



High **Performance**

Compact track loaders deliver on pavement or turf

esigned for work in rugged terrain applications, the Cat® C-Series of Compact Track Loaders can also be used for trenching, grading and backfilling on rainsoaked lawns or any job where you need to tread lightly.

These low-ground-pressure machines are turf friendly, powerful, and agile enough to keep your agency on the job in even the most challenging terrain. The industry-first suspended undercarriage also provides smooth travel—even at high speeds—as well as better load retention.

Undercarriage Features:

- The heavy-duty torsion axles suspend the undercarriage, and can move independently relative to the machine and each other. The axles absorb most of the shock to the undercarriage, machine, and operator—especially over rough terrain.
- The tread design ensures a smooth ride and a great combination of traction and flotation. Ground pressure ranges from 4.0 psi to 4.3 psi.

Model	Net Power	Operating Weight	Operating Capacity	Top Travel Speed	Breakout Force
279C	82 hp	9,892 lb.	3,200 lb.	8.5 hp	7,308 lb.
289C	82 hp	10,365 lb.	3,850 lb.	8.5 hp	7,308 lb.
299C	90 hp	10,730 lb.	4,150 lb.	8.5 hp	7,308 lb.

- Highly durable and easily maintained components keep your compact track loader on the jobsite and out of the repair shop.
- Steel imbeds provide a rigid support for the entire width of each track, and provide excellent durability in a wide variety of applications.
- Continuously wound cables hold imbeds in place and provide tensile strength, ensuring the track does not stretch.
- The elevated, external, positive-drive system keeps drive components away from ground debris.
- Steel rollers with metal face seals provide maximum protection for wheel bearings resulting in long-term durability and reliability even in the toughest conditions.
- The simple recoil grease tensioning system enables quick track tension adjustment.

Visit **GovBidSpec.com** or our dealership to learn more about the C-Series of Compact Track Loaders. **5**

WINTER 2009

GOVERNIGOTAL

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Pretty Slick

Synthetic oil brings new life to tired engines.

The Bottom Line

Select true low bid using Life Cycle Costing.

Cat® Delivers

Equipment endures the harsh conditions of Iraq.











GovBidSpec.com helps you efficiently specify equipment by developing a well-defined Request for Proposal (RFP) with little or no editing required. To easily evaluate your purchasing options, budget with precision, reduce risk and make better budget decisions, visit **GovBidSpec.com** today.

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The National Institute of Governmental Purchasing (NIP), National Association of State Procurement Officials (NASPO) and National Association of Fleet Administrators (NAFA) endorse the use of Life Cycle Costing as a preferred procurement method.



Alternative Alternative Alternative

Guaranteed buyback option enables agency to maintain a like-new fleet



hat if your agency could sell your used equipment for as much—or nearly as much—as you paid for it? If you were in the market to replace the machines, you'd probably take a close look at the details, and sell if the conditions were favorable.

The Idaho Transportation Department has found a way to sell equipment that is five years old and less at or near the price it cost when new.

When seeking bids for new machines, specs require that guaranteed buyback of the equipment be an option. The buyback option is exercised before the state owns the machines 60 months. "The buyback option schedule depends on how the dealer wants it structured," said Steve Spoor, Maintenance Services Manager for the Idaho Transportation Department.

The state's flexibility on the duration of the buybacks—which enables dealers to receive a better return on the resale of the equipment—has helped the state financially.

"We're selling the equipment for about what we paid for it. It takes very little new money to buy replacements. It has kept our wheel loader, backhoe loader and transport fleet in new and likenew condition," Spoor said.

This fall, the agency took delivery of 47 Cat® 928H Wheel Loaders, six 950H Wheel Loaders and 12 420E Backhoe Loaders. All were purchased with the guaranteed buyback option.

For buyback bids, specs require a "bumper-to-bumper" warranty as long as the equipment is state-owned. "The only thing we're responsible for is wear items or damage," said Spoor.

The state also requires delivery in October, so the machines are available for winter use.

The department uses the equipment to maintain 13,000 lane miles of highway. "All wheel loaders are located at stock pile sites for winter maintenance—loading salt and anti-skid materials into trucks," Spoor said. "We also have various activities in the summer—primarily ditching and loading trucks."

The agency purchases machines outright (without a guaranteed buyback) or with a guaranteed buyback. When purchased outright, the department determines a monthly depreciation cost. With the buyback option, the agency develops a cost per month for the period the equipment is owned.

