. All in all grader is in very good condition. Suggest getting protective guards for awd drive hoses up front as well as cover for electrical connectors for awd speed sensors. Side shift cylinder needs adjustment. Research is advised for tire application due to wear on front tires. Tandem tires in good shape. Machine lacking grease. Completed paper work as required. Remove outside covers for moldboard brass and inspect tolerances. Suggestion when replacing brass for mold board replace end covers for operator to do daily visual inspection and can monitor how mold board is wearing.

Jake Thompson <jthompson@cityofbethel.net>

Fri, May 5, 2017 at 1:00 PM

To: "William (Bill) Arnold" <warnold@cityofbethel.net>

[Quoted text hidden]

Jake Thompson <jthompson@cityofbethel.net>

Fri, May 5, 2017 at 1:00 PM

To: "William (Bill) Arnold" <warnold@cityofbethel.net>

[Quoted text hidden]



City
of
Bethel

Jake Thompson <jthompson@cityofbethel.net>

(no subject)

1 message

Leno, Peter <PLeno@ncmachinery.com>

Thu, Apr 27, 2017 at 7:38 AM

To: "jthompson@cityofbethel.net" <jthompson@cityofbethel.net>

Checked belt tension found belt loose at idle charging system good at high idle charging volts are down to 19.8 volts, recommend tightening belts. I was able to turn fan pulley by hand Low coolant level site gage in op replace or check for sticking gage. Pressure test cooling system to locate leak. Upon visual inspection was not able to find source of leak. Right hand transmission mount damaged and rubber sticking out of mount. Recommend replacing both mounts. Engine oil pressure high. Specs are as follows low idle 14 psi minimum results 80 psi. High idle specs 36 psi minimum results 106 psi. Recommendations remove oil filter bypass (relief valve) located in oil filter housing clean and inspect. Next step remove oil cooler bypass valve clean and inspect. If still high oil pressure last step remove oil pan and check oil pump by pass valve located in engine oil pump. Front axle very low on fluid. Technician filled to proper level. Inspected found no external leaks. Monitor front axle oil level. Hose part number 6w0328 Implement hydraulic lines from tank to main implement control valve locate in center hitch area, found steel clamp broken and rubber into hydraulic lines. Replace as well due to age and brittle. Turbo oil drain line leaking at gasket. quick coupler pins have banding tack welded onto pin for retainers, temp fix. Needs pins replaced as well as bores for quick coupler pins cracked and need removed and replaced. Both left , right steering cylinders need pins and bushings. Loader arms to head ache rack need at least bushings as well as new shims. Lift cylinders need bushings and shims. Dog bone needs pins and bushings, possibly line boring required. Center hitch needs adjustment ,possibly line bore on lower frame pin worse that upper hitch pin. Operator station codes present for voltage above normal for action alarm. Action alarm does not sound when machine park brake applied in forward gear, action alarm sounds when park brake applied and in reverse gear. Completed inspection form and cleaned work area completed paper work as required.



City
of
Bethel

Jake Thompson <jthompson@cityofbethel.net>

FW: 163H inspection

2 messages

Leno, Peter <PLeno@ncmachinery.com>
To: "jthompson@cityofbethel.net" <jthompson@cityofbethel.net>

Wed, Apr 26, 2017 at 7:52 AM

From: Leno, Peter
Sent: Wednesday, April 26, 2017 7:50 AM
To: Leno, Peter <PLeno@NCMachinery.com>
Subject: 163H inspection

Upon inspection found the following removed filters , cut and inspected filters for de bree. Hooked up caterpillar electronic technician performed product status report see attached files. Checked belt tension on engine found that inside of belt damaged , tension was loose, needs belt tensioner. Further inspection needed to find out why belt damaged on inside groove but fits on water pump pulley just fine, other pulleys incorrectly. Needs radiator cap seal damaged. Coolers and radiator need to be cleaned large amount of dirt etc. present. Pressure tested cooling system found block heater leaking, hose for thermostat housing leaking possibly just loose hose clamp. Checked low idle and high idle with in specs. The results are same as when original test specs were performed. Checked high idle fuel pressure specs roughly 8 to 10 psi low. Recommendations change fuel filters inspect fuel relief valves , if problem still exists further tests on fuel system needed. Possibly transfer pump. Checked engine oil pressures low/high idle with in specs. Performed cylinder cut out test ... See attached downloads on service reports. Performed service park brake test results failed . Specs are as follows operate machine in 5th gear forward high idle with service brakes applied engine should stall. I operated machine in first gear forward low idle machine had movement. Operated machine in low idle with eighth gear applied and results barely stalled engine. Tried service brake test in reverse 6th gear and stalled. This test is not out lined in test procedures, tried anyways for curiosity. Upon further inspection found both tandems seals are leaking. Recommend that when tandems are pulled that service brakes be replaced at same time. Tested air system alarms etc. passed. Air pressure with master gage and manual gage builds are pressure up to 150 psi. plus. Recommend governor replace/ replace air dryer adjust to specs. Pressure switch (brake air) (stop lamp) test depress brakes once the air is drained from system stop lamps should operate at roughly 9 psi pressure. Recommendations if lamps do not operate check bulbs, if they do not operate at correct air pressure check the following connections electrical connector for pressure switch on the air control valve for service brakes possibly switch if no evident problems found. Checked charging system, checks out good recommend cleaning terminals. Checked transmission charge pressure low/high idle results low idle 10 psi beyond max pressure. High idle 30 psi beyond max pressure. Advised adjust relief valve. Diff lock works and pressure is correct but monitor light in -op. Found lift cylinder yoke bearings as well as all cylinders for implements need adjusted. Moldboard is missing shims upper lower etc. all brass Complete moldboard adjustment recommended. Table needs all wear strips and shims. Adjust table very loose. Found sprockets for table as well as circle drive pinion signs of miss adjustment. Perfoemd cycle times on all implements checked out good. Right hand side articulation cylinder needs pins and shimmed. Took transmission pressures found them to be a little on the low side recommend perform clutch engagement calibrations. Drivers side mirror damaged. Completed daily paper work as required.



City
of
Bethel

Jake Thompson <jthompson@cityofbethel.net>

Fwd: 420D inspection

2 messages

Leno, Peter <PLeno@ncmachinery.com>

Tue, Apr 25, 2017 at 6:57 PM

To: "jthompson@cityofbethel.net" <jthompson@cityofbethel.net>

Sent from my iPhone

Begin forwarded message:

From: "Leno, Peter" <PLeno@NCMachinery.com>

Date: April 24, 2017 at 7:45:45 PM AKDT

To: "Leno, Peter" <PLeno@NCMachinery.com>

Subject: 420D inspection

Upon visual inspection found the following issue's.

