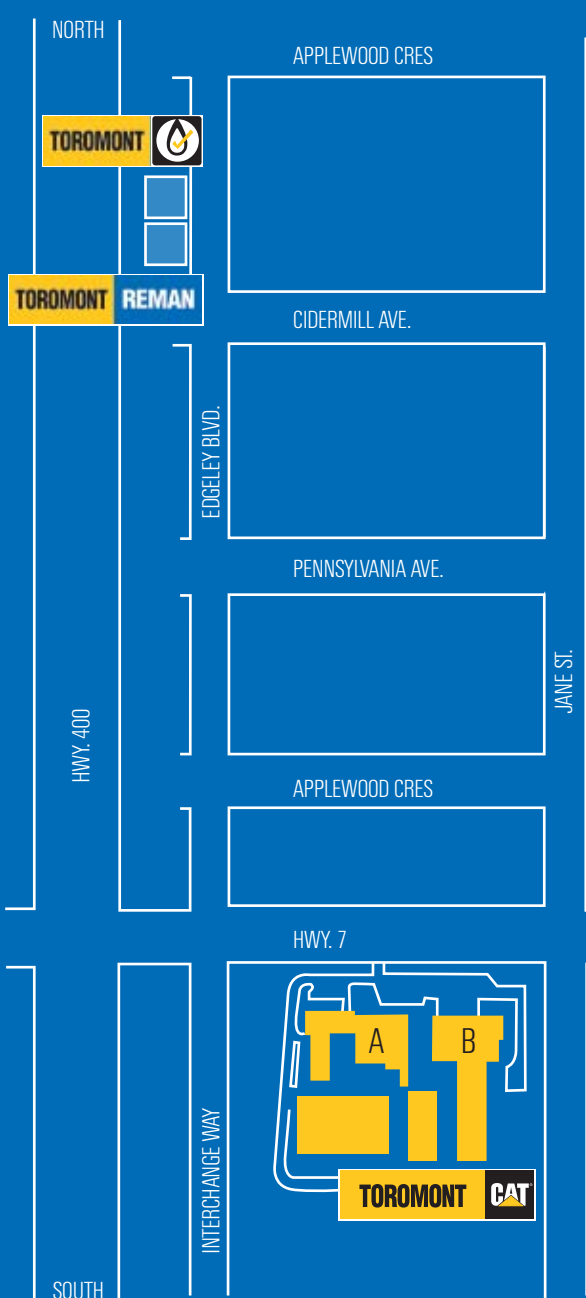




TOROMONT

FLUID ANALYSIS LAB

SCHEDULED FLUID ANALYSIS CAN MAXIMIZE EQUIPMENT LIFE AND PRODUCTIVITY, WHILE MINIMIZING OPERATING COSTS AND DOWNTIME.



HOURS OF OPERATION

7:00 AM TO 5:00 PM
OVERNIGHT DROP-OFF BOX AVAILABLE AFTER HOURS

TOROMONT FLUID ANALYSIS

548 EDGELEY BLVD.
CONCORD ON. L4K

S.O.S. LAB	416.667.5937	1.866.9.SOS.LAB
	FAX: 416.667.5969	
HEAD OFFICE	416.667.5900	
REMAN PRODUCTS	416.667.5915	
ENGINES & MACHINING	416.667.5902	
FLUID POWER TRAIN	416.667.5903	
HYDRAULIC SHOP	416.667.5938	

VISIT ONLINE:

www.toromontcat.com/sos_oilanalysis.asp

EMAIL US:
CATFluidAnalysisLabGroup@toromont.com

WELCOME TO TOROMONT FLUID ANALYSIS

OFFERING "SCHEDULED OIL SAMPLING"
(S-O-S) & "COOLANT ANALYSIS"
PROGRAMS

PROTECT YOUR INVESTMENT

A program developed by Caterpillar,
expressly for Caterpillar Dealers, used to
monitor the health of your equipment.