"That way, we can fairly compare direct purchase and buyback bids," said Spoor.

The high resale value of Cat equipment—and state flexibility on the length of ownership—are key to the program working as well as it does. "The equipment retains its value, so we can work with



"The Cat equipment retains its value. That's one of the big reasons for the success of the program."

STEVE SPOOR

Maintenance Services Manager
Idaho Transportation Department

the dealer to get him machines he can resell," said Spoor. "We learned a long time ago that we have to balance our needs with the needs of the dealer and their second-tier customers."

Strategic ownership helps the state (new equipment features up-to-date technology and has better uptime than older machines). The dealer also benefits. The low operating hours and current technology make the relatively new machines attractive to contractors or agencies buying used equipment.

The agency has been purchasing equipment with the buyback option since 1995. Prior to that, awards were based solely on purchase price, and didn't consider resale value.

Consequently, the state wasn't buying a lot of top-quality machines, which hold their value better than less well-made machines. Also, the state was typically keeping machines for 15 years, which led to breakdowns and maintenance expenses.

Today, the buyback option has made it possible to keep a fleet of new wheel loaders, backhoe loaders and motor graders (with the accompanying uptime and low maintenance costs) that the state might not otherwise own.

This strategy keeps machines operating at low cost and high performance, pleasing both taxpayers and equipment operators. ®

A Closer

Monitoring performance improves fuel efficiency

aking time to monitor a machine's performance is a valuable first step toward fuel conservation in Dodge County, Wisconsin.

The Dodge County Highway Department tracks equipment performance and efficiency in an annual financial report.

"It's a very detailed accounting report," said Brian Field, County Highway Commissioner. "If a machine is hard on fuel, or had a premature brake replacement, we'll see it."

In the report, all costs associated with each piece of equipment (fuel, repairs, maintenance, depreciation, for instance) are recorded. Expenses are examined closely to determine where the money is being spent.

If expenses are higher than they should be in an area, technicians will find out why. "We'll

determine what's happening. We'll see if it's a onetime thing or a recurring problem," Field said.

When the problem has been identified, crews determine if an adjustment can be made to make the machine operate more efficiently. "If there's excessive tire wear, for instance, we'll check the alignment or maybe write a new tire spec," he said.

When it makes fiscal sense to repair the problem, it's fixed. If it's best to sell, that option is pursued.

If a machine continues to lose money—and a mechanical reason can't be found—Field looks at the hours of operation. "Maybe there aren't enough hours of use. Maybe it's better for us to rent that machine than own it," Field said.

Observant Operators

Another way Dodge County keeps machines in top shape—which also saves fuel—is promoting operator awareness of equipment performance.

This keeps uptime and efficiency at optimum levels. When an operator spots a tire with low pressure during a walk around, for instance, the problem can be addressed before a more serious problem arises. Proper tire pressure, of course, also conserves fuel.

Before machines leave the shop, operators must fill out forms verifying they checked to be sure all safety features are operational, tire pressure is at recommended levels, and there are no leaks.

"Operators need to be aware of the performance of equipment. They have to monitor gauges. They also need to pay attention to how the machines are running—know if they're making unusual noise or leaking," Field said.

Training also keeps fuel consumption—and expenses—in check. Training goes beyond basics like avoiding excessive idling and jack rabbit starts to learning how to take advantage of new technology. "As equipment changes, their knowledge has to increase," Field said.

The highway department takes advantage of dealer workshops or individual training when new models are introduced. "That goes for trucks, as well as excavating equipment," said Field.

The use of new and relatively new, fuelefficient equipment also conserves fuel In Dodge County—through the use of Life Cycle Costing (LCC) and precise equipment monitoring—it's been determined that it's most cost effective to keep wheel loaders and motor

expenses. "Your agency can really benefit from

a quick turn around on equipment you use

graders for three years before replacing them with new models.

regularly," Field said.

And when new machines are added to the fleet, they are monitored closely to keep performance—and fuel conservation—at optimum levels. ©

THE FACTS:

Dodge County Highway Department crews are responsible for the maintenance of 886 miles of paved roadway.

County crews do much of the maintenance, construction, excavation and base work. "We contract the paving, milling and pulverizing," said Brian Field, Highway Commissioner.

The highway department has 83 employees, including seven equipment operators.