Park Brake in -op. Found brake pads need replaced as well as new cable along with adjustment. Right rear outrigger pad (bracket broken). Charging system voltage 14.3 volts at idle 14.5 volts at high idle. Exhaust smoke showing signs of white smoke. Researched and talked to customer valve lash has not been checked or adjusted. Right rear outrigger rod end retainer clip damaged , pin will walk out. Wiper seal is beginning to leak on right hand outrigger cylinder as well.

Right rear reflector missing, checked all lights found beacon light in -op. Lock pin missing for back hoe swing.

Both hydraulic lines on right hand loader arms damaged and need replaced for tilt circuit. Took pictures of damaged pins on swing knuckle assembly possibly needs line bored as well. damaged hoses underneath swing frame. Muffler to exhaust hot side of turbo clamp just hanging there. Oil pan needs to be cleaned and operated further inspection required to verify that pan is or is not leaking.

hen implements are raised fill hose for hydraulic tank leaks possibly just tighten clamp.

Inspected machine wiring harness for abrasions or signs of damage none found. No codes present un able to hook up cat et . Checked codes with jumper harness. Removed oil pressure switch and installed test fitting for engine oil pressure specs are as follows. 22 psi low idle minimum. 40 psi high idle minimum . Results low idle 66 psi high idle results 76 plus.. Engine oil temperature was 112 degrees. Another technician Cut the following filters hydraulic, transmission, engine oil. Found metal in filters except hydraulic very little amounts. Will wait for oil sample test results. Advised customer and completed paper work as required.

Jake Thompson <jthompson@cityofbethel.net>
To: "William (Bill) Arnold" <warnold@cityofbethel.net>

Fri, May 5, 2017 at 12:58 PM

[Quoted text hidden]

NC MACHINERY-ANCHORAGE
BRANDON KANE

COMPANY NAME : CITY OF BETHEL
 CUSTOMER EQUIP NUM : 29A18020
 COMPARTMENT NAME : ENGINE
 SERIAL NUMBER : B9100155
 MANUFACTURER : CATERPILLAR
 MODEL : 160M
 JOB SITE :
 EXT WARR NUMBER :
 SHOP JOB NUM : AN86658
 COMP SERIAL NUM :
 COMPARTMENT MODEL :
 COMP MANUFACTURER :
 SAMPLE LABEL NUM :
 FLUID BRAND/WEIGHT : UNKNOWN
 FLUID TYPE :
 EXT WARR EXPIRE DATE :
 FUEL CONSUMED :

NC MACHINERY 

SOS Services Laboratory
 17025 West Valley Highway
 Tukwila, WA 98188-5519
 800-562-4735

SAMPLE TYPE: **OIL**
 PHONE :
 FAX :
 SAMPLE SHIP TIME (day's) : 12
 EXT WARR NUMBER :
 FUEL CONSUMED :
 LAB CONTROL NUMBER : H330-47128-1094
 SAMPLE DATE : 26-Apr-2017
 PROCESS DATE : 08-May-2017
 EQUIPMENT METER : 5778 HR
 METER ON FLUID :
 FLUID CHANGED : No
 MAKE UP FLUID :
 MAKE UP FLUID UNITS :
 FILTER CHANGED : Yes

No Action Required
 UNKNOWN TIME ON THE OIL. UNKNOWN WEIGHT OR BRAND OF OIL BEING USED. VISCOSITY IS IN THE 40W RANGE. WEAR METAL READINGS APPEAR NORMAL. OTHER ANALYSIS READINGS APPEAR TO BE ACCEPTABLE. MORE SAMPLE HISTORY NEEDED TO ESTABLISH A NORMAL WEAR TREND. RESAMPLE AT THE NEXT RECOMMENDED INTERVAL.

Wear Metals (ppm)	Cu	Fe	Cr	Al	Pb	Sn	Si	Na	K	B	Mo	Ni	Ag	Ti	V	Mn	Cd	Ca	Mg	Zn	P	Ba
H330-47128-1094	0	7	0	2	0	0	1	0	2	465	88	0	0	0	0	0	0	1425	389	1179	1008	0

Oil Condition / Particle Count (ct/ml)	ST	OXI	NIT	SUL	W	A	F	V100
H330-47128-1094	4	17	7	24	N	N	N	13.4

Ag = Silver, Al = Aluminum, B = Boron, Ca = Calcium, Cr = Chromium, Cu = Copper, Fe = Iron, P = Phosphorus, K = Potassium, Li = Lithium, Mg = Magnesium, Mo = Molybdenum, Na = Sodium, Ni = Nickel, Pb = Lead, Si = Silicon, Sn = Tin, S = Sulfur, V = Vanadium, Zn = Zinc, A = Antifreeze, F = Fuel, W = Water, P = Positive, N = Negative, T = Trace, E = Excessive, NIT = Nitration, OXI = Oxidation, ST = Soot, SUL = Sulfation, ISO = ISO Rating, PFC = Percent Fuel Content, PFI = Particle Quantity Index, NAW = Sulf Water, FLPI = Flash Point, TAN = Total Acid Number, TBN = Total Base Number, H2O = Karl Fisher result, V100 = Viscosity@100C, V40 = Viscosity@40C, PVI = Particle Volume Indicator

Notice: This analysis is intended as an aid in predicting mechanical wear. No guarantee, expressed or implied, is made against failure of this piece of equipment or a component thereof.

NC MACHINERY-ANCHORAGE
BRANDON KANE

COMPANY NAME : CITY OF BETHEL
 CUSTOMER EQUIP NUM : 21A10241
 COMPARTMENT NAME : ENGINE
 SERIAL NUMBER : 3JW02270
 MANUFACTURER : CATERPILLAR
 MODEL : 950G
 JOB SITE :
 EXT WARR NUMBER :
 SHOP JOB NUM : AN86960
 COMP SERIAL NUM :
 COMPARTMENT MODEL :
 COMP MANUFACTURER :
 SAMPLE LABEL NUM :
 FLUID BRAND/WEIGHT : UNKNOWN
 FLUID TYPE :
 EXT WARR EXPIRE DATE :
 FUEL CONSUMED :

SOS Services Laboratory
 17025 West Valley Highway
 Tukwila, WA 98188-5519
 800-562-4735