ISO 9001
REGISTERED
PRICEWATERHOUSECOOPERS

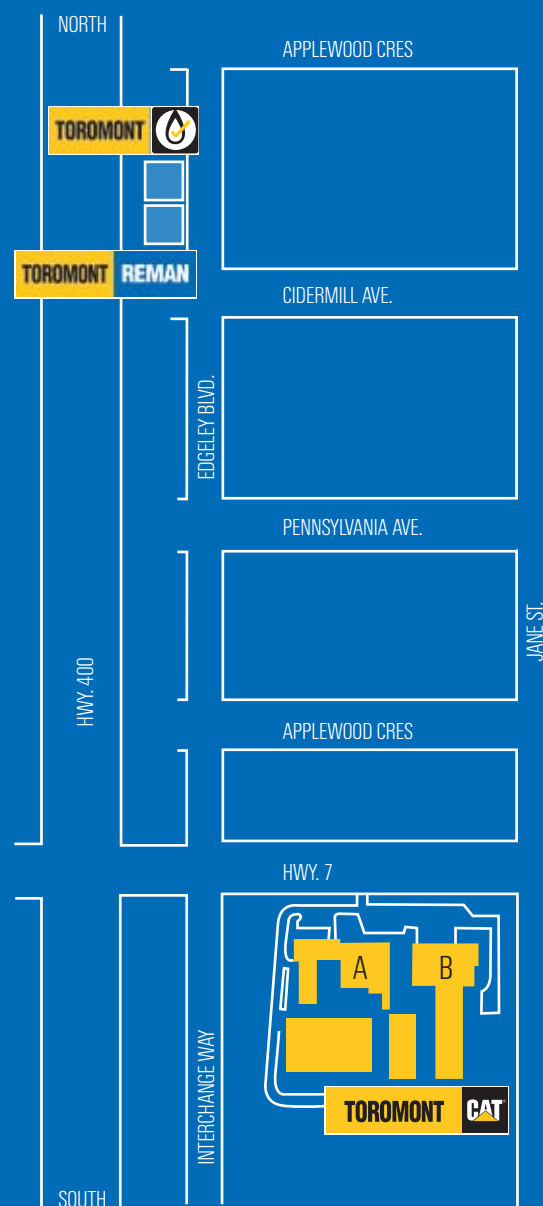


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PROTECT YOUR INVESTMENT

Monitor the health of your equipment with Toromont's Fluid Analysis lab program. The Toromont Fluid Analysis lab is committed to early detection of mechanical problems in order to prevent costly failures and extend the life of your equipment. A few ounces tell the story... regular oil and coolant testing are excellent tools to help detect impending system failures and ensure that your equipment is being protected.



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**A FEW
OUNCES
TELL THE
STORY**

ISO 9001:2000 | ISO 11171:1999 | SAE J 300 | SAE J 306



PROTECT YOUR INVESTMENT

Your equipment has been engineered to precise standards to ensure peak performance, and machine fluids are an important factor in this equation. Failed or worn parts can be analyzed to provide vital machine performance information, and machine fluids can tell a similar story.

Help avoid large repair bills and costly downtime with Toromont's S•O•S and Coolant Analysis programs. *Protect your investment.*

OIL ANALYSIS (S•O•S)

Analyze the condition of your oil and the overall health of your equipment using S•O•S services.

- Identify potential problems early
- Verify the effectiveness of your maintenance programs
- Develop oil condition histories and wear trends
- Keep your equipment value high with proof of maintenance
- Increase your machine productivity
- Increase your machine availability
- Lower your operating costs
- Increase your profitability

COOLANT ANALYSIS

A Coolant Analysis program is an essential part of any complete equipment maintenance program. We can help ensure your cooling systems protect your machine's vital components from harm.

Poor cooling system maintenance can lead to overheating and rapid oil deterioration, which can cause or accelerate failures in related systems. It is estimated that over 50% of all engine related problems are caused or made worse by poor cooling system maintenance.