THE HIGHWAY DEPARTMENT FLEET INCLUDES:

55 patrol trucks (all outfitted with snowplows and wings), 2 tractor trailers, 3 track-type tractors (Cat® D6R, D6N and D5C), 4 hydraulic excavators (including a Cat 345BL, 336, and M322), 8 wheel loaders (including a Cat 950, 930 and IT28), 12 motor graders (11 Cat 140H and a 140M), 15 pickup trucks , 3 soil compaction rollers, 2 smooth drum rollers and 1 paving machine

News and Notes

EQUIPMENT INSURANCE MADE EASY

Henry David Thoreau said, "Simplify, simplify, simplify!"

Your agency can do this using the Cat® AccessAccount to pay for the renewal of Physical Damage Insurance for equipment from Cat Insurance

Physical Damage Insurance covers losses from theft, collision, flood, upset or overturn, fire, vandalism and more, for all machines in your fleet. Now, machine owners can use the Cat AccessAccount to pay for their insurance

renewal to simplify the renewal process and choose payment options.

The Cat AccessAccount enables customers to pay for or rent anything (with the exception of new Cat construction equipment) from any Cat Dealer or The Cat Rental Store™ in the United States.

For more information about Cat
Physical Damage Insurance, contact our
dealership or log onto **Cat.com**. To learn
more about the Cat Access Account, visit

more about the Cat AccessAccount, visit CatAccessAccount.com

APWA CALENDAR

Upcoming training and education programs from the American Public Works Association (APWA) include:

Feb. 18	The Click, Listen and Learn Program, Succession Planning—Growing Your Own Director, will be offered.	
March 11	The Click, Listen and Learn Program, Disaster Recovery Exercises, will be presented.	
March 25	The Click, Listen and Learn Program, LED Technology, will be offered.	

For more information or to register online, visit **APWA.Net/Education**. Questions? Call the APWA's Education Department at (800) 848-2792.

NIGP CALENDAR

Training and educational opportunities offered by the National Institute of Governmental Purchasing (NIGP) include:

Jan. 20	The workshop, Developing and Managing RFPs, will be held in Columbus, Ohio.	
Feb. 4	The seminar, Risk Management in Public Procurement, will be offered in Plano, Texas.	
Feb. 24	The seminar, Legal Aspects of Public Purchasing, will be held in Columbus, Ohio.	

For additional information or to register online, visit **nigp.org**. Details are available by calling (703) 736-8900.

Beating the Common Codd

Tips to keep your fleet running this winter

our agency's fleet can't be stopped by cold weather. And it doesn't have to be. A few precautions can keep your equipment up and running, no matter how low the temperature drops.

In freezing weather:

- Proper oil viscosity is of utmost importance.
- If a unit is in a heated shop all night or for any length of time, start the machine and then park it outside (while running) and allow the exterior components to cool to ambient temperature before going to work. This will keep the snow from melting and sticking on machine surfaces.
- When working in snow, clean out areas regularly where snow can accumulate and damage components.

- The engine crank case breather should be inspected for icing on a regular basis.
- Cyclone precleaners help prevent snow build up in air filters.
- When leaving machines running unattended in extreme cold (minus 15 Fahrenheit or lower) or for extended periods of time, leave running at an elevated idle in the 1200 RPM range. Be sure machines have winter tarps or guarding.
- Fill the fuel tank at the end of each shift.
- Before returning the machine to work, the hydraulics should be cycled to warm up the oil in the cylinders and exposed hydraulic components.
- Do not return machine to full working conditions until all systems are warmed to operating temperatures.
- To assist in warm-up, block the radiator. This keeps air from the fan.
- Keep all starting fluid at room temperature. Inject starting fluid only when the engine is cranking.
- To prevent final drive seal failures when ice has formed due to frozen condensation on the seals, move the machine from forward to reverse a few times in very small movements.



Coping with

BUDGET REALITY

Equipment cross-training, diagnostics help meet demands with half as many employees

hat would you do if your worst fear came true, and your agency had to terminate half its staff?

It happened in Imperial County, Calif., where the Public Works Department staff has been pared from 160 employees in 2008 to 80 this year.

To save on overhead costs, four separate highway districts have been consolidated into two sections. "We've got a smaller crew, working from two locations. We now have north and south county work crews, who work together on major projects," said Danny Lima, Deputy Director of Public Works—Field Operations.

While personnel now work from two locations, all four equipment yards—strategically located to keep travel