FAX :
 PHONE :
 SAMPLE TYPE: **OIL**
 SAMPLE SHIP TIME (day): 10

LAB CONTROL NUMBER	SAMPLE DATE	PROCESS DATE	EQUIPMENT METER	METER ON FLUID	FLUID CHANGED	MAKE UP FLUID	MAKE UP FLUID UNITS	FILTER CHANGED
H330-47128-1096	28-Apr-2017	08-May-2017	15558 HR		No			Yes
<div style="border: 1px solid red; padding: 5px;"> <p>Action Required</p> <p>UNKNOWN TIME ON THE OIL. SILICON & ALUMINUM (TYPICALLY DIRTY) APPEARS ELEVATED. IRON ALSO APPEARS ELEVATED. THIS MAY BE ASSOCIATED WITH INCREASED OIL HOURS COMBINED WITH SAMPLE CONTAMINATION. MORE SAMPLE HISTORY NEEDED TO ESTABLISH A NORMAL WEAR TREND. DRAIN AND RE-FILL COMPARTMENT WITH APPROVED LUBRICANT. CHECK FOR POSSIBLE SOURCES OF DIRT ENTRY. RESAMPLE IN 125 HOURS TO MONITOR.</p> </div>								

Wear Metals (ppm)	H330-47128-1096																						
	Cu	Fe	Cr	Al	Pb	Sn	Si	Na	K	B	Mo	Ni	Ag	Ti	V	Mn	Cd	Ca	Mg	Zn	P	Ba	
1	34	0	16	1	0	68	3	5	473	85	0	0	1	0	0	0	1351	373	1134	970	0		

Oil Condition / Particle Count (ct/ml)	H330-47128-1096						
	ST	OXI	NIT	SUL	W	A	F
	3	18	6	23	N	N	N
							15.1

Ag = Silver, Al = Aluminum, B = Boron, Ca = Calcium, Cr = Chromium, Cu = Copper, Fe = Iron, P = Phosphorus, K = Potassium, Li = Lithium, Mg = Magnesium, Mo = Molybdenum, Na = Sodium, Ni = Nickel, Pb = Lead, Si = Silicon, Sn = Tin, S = Sulfur, V = Vanadium, Zn = Zinc, A = Antifreeze, F = Fuel, W = Water, P = Positive, N = Negative, T = Trace, E = Excessive, NIT = Nitration, OXI = Oxidation, ST = Soot, SUL = Sulfation, ISO = ISO Rating, PFC = Percent Fuel Content, POI = Particle Quantifying Index, Nav = Salt Water, FLPI = Flash Point, TAN = Total Acid Number, TBN = Total Base Number, H2O = Karl Fisher result, V100 = Viscosity@100C, V40 = Viscosity@40C, PVI = Particle Volume Indicator

Notice: This analysis is intended as an aid in predicting mechanical wear. No guarantee, expressed or implied, is made against failure of this piece of equipment or a component thereof.

**NC MACHINERY-ANCHORAGE
BRANDON KANE**

COMPANY NAME : CITY OF BETHEL
 CUSTOMER EQUIP NUM : 98A00664
 COMPARTMENT NAME : ENGINE
 SERIAL NUMBER : 5MK02728
 MANUFACTURER : CATERPILLAR
 MODEL : 953B
 JOB SITE :
 EXT WARR NUMBER :
 SAMPLE SHIP TIME (day's) : 8

SHOP JOB NUM : AN85654
 COMP SERIAL NUM :
 COMPARTMENT MODEL :
 COMP MANUFACTURER :
 SAMPLE LABEL NUM :
 FLUID BRAND/WEIGHT : UNKNOWN
 FLUID TYPE :
 EXT WARR EXPIRE DATE :
 FUEL CONSUMED :

SOS Services Laboratory
 17025 West Valley Highway
 Tukwila, WA 98188-5519
 800-562-4735



LAB CONTROL NUMBER	SAMPLE DATE	PROCESS DATE	EQUIPMENT METER	METER ON FLUID	FLUID CHANGED	MAKE UP FLUID	MAKE UP FLUID UNITS	FILTER CHANGED
H330-47128-1097	30-Apr-2017	08-May-2017	15391 HR		No			Yes
<div style="border: 1px solid black; padding: 5px;"> Monitor Compartment UNKNOWN TIME ON THE OIL. IRON, COPPER, AND ALUMINUM APPEAR SLIGHTLY ELEVATED. SULFATION ALSO APPEARS SLIGHTLY ELEVATED. THIS MAY BE DUE TO EXTENDED TIME ON THE OIL BUT CAN ALSO INDICATE INCREASED WEAR. MORE SAMPLE HISTORY NEEDED TO ESTABLISH A NORMAL WEAR TREND. VERIFY THAT THE RECOMMENDED OIL DRAIN INTERVALS ARE BEING FOLLOWED. RESAMPLE IN 125 HOURS TO MONITOR. </div>								

Wear Metals (ppm)	Cu	Fe	Cr	Al	Pb	Sn	Si	Na	K	B	Mo	Ni	Ag	Ti	V	Mn	Cd	Ca	Mg	Zn	P	Ba
H330-47128-1097	7	25	1	8	3	0	6	1	4	311	94	1	0	0	0	1	0	1572	401	1404	1084	0

Oil Condition / Particle Count (ct/ml)	ST	OXI	NIT	SUL	W	A	F	V100
H330-47128-1097	7	28	11	31	N	N	N	14.7

Ag = Silver, Al = Aluminum, B = Boron, Ca = Calcium, Cr = Chromium, Cu = Copper, Fe = Iron, P = Phosphorus, K = Potassium, Li = Lithium, Mg = Magnesium, Mo = Molybdenum, Na = Sodium, Ni = Nickel, Pb = Lead, Si = Silicon, Sn = Tin, S = Sulfur, V = Vanadium, Zn = Zinc, A = Antifreeze, F = Fuel, W = Water, P = Positive, N = Negative, T = Trace, E = Excessive, NIT = Nitration, OXI = Oxidation, ST = Soot, SUL = Sulfation, ISO = ISO Rating, PFC = Percent Fuel Content, PQL = Particle Quantifying Index, Nav = Sall Water, FLPI = Flash Point, TAN = Total Acid Number, TBN = Total Base Number, H2O = Karl Fisher result, V100 = Viscosity@100C, V40 = Viscosity@40C, PVI = Particle Volume Indicator

Notice: This analysis is intended as an aid in predicting mechanical wear. No guarantee, expressed or implied, is made against failure of this piece of equipment or a component thereof.