A Coolant Analysis program can;

- Detect potential problems in engine, hydraulic, and transmission cooling systems early
- Improve the life of your lubricating oils
- Prolong the life of your machine's critical components



THE TOROMONT ADVANTAGE

WHY CHOOSE TOROMONT S•O•S AND COOLANT ANALYSIS?

The Toromont Fluid Analysis Team doesn't just focus on the condition of your oil, we also focus on the condition of your equipment. Caterpillar owners trust the skilled and knowledgeable CAT certified technicians of Toromont to keep their machines running at peak efficiency. Similarly, the Toromont Fluid Analysis Lab's interpretation of S•O•S and Coolant Analysis results are supported by nearly 40 years of heavy equipment database records and experience. Our knowledge of your machine's maintenance and operational procedures, plus our technical expertise significantly enhance our ability to provide you with sound preventative maintenance advice not just numbers or graphs.

Toromont Fluid Analysis results are automatically and seamlessly integrated with your Toromont service records. You never need to search for your Fluid Analysis reports when you bring your equipment in to Toromont for service. No matter where you may be in our territory, our product support team can find your machine's S•O•S and Coolant Analysis records virtually instantly, with the click of a button. In addition, our product support personnel are trained to review S•O•S and Coolant Analysis results to aid in-shop repairs and diagnosis for a fully integrated repair and maintenance program.



KNOWLEDGE

HEAVY EQUIPMENT

Not a Cat? Not a problem! Our employees know heavy machinery inside and out. The resources and experience network available throughout our organization gives us a huge advantage over competitive labs. When it comes to interpreting S*O*S and Coolant Analysis results we can help with any brand of heavy machinery you may have.

CATERPILLAR

Of course, our knowledge of Caterpillar equipment is unmatched, and our direct working relationship with Caterpillar Inc helps us to get to the bottom of any machine issue you may have.

INDIVIDUAL ATTENTION

After processing, each report is carefully reviewed, the results explained and, if required, recommendations are made. All of this is to ensure that Toromont Fluid Analysis is truly your value added service.



S•O•S AND COOLANT ANALYSIS

PROGRAM OPTIONS – SHIPPING/REPORT VIEWING



AT TOROMONT FLUID ANALYSIS WE OFFER A SERVICE CUSTOMIZED TO YOUR NEEDS. DEALING WITH US IS AS EASY AS YOU'D LIKE IT TO BE!

SAMPLE RETURN METHOD

Our Fluid Analysis programs allow you to ship your samples to our labs at **no cost to you!**

CANADA-POST PRE-PAID BOTTLES - Every sample bottle is labelled and pre-paid for shipment to the lab from anywhere in Canada. Simply drop your sample into any mail box.

PRE-PAID XPRESSPOST ENVELOPES - Included in every 10 pack are labelled and pre-paid XPRESSPOST bags that can be used to quickly send up to 10 samples to our lab at a time. Again, simply drop the bag into any mailbox.

DROP OFF AT A NEARBY BRANCH – You can drop off your samples at any one of our 33 branch locations throughout Ontario, Manitoba, Newfoundland, Labrador and Nunavut and we'll expedite them to our lab for you.

REPORT VIEWING

After your report has been created you have the choice of receiving results by:

- Standard mail
- E-mail
- Fax
- MyToromont, our free of charge fleet management website
 - View sample reports online
 - Order parts, view service records, pay/track invoices
 - Use the e-sheet service to create sample information sheets quickly and easily
 - Visit <https://www.mytoromont.com> for details

REPORT FORMAT

Our Fluid Analysis reports display all machine and customer information, recommendations and sampling history in a concise, easy to understand format.

SAMPLING OPTIONS

You can draw your fluid sample using a conventional vacuum pump, or a Toromont technician can install a sampling test port to any one of your machine's fluid compartments. When using a sampling test port you can easily draw fluid from your machine's compartments using a probalizer tip included free in our 10-pack kits.