NC MACHINERY-ANCHORAGE
BRANDON KANE

COMPANY NAME : CITY OF BETHEL
 CUSTOMER EQUIP NUM : 9TC08237
 COMPARTMENT NAME : ENGINE
 SERIAL NUMBER : 9TC08237
 MANUFACTURER : CATERPILLAR
 MODEL : D8N
 JOB SITE :
 EXT WARR NUMBER :

SHOP JOB NUM : AN85652
 COMP SERIAL NUM :
 COMPARTMENT MODEL :
 COMP MANUFACTURER :
 SAMPLE LABEL NUM :
 FLUID BRAND/WEIGHT : UNKNOWN
 FLUID TYPE :
 EXT WARR EXPIRE DATE :
 FUEL CONSUMED :

SOS Services Laboratory
 17025 West Valley Highway
 Tukwila, WA 98188-5519
 800-562-4735



FAX :
 PHONE :
 SAMPLE TYPE: **OIL**
 SAMPLE SHIP TIME (days) : 14

LAB CONTROL NUMBER	SAMPLE DATE	PROCESS DATE	EQUIPMENT METER	METER ON FLUID	FLUID CHANGED	MAKE UP FLUID	MAKE UP FLUID UNITS	FILTER CHANGED
H330-47128-1101	24-Apr-2017	08-May-2017	9834 HR	No				Yes

No Action Required
 UNKNOWN TIME ON THE OIL. WEAR METAL READINGS APPEAR NORMAL. OTHER ANALYSIS READINGS APPEAR TO BE ACCEPTABLE. MORE SAMPLE HISTORY NEEDED TO ESTABLISH A NORMAL WEAR TREND. CONTINUE SAMPLING AT THE NORMAL INTERVAL.

Wear Metals (ppm)	Cu	Fe	Cr	Al	Pb	Sn	Si	Na	K	B	Mo	Ni	Ag	Ti	V	Mn	Cd	Ca	Mg	Zn	P	Ba
H330-47128-1101	5	13	0	2	1	0	5	2	2	414	76	0	0	0	0	0	0	1382	330	1082	934	0

Oil Condition / Particle Count (cf/ml)	ST	OXI	NIT	SUL	W	A	F	V100
H330-47128-1101	0	16	7	23	N	N	N	14.0

Ag = Silver, Al = Aluminum, B = Boron, Ca = Calcium, Cr = Chromium, Cu = Copper, Fe = Iron, P = Phosphorus, K = Potassium, Li = Lithium, Mg = Magnesium, Mo = Molybdenum, Na = Sodium, Ni = Nickel, Pb = Lead, Si = Silicon, Sn = Tin, S = Sulfur, V = Vanadium, Zn = Zinc, A = Antifreeze, F = Fuel, W = Water, P = Positive, N = Negative, T = Trace, E = Excessive, NIT = Nitration, OXI = Oxidation, ST = Soot, SUL = Sulfation, ISO = ISO Rating, PFC = Percent Fuel Content, PFI = Particle Quantifying Index, NAW = Salt Water, FLPI = Flash Point, TAN = Total Acid Number, TBN = Total Base Number, H2O = Viscosity@100C, V40 = Viscosity@40C, PVI = Particle Volume Indicator

Notice: This analysis is intended as an aid in predicting mechanical wear. No guarantee, expressed or implied, is made against failure of this piece of equipment or a component thereof.

NC MACHINERY-ANCHORAGE
BRANDON KANE

COMPANY NAME: CITY OF BETHEL

SHOP JOB NUM: AN86659

CUSTOMER EQUIP NUM: 24447001

COMP SERIAL NUM:

COMPARTMENT NAME: ENGINE

COMPARTMENT MODEL:

SERIAL NUMBER: ARL00311

COMP MANUFACTURER:

MANUFACTURER: CATERPILLAR

SAMPLE LABEL NUM:

MODEL: 163H

FLUID BRAND/WEIGHT:

EXT WARR NUMBER: 24447001

FLUID TYPE:

EXT WARR EXPIRE DATE: 07-Sep-09

FUEL CONSUMED:

SOS Services Laboratory
 17025 West Valley Highway
 Tukwila, WA 98188-6519
 800-562-4735

NC MACHINERY



SAMPLE TYPE: **OIL**
 SAMPLE SHIP TIME (day): 9

LAB CONTROL NUMBER	SAMPLE DATE	PROCESS DATE	EQUIPMENT METER	METER ON FLUID	FLUID CHANGED	MAKE UP FLUID	MAKE UP FLUID UNITS	FILTER CHANGED
H330-47128-1102	29-Apr-2017	08-May-2017	8380 HR		No			Yes

No Action Required

UNKNOWN TIME ON THE OIL. WEAR METAL READINGS APPEAR NORMAL. OTHER ANALYSIS READINGS APPEAR TO BE ACCEPTABLE. MORE SAMPLE HISTORY NEEDED TO ESTABLISH A NORMAL WEAR TREND. CONTINUE SAMPLING AT THE NORMAL INTERVAL.

Wear Metals (ppm)	Cu	Fe	Cr	Al	Pb	Sn	Si	Na	K	B	Mo	NI	Ag	Ti	V	Mn	Cd	Ca	Mg	Zn	P	Ba
H330-47128-1102	1	4	0	2	0	0	2	1	2	488	84	0	0	0	0	0	0	1370	389	1144	967	0

Oil Condition / Particle Count (ct/ml)	ST	OXI	NIT	SUL	W	A	F	V100
H330-47128-1102	0	18	6	23	N	N	N	14.2

Ag = Silver, Al = Aluminum, B = Boron, Ca = Calcium, Cr = Chromium, Cu = Copper, Fe = Iron, P = Phosphorus, K = Potassium, Li = Lithium, Mg = Magnesium, Mo = Molybdenum, Na = Sodium, Ni = Nickel, Pb = Lead, Si = Silicon, Sn = Tin, S = Sulfur, V = Vanadium, Zn = Zinc, A = Antifreeze, F = Fuel, W = Water, P = Positive, N = Negative, T = Trace, E = Excessive, NIT = Nitration, OXI = Oxidation, ST = Soot, SUL = Sulfation, ISO = ISO Rating, PFC = Percent Fuel Content, PQI = Particle Quantifying Index, Nav = Sulf Water, FLPI = Flash Point, TAN = Total Acid Number, TBN = Total Base Number, H2O = Viscosity@100C, V40 = Viscosity@40C, PVI = Particle Volume Indicator

Notice: This analysis is intended as an aid in predicting mechanical wear. No guarantee, expressed or implied, is made against failure of this piece of equipment or a component thereof.

NC MACHINERY-ANCHORAGE
BRANDON KANE

COMPANY NAME : CITY OF BETHEL
 CUSTOMER EQUIP NUM : 23A10835
 COMPARTMENT NAME : ENGINE
 SERIAL NUMBER : FDP12654
 MANUFACTURER : CATERPILLAR
 MODEL : 420D
 JOB SITE :
 EXT WARR NUMBER :

SHOP JOB NUM : AN86557
 COMP SERIAL NUM :
 COMPARTMENT MODEL :
 COMP MANUFACTURER :
 SAMPLE LABEL NUM :
 FLUID BRAND/WEIGHT : UNKNOWN
 FLUID TYPE :
 EXT WARR EXPIRE DATE :
 FUEL CONSUMED :

SOS Services Laboratory
 17025 West Valley Highway
 Tukwila, WA 98188-5519
 800-562-4735



SAMPLE TYPE: **OIL**
 SAMPLE SHIP TIME (day's) : 15

LAB CONTROL NUMBER	SAMPLE DATE	PROCESS DATE	EQUIPMENT METER	METER ON FLUID	FLUID CHANGED	MAKE UP FLUID	MAKE UP FLUID UNITS	FILTER CHANGED
H330-47128-1099	23-Apr-2017	08-May-2017	4330 HR		No			Yes

No Action Required

UNKNOWN TIME ON THE OIL. WEAR METAL READINGS APPEAR NORMAL. OTHER ANALYSIS READINGS APPEAR TO BE ACCEPTABLE. MORE SAMPLE HISTORY NEEDED TO ESTABLISH A NORMAL WEAR TREND. CONTINUE SAMPLING AT THE NORMAL INTERVAL.

Wear Metals (ppm)	Cu	Fe	Cr	Al	Pb	Sn	Si	Na	K	B	Mo	Ni	Ag	Ti	V	Mn	Cd	Ca	Mg	Zn	P	Ba
H330-47128-1099	1	13	1	3	0	0	9	0	3	498	92	0	0	0	0	0	0	1458	389	1200	1015	0

Oil Condition / Particle Count (cf/ml)	ST	OXI	NIT	SUL	W	A	F	V100
H330-47128-1099	3	17	7	24	N	N	N	15.0

Ag = Silver, Al = Aluminum, B = Boron, Ca = Calcium, Cr = Chromium, Cu = Copper, Fe = Iron, P = Phosphorus, K = Potassium, Li = Lithium, Mg = Magnesium, Mo = Molybdenum, Na = Sodium, Ni = Nickel, Pb = Lead, Si = Silicon, Sn = Tin, S = Sulphur, V = Vanadium, Zn = Zinc, A = Antifreeze, F = Fuel, W = Water, P = Positive, N = Negative, T = Trace, E = Excessive, NIT = Nitration, OXI = Oxidation, ST = Soot, SUL = Sulfation, ISO = ISO Rating, PFC = Percent Fuel Content, PCI = Particle Quantifying Index, NAW = Salt Water, FLPI = Flash Point, TAN = Total Acid Number, TBN = Total Base Number, H2O = Viscosity@100C, V40 = Viscosity@40C, PVI = Particle Volume Indicator

Notice: This analysis is intended as an aid in predicting mechanical wear. No guarantee, expressed or implied, is made against failure of this piece of equipment or a component thereof.

NC MACHINERY-ANCHORAGE
BRANDON KANE

COMPANY NAME : CITY OF BETHEL
 CUSTOMER EQUIP NUM : 18061
 COMPARTMENT NAME : ENGINE
 SERIAL NUMBER : 3XJ02208
 MANUFACTURER : CATERPILLAR
 MODEL : 986F
 JOB SITE :
 EXT WARR NUMBER :

SHOP JOB NUM : AN86661
 COMP SERIAL NUM :
 COMPARTMENT MODEL :
 COMP MANUFACTURER :
 SAMPLE LABEL NUM :
 FLUID BRAND/WEIGHT : UNKNOWN
 FLUID TYPE :
 EXT WARR EXPIRE DATE :
 FUEL CONSUMED :

SOS Services Laboratory
 17025 West Valley Highway
 Tukwila, WA 98188-5519
 800-562-4735



SAMPLE TYPE: OIL
 SAMPLE SHIP TIME (days) : 14

LAB CONTROL NUMBER	SAMPLE DATE	PROCESS DATE	EQUIPMENT METER	METER ON FLUID	FLUID CHANGED	MAKE UP FLUID	MAKE UP FLUID UNITS	FILTER CHANGED
H330-47128-1100	24-Apr-2017	08-May-2017	24097 HR	No	No			Yes

No Action Required
 UNKNOWN TIME ON THE OIL. UNKNOWN WEIGHT OR BRAND OF OIL BEING USED. VISCOSITY IS IN THE 40W RANGE. WEAR METAL READINGS APPEAR NORMAL. OTHER ANALYSIS READINGS APPEAR TO BE ACCEPTABLE. MORE SAMPLE HISTORY NEEDED TO ESTABLISH A NORMAL WEAR TREND. CONTINUE SAMPLING AT THE NORMAL INTERVAL.

Wear Metals (ppm)	Cu	Fe	Cr	Al	Pb	Sn	Si	Na	K	B	Mo	Ni	Ag	Ti	V	Mn	Cd	Ca	Mg	Zn	P	Ba
H330-47128-1100	7	4	0	2	1	0	4	1	2	468	83	0	0	0	0	0	0	1338	354	1110	952	0

Oil Condition / Particle Count (ct/m)	ST	OXI	NIT	SUL	W	A	F	V100
H330-47128-1100	0	16	7	23	N	N	N	13.9

Ag = Silver, Al = Aluminum, B = Boron, Ca = Calcium, Cr = Chromium, Cu = Copper, Fe = Iron, P = Phosphorus, K = Potassium, Li = Lithium, Mg = Magnesium, Mo = Molybdenum, Na = Sodium, Ni = Nickel, Pb = Lead, Si = Silicon, Sn = Tin, S = Sulphur, V = Vanadium, Zn = Zinc, A = Antifreeze, F = Fuel, W = Water, P = Positive, N = Negative, T = Trace, E = Excessive, NIT = Nitration, OXI = Oxidation, ST = Soot, SUL = Sulfation, ISO = ISO Rating, PFC = Percent Fuel Content, PCI = Particle Quantifying Index, NAV = Salt Water, FLPI = Flash Point, TAN = Total Acid Number, TBN = Total Base Number, H2O = Karl Fisher result, V100 = Viscosity@100C, VA0 = Viscosity@40C, PVI = Particle Volume Indicator

Notice: This analysis is intended as an aid in predicting mechanical wear. No guarantee, expressed or implied, is made against failure of this piece of equipment or a component thereof.