TOROMONT Lab Control No.: 206699608
Sample Label No.: 0934620

FLUID ANALYSIS
Lubricant & Component - Predictive Results

UNIT INFORMATION

Unit Number: 10007	Component: ENGINE	VIN: [REDACTED]
Equip Make: CATERPILLAR	Equip Serial: [REDACTED]	
Equip Model: 945	Job Number: [REDACTED]	JOB# [REDACTED]

SAMPLE INFORMATION

Date Taken	Oil Type	Oil Qty	Oil Level	Oil Color	Oil Smell	Oil Temp	Oil Viscosity	Oil Specific Gravity	Oil pH	Oil Total Solids	Oil Water	Oil Acid	Oil Oxidation	Oil Sulfur	Oil Copper	Oil Iron	Oil Lead	Oil Silicon	Oil Sodium	Oil Potassium	Oil Tin	Oil Antimony	Oil Fuel	Oil Water
4/23/2008	15W40	1	176	2	Red	1	5	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/16/2007	15W40	18	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/28/2007	15W40	280	27	0	14	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/16/2007	15W40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/23/2008	15W40	28	2	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/16/2004	15W40	20	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

OIL CHANGE HISTORY

Date Taken	Date Repl	Make	Oil Qty	Filter	Oil Brand	S&S Grade	Oil Temp	Oil Viscosity	Oil Specific Gravity	Oil pH	Oil Total Solids	Oil Water	Oil Acid	Oil Oxidation	Oil Sulfur	Oil Copper	Oil Iron	Oil Lead	Oil Silicon	Oil Sodium	Oil Potassium	Oil Tin	Oil Antimony	Oil Fuel	Oil Water
4/23/2008	4/16/2008	Yes	18	15W40	15W40	15W40	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/16/2007	4/16/2007	Yes	18	15W40	15W40	15W40	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/28/2007	4/28/2007	Yes	280	15W40	15W40	15W40	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/16/2007	4/16/2007	Yes	0	15W40	15W40	15W40	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/23/2008	4/23/2008	Yes	28	15W40	15W40	15W40	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/16/2004	4/16/2004	Yes	20	15W40	15W40	15W40	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

EVALUATION / RECOMMENDATION

Urgent levels detected. Glycol/Antifreeze was detected in this sample. Iron, moly, copper, lead, silicon, sodium, potassium, Soot and Nitration are higher than normal. All other readings are acceptable. Possible causes of coolant contamination are: bad water pump or seal, plugged water pump sweep hole, bad gasket or seal, bad head gasket, bad oil cooler, or cracked head. Recommend location and correction of the source of coolant entry/contamination and abnormal wear. Drain, flush thoroughly and refill. Resample after repairs to continue monitoring the system.

Please note: If the number of hours on the oil is not provided on the sample information sheet, then the sample interpretation and recommendations will be based on a normal sample interval (i.e., 250-30,000hrs for engine oil compartments, 500-10,000hrs for non-engine oil compartments).





S•O•S ANALYSIS PROGRAM (SCHEDULED OIL SAMPLING)

WE MONITOR YOUR OIL WITH METHODS DEVELOPED BY CATERPILLAR AND DESIGNED TO EVALUATE THE CONDITION OF YOUR MACHINE COMPONENTS, NOT JUST THE CONDITION OF YOUR OIL

WEAR RATE ANALYSIS

- Detects the amount and type of wear metal elements present
 - When samples are taken at regular intervals these elements can be trended to often spot the onset of a progression towards failure
 - When classic wear element combinations are observed the source of rapid wear can often be determined
- Monitors elements such as silicon that indicate dirt entry into the system
- Monitors certain additive levels in the oil

OIL CLEANLINESS ANALYSIS

- 70% of hydraulic system failures are caused by some form of contaminant
- Particle count analysis is used to detect metallic and non-metallic impurities in oil such as friction disc material or contamination, that are otherwise undetectable
- Combined with wear rate analysis this provides a more comprehensive evaluation of hydraulic and power train component health