NC MACHINERY-ANCHORAGE
BRANDON KANE

COMPANY NAME : CITY OF BETHEL
 CUSTOMER EQUIP NUM : 23A10835
 COMPARTMENT NAME : RADIATOR
 SERIAL NUMBER : FDP12654
 MANUFACTURER : CATERPILLAR
 MODEL : 420D
 PHONE :
 FAX :
 SAMPLE TYPE: **COOLANT - RAD_1**
 SAMPLE SHIP TIME (days) : 15
 EXT WARR NUMBER :
 JOB SITE :
 EXT WARR NUMBER :

SHOP JOB NUM : AN88657
 COMP SERIAL NUM :
 COMPARTMENT MODEL :
 COMP MANUFACTURER :
 SAMPLE LABEL NUM :
 FLUID BRAND/WEIGHT : UNKNOWN
 FLUID TYPE :
 EXT WARR EXPIRE DATE :
 FUEL CONSUMED :

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 Tukwila, WA 98188-5519
 800-562-4735

NC MACHINERY



LAB CONTROL NUMBER	SAMPLE DATE	PROCESS DATE	EQUIPMENT METER	METER ON FLUID	FLUID CHANGED	MAKE UP FLUID	MAKE UP FLUID UNITS
H330-47128-5009	23-Apr-2017	08-May-2017	4330 HR	4330 HR	Unknown		

No Action Required

ALL LEVEL 1 READINGS ARE WITHIN THE ACCEPTABLE RANGE FOR ELC. CONTINUE TO USE THIS COOLANT. SAMPLE AGAIN AT THE REGULAR INTERVAL TO MONITOR THE COOLING SYSTEM.

Data	BP	FP	GL	pH	CON
H330-47128-5009	109	-52	59	7.8	4004

Data	NO2	Odor	Color	App	Foam	Oil	Paint
H330-47128-5009	410	norm	reddk	clear	norm	none	none

Al = Aluminum, Cu = Copper, Fe = Iron, K = Potassium, Na = Sodium, Pb = Lead, Sn = Tin, V = Vanadium, Zn = Zinc, BO3 = Borate, CaC = Ca as CaCO3, MgC = Mg as CaCO3, MoO4 = Molybdate, PO4 = Phosphate, SiO3 = Silicate,
 TH = Total Hardness, CL = Chloride, CO3 = Carbonate, GLO = Glycolate, NO2 = Nitrite, NO3 = Nitrate, PO4 = Phosphate, SAC = Sebacic Acid, SO4 = Sulfate, TT = Toluylazote, BP = Boil Point(C), FP = Freeze Point(C), GL = Glycol,
 CON = Conductivity, App = Appearance, Paint = Precipitate Amount, Papp = Precipitate Color, Pprop = Precipitate Property, CType = Coolant Type
 Notice: This analysis is intended as an aid in predicting mechanical wear. No guarantee expressed or implied. Is made against failure of this piece of equipment or a component thereof.

NC MACHINERY-ANCHORAGE
BRANDON KANE

COMPANY NAME : CITY OF BETHEL
 CUSTOMER EQUIP NUM : 29A18020
 COMPARTMENT NAME : RADIATOR
 SERIAL NUMBER : B9T00155
 MANUFACTURER : CATERPILLAR
 MODEL : 180M
 JOB SITE :
 EXT WARR NUMBER :
 SAMPLE TYPE: **COOLANT - RAD_1**
 SAMPLE SHIP TIME (day's) : 12

SHOP JOB NUM : AN86658
 COMP SERIAL NUM :
 COMPARTMENT MODEL :
 COMP MANUFACTURER :
 SAMPLE LABEL NUM :
 FLUID BRAND/WEIGHT : UNKNOWN
 FLUID TYPE :
 EXT WARR EXPIRE DATE :
 FUEL CONSUMED :

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 17025 West Valley Highway
 Tukwila, WA 98188-5519
 800-562-4735

NC MACHINERY



LAB CONTROL NUMBER	SAMPLE DATE	PROCESS DATE	EQUIPMENT METER	METER ON FLUID	FLUID CHANGED	MAKE UP FLUID	MAKE UP FLUID UNITS
H330-47128-5010	26-Apr-2017	08-May-2017	5778 HR	5778 HR	Unknown		

CONTAINS AN EXCESSIVE AMOUNT OF BLACK MAGNETIC PRECIPITATES. PRECIPITATE MAY LEAD TO SCALE FORMATION AND ABNORMAL WEAR. DRAIN COOLANT. FLUSH 3-4 TIMES WITH WATER AND REFILL WITH EXTENDED LIFE COOLANT PREMIX. RESAMPLE IN 1/2 NORMAL INTERVAL TO MONITOR THE PRECIPITATE LEVELS.

Action Required

Data	BP	FP	GL	pH	CON
H330-47128-5010	108	-43	54	7.1	3913

Data	NO2	Odor	Color	App	Foam	Oil	Paint	Papp	PCol	PProp
H330-47128-5010	410	norm	magentz	clear	norm	none	excess	flake	blk sol	mag

Al = Aluminum, Cu = Copper, Fe = Iron, K = Potassium, Na = Sodium, Pb = Lead, Sr = Tin, V = Vanadium, Zn = Zinc, BO3 = Borate, CAC = Ca as CaCO3, MgC = Mg as CaCO3, MoO4 = Molybdate, PO4 = Phosphate, SiO3 = Silicate, TH = Total Hardness, CL = Chloride, CO3 = Carbonate, GLO = Glycolate, NO2 = Nitrite, NO3 = Nitrate, PO4 = Phosphate, SAG = Sulfuric Acid, SO4 = Sulfate, TT = Toluene, BP = Boil Point(C), FP = Freeze Point(C), GL = Glycol, CON = Conductivity, App = Appearance, Paint = Precipitate Amount, Papp = Precipitate Appearance, PCol = Precipitate Color, PProp = Precipitate Property, CType = Coolant Type

Notice: This analysis is intended as an aid in predicting mechanical wear. No guarantee expressed or implied, is made against failure of this piece of equipment or a component thereof.

NC MACHINERY-ANCHORAGE
BRANDON KANE

COMPANY NAME : CITY OF BETHEL
 CUSTOMER EQUIP NUM : 24447001
 COMPARTMENT NAME : RADIATOR
 SERIAL NUMBER : ARL00311
 MANUFACTURER : CATERPILLAR
 MODEL : 163H
 JOB SITE :
 EXT WARR NUMBER : 24447001

SHOP JOB NUM : AN86659
 COMP SERIAL NUM :
 COMPARTMENT MODEL :
 COMP MANUFACTURER :
 SAMPLE LABEL NUM :
 FLUID BRAND/WEIGHT : UNKNOWN
 FLUID TYPE :
 EXT WARR EXPIRE DATE : 07-Sep-09
 FUEL CONSUMED :

NC MACHINERY

SOS Services Laboratory
 17025 West Valley Highway
 Tukwila, WA 98188-5519
 800-562-4735



SAMPLE TYPE: **COOLANT - RAD_1**
 SAMPLE SHIP TIME (day's) : 9
 LAB CONTROL NUMBER : H330-47128-5011
 SAMPLE DATE : 29-Apr-2017
 PROCESS DATE : 08-May-2017
 EQUIPMENT METER : 8380 HR
 METER ON FLUID : 8380 HR
 FLUID CHANGED : Unknown
 MAKE UP FLUID :
 MAKE UP FLUID UNITS :

MONITOR COMPARTMENT

NITRITE (SCA INHIBITOR) IS SLIGHTLY BELOW THE LOWER LIMIT. WE RECOMMEND AN SCANNITRITES LEVEL OF 1.000 TO 2.600ppm FOR METAL PITTING PROTECTION IN CONVENTIONAL COOLANT. ALL OTHER LEVEL TESTS APPEAR NORMAL FOR CONVENTIONAL COOLANT. ADJUST THE NITRITES BY ADDING 0.8 LITERS OF SCA PER 10 GALLON CAPACITY. RESAMPLE IN 1/2 NORMAL INTERVAL TO MONITOR THE NITRITE LEVELS.

Data	BP	FP	GL	PH	CON
H330-47128-5011	108	-53	60	7.8	3760

Data	NO2	Odor	Color	App	Foam	Oil	Paint
H330-47128-5011	950	norm	green/fg	clear	norm	none	none

Al = Aluminum, Cu = Copper, Fe = Iron, K = Potassium, Na = Sodium, Pb = Lead, Sr = Tin, V = Vanadium, Zn = Zinc, B03 = Borate, CAC = Ca as CaCO3, MgC = Mg as CaCO3, MoO4 = Molybdate, PO4 = Phosphate, SiO3 = Silicate, TH = Total Hardness, CL = Chloride, CO3 = Carbonate, GLO = Glycolate, NO2 = Nitrite, NO3 = Nitrate, PO4 = Phosphate, SAc = Sulfuric Acid, SO4 = Sulfate, TT = Total Hardness, BP = Boil Point(C), FP = Freeze Point(C), GL = Glycol, CON = Conductivity, App = Appearance, Paint = Precipitate Amount, Papp = Precipitate Appearance, PCol = Precipitate Color, Pprop = Precipitate Property, CType = Coolant Type

Notice: This analysis is intended as an aid in predicting mechanical wear. No guarantee, expressed or implied, is made against failure of this piece of equipment or a component thereof.

NC MACHINERY-ANCHORAGE
BRANDON KANE

COMPANY NAME : CITY OF BETHEL
 CUSTOMER EQUIP NUM : 21A10241
 COMPARTMENT NAME : RADIATOR
 SERIAL NUMBER : 3JW02270
 MANUFACTURER : CATERPILLAR
 MODEL : 990G

SHOP JOB NUM : AN86660
 COMP SERIAL NUM :
 COMPARTMENT MODEL :
 COMP MANUFACTURER :
 SAMPLE LABEL NUM :
 FLUID BRAND/WEIGHT : UNKNOWN
 FLUID TYPE :
 EXT WARR EXPIRE DATE :
 FUEL CONSUMED :

SOS Services Laboratory
 17025 West Valley Highway
 Tukwila, WA 98188-5519
 800-562-4735

SAMPLE TYPE: **COOLANT - RAD_1**
 SAMPLE SHIP TIME (days) : 10

EXT WARR NUMBER :

EXT WARR EXPIRE DATE :

LAB CONTROL NUMBER	SAMPLE DATE	PROCESS DATE	EQUIPMENT METER	METER ON FLUID	FLUID CHANGED	MAKE UP FLUID	MAKE UP FLUID UNITS
H330-47128-5012	28-Apr-2017	08-May-2017	15558 HR	15558 HR	Unknown		

CONTAINS A TRACE AMOUNT OF BLACK MAGNETIC PRECIPITATES. GLYCOL CONCENTRATION IS SLIGHTLY WEAK, HAS WATER BEEN ADDED TO THE SYSTEM? DRAIN 1/4 OF COOLANT, ADD NEW ANTIFREEZE. RESAMPLE IN 1/2 NORMAL INTERVAL TO MONITOR THE COOLING SYSTEM.

Action Required

Data	BP	FP	GL	pH	CON
H330-47128-5012	103	-18	33	8.1	2480

Data	NO2	Odor	Color	App	Foam	Oil	Paint	Papp	Pcol	PProp
H330-47128-5012	880	norm	red/dk	clear	norm	none	trace	flake	blk sol	mag

Al = Aluminum, Cu = Copper, Fe = Iron, K = Potassium, Na = Sodium, Pb = Lead, Sr = Tin, V = Vanadium, Zn = Zinc, BO3 = Borate, CAC = Ca as CaCO3, MgC = Mg as CaCO3, MoO4 = Molybdate, PO4 = Phosphate, SiO3 = Silicate, TH = Total Hardness, Cl = Chloride, CO3 = Carbonate, GLO = Glycolate, NO2 = Nitrite, NO3 = Nitrate, PO4 = Phosphate, SAc = Sulfuric Acid, SO4 = Sulfate, TT = Total Hardness, BP = Boil Point(C), FP = Freeze Point(C), GL = Glycol, CON = Conductivity, App = Appearance, Pamt = Precipitate Amount, Papp = Precipitate Appearance, Pcol = Precipitate Color, PProp = Precipitate Property, CType = Coolant Type
 Notice: This analysis is intended as an aid in predicting mechanical wear. No guarantee is expressed or implied, is made against failure of this piece of equipment or a component thereof.