OIL CONDITION ANALYSIS

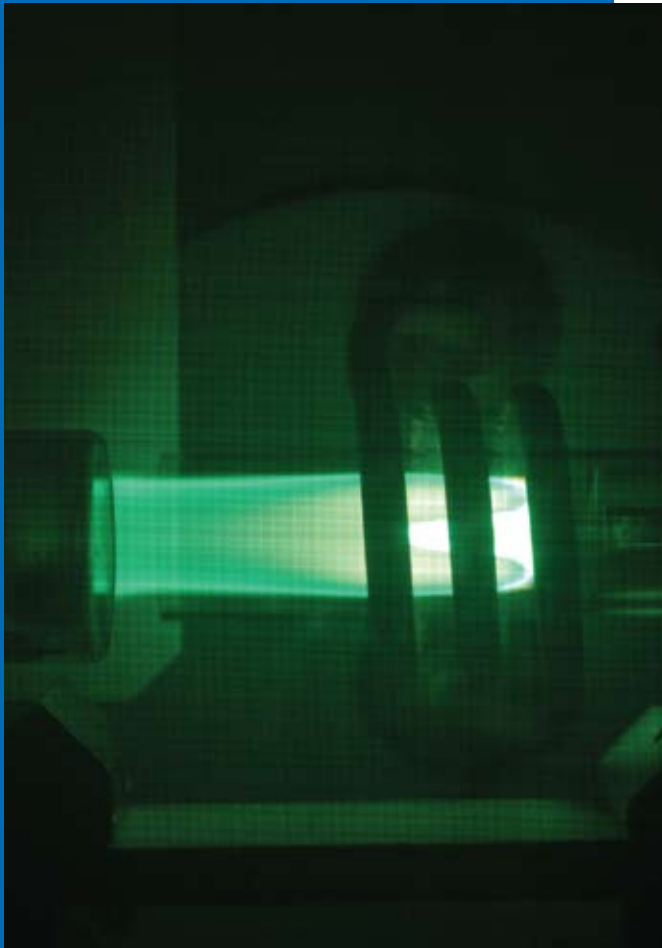
- Determines lubrication properties of your oil.
- Infrared analysis is used to test for soot, sulphation, oxidation and nitration, determines the extent of oil deterioration and if your oil is performing to spec

DETECTION OF FUEL, WATER & GLYCOL

- Fluid contaminants can degrade oil performance rapidly and are often signs of problems elsewhere that could require immediate attention

VISCOSITY

- Is a measure of your oil's lubricity, or its ability to lubricate your machine's internal moving parts



ADDITIONAL TESTS

- **TAN (Total Acid Number)**
Is a measure of the build-up of acidic by-products in your oil which can lead to corrosion and premature wear of internal metallic components
- **TBN (Total Base Number)**
Is a measure of your oil's alkalinity reserve and its' ability to neutralize acidic contaminants and preventing corrosion
- Both TAN and TBN numbers can help to indicate when your oil should be changed





Cooling system problems contribute to more than 50% of all engine related failures. Diesel engines produce a tremendous amount of power and heat that must be dissipated to keep your engine running properly. In addition, your engine's cooling system (depending on design) is used to absorb heat from transmission and hydraulic components. Poor cooling system maintenance can reduce engine and component life and lead to serious failures and downtime. Keep your cooling system, and the components they protect healthy with Toromont's Coolant Analysis program.

TOROMONT COOLANT ANALYSIS

A TWO-LEVEL PROGRAM WHICH:

- Gives an indication of overall cooling system condition
- Identifies issues with maintenance procedures and operational practices

LEVEL 1: BASIC COOLANT MAINTENANCE CHECK

- Up to 7 observational parameters and 4 analytical tests
- Indicates major problems with coolant and predicts major system problems
- Results can be used to determine if a level 2 analysis is required

LEVEL 2: COMPREHENSIVE COOLING SYSTEM ANALYSIS

- Extensive chemical evaluation of coolant and its effects on the system itself
- Identifies subtle system problems, identifies causes, and prioritizes issues
- Performed at Caterpillar labs in Peoria, Illinois