NC MACHINERY-ANCHORAGE
BRANDON KANE

COMPANY NAME : CITY OF BETHEL
 CUSTOMER EQUIP NUM : 9TC06237
 COMPARTMENT NAME : RADIATOR
 SERIAL NUMBER : 9TC06237
 MANUFACTURER : CATERPILLAR
 MODEL : D9N
 JOB SITE :
 EXT WARR NUMBER :
 SAMPLE TYPE: **COOLANT - RAD_1**
 SAMPLE SHIP TIME (days) : 14

SHOP JOB NUM : AN88662
 COMP SERIAL NUM :
 COMPARTMENT MODEL :
 COMP MANUFACTURER :
 SAMPLE LABEL NUM :
 FLUID BRAND/WEIGHT :
 FLUID TYPE :
 EXT WARR EXPIRE DATE :
 FUEL CONSUMED :

SOS Services Laboratory
 17025 West Valley Highway
 Tukwila, WA 98188-5519
 800-562-4735



LAB CONTROL NUMBER	SAMPLE DATE	PROCESS DATE	EQUIPMENT METER	METER ON FLUID	FLUID CHANGED	MAKE UP FLUID	MAKE UP FLUID UNITS
H330-47128-5013	24-Apr-2017	08-May-2017	9834 HR	9834 HR	Unknown		

Action Required

SCA (INHIBITOR) LEVEL IS ABOVE THE TARGET LEVEL BUT STILL WITHIN RANGE. THIS MAY CAUSE HIGH CONDUCTIVITY READINGS AND MIGHT RESULT IN ADDITIVE DROPOUT AND ABNORMAL WEAR. BE SURE TO TEST NITRITE LEVEL BEFORE ADDING SCA ADDITIVE. GLYCOL CONCENTRATION IS SLIGHTLY WEAK. HAS WATER BEEN ADDED THE SYSTEM? DRAIN 1/4 OF COOLANT. ADD NEW ANTIFREEZE. RESAMPLE IN 1/2 NORMAL INTERVAL TO MONITOR THE COOLING SYSTEM.

Data	BP	FP	GL	pH	CON
H330-47128-5013	104	-24	39	8.3	3010

Data	NO2	Odor	Color	App	Foam	Oil	Paint
H330-47128-5013	3110	norm	green/lig	clear	norm	none	none

Al = Aluminum, Cu = Copper, Fe = Iron, K = Potassium, Na = Sodium, Pb = Lead, Sn = Tin, V = Vanadium, Zn = Zinc, BO3 = Borate, CAC = Ca as CaCO3, MgC = Mg as CaCO3, MoO4 = Molybdate, PO4 = Phosphate, SiO3 = Silicate, TH = Total Hardness, CL = Chloride, CO3 = Carbonate, GLO = Glycolate, NO2 = Nitrite, NO3 = Nitrate, PO4 = Phosphate, SAc = Sulfuric Acid, SO4 = Sulfate, TT = Total Hardness, BP = Boil Point(C), FP = Freeze Point(C), GL = Glycol, CON = Conductivity, App = Appearance, Paint = Precipitate Amount, Papp = Precipitate Appearance, PCol = Precipitate Color, Pprop = Precipitate Property, CType = Coolant Type
 Notice: This analysis is intended as an aid in predicting mechanical wear. No guarantee expressed or implied, is made against failure of this piece of equipment or a component thereof.

NC MACHINERY-ANCHORAGE
BRANDON KANE

COMPANY NAME CITY OF BETHEL
CUSTOMER EQUIP NUM 24A11106
COMPARTMENT NAME ENGINE
SERIAL NUMBER BMR00444
MANUFACTURER CATERPILLAR

SHOP JOB NUM AN86663
COMP SERIAL NUM
COMPARTMENT MODEL
COMP MANUFACTURER
SAMPLE LABEL NUM
FLUID BRAND/WEIGHT UNKNOWN
FLUID TYPE

SOS Services Laboratory
17025 West Valley Highway
Tukwila, WA 98188-5519
800-562-4735

FAX
PHONE
SAMPLE TYPE: **OIL**
SAMPLE SHIP TIME (days) 11

EXT WARR NUMBER 24A11106
JOB SITE

EXT WARR EXPIRE DATE 28-May-09
FUEL CONSUMED

LAB CONTROL NUMBER	SAMPLE DATE	PROCESS DATE	EQUIPMENT METER	METER ON FLUID	FLUID CHANGED	MAKE UP FLUID	MAKE UP FLUID UNITS	FILTER CHANGED
H330-47128-1095	27-Apr-2017	08-May-2017	5007 HR	No				Yes

Action Required

MORE SAMPLE HISTORY NEEDED TO ESTABLISH A NORMAL WEAR TREND. UNKNOWN TIME ON THE OIL. FUEL DILUTION ABOVE 4% BY VOLUME IN OIL. FUEL DILUTION HAS DECREASED THE VISCOSITY TO A SAE 10 WT. COPPER IS HIGHER THAN NORMAL BUT COULD BE FROM A NON-CRITICAL SOURCE. CHECK THE FUEL SYSTEM FOR THE SOURCE OF THE FUEL. INVESTIGATE SOURCE OF FUEL DILUTION. AFTER ANY NECESSARY REPAIRS, RESAMPLE AT HALF THE NORMAL SAMPLE INTERVAL TO VERIFY FUEL DILUTION NO LONGER EXISTS.

Wear Metals (ppm)	Cu	Fe	Cr	Al	Pb	Sn	Si	Na	K	B	Mo	Ni	Ag	Ti	V	Mn	Cd	Ca	Mg	Zn	P	Ba
H330-47128-1095	91	24	1	1	2	1	4	5	1	30	28	0	0	0	0	0	0	516	546	678	551	0

Oil Condition / Particle Count (c/mtl)	ST	OXI	NIT	SUL	W	A	F	V100
H330-47128-1095	0	18	10	22	N	N	P	5.1

Ag = Silver, Al = Aluminum, B = Boron, Ca = Calcium, Cr = Chromium, Cu = Copper, Fe = Iron, P = Phosphorus, K = Potassium, Li = Lithium, Mg = Magnesium, Mo = Molybdenum, Na = Sodium, Ni = Nickel, Pb = Lead, Si = Silicon, Sn = Tin, S = Sulfur, V = Vanadium, Zn = Zinc, A = Antifreeze, F = Fuel, W = Water, P = Positive, N = Negative, T = Trace, E = Excessive, NIT = Nitration, OXI = Oxidation, ST = Soot, SUL = Sulfation, ISO = ISO Rating, PFC = Percent Fuel Content, PCI = Particle Counting Index, NaW = Salt Water, FLPI = Flash Point, TAN = Total Acid Number, TBN = Total Base Number, H2O = Water, V100 = Viscosity@100C, V40 = Viscosity@40C, PVI = Particle Volume Indicator

Notice: This analysis is intended as an aid in predicting mechanical wear. No guarantee expressed or implied, is made against failure of this piece of equipment or a component thereof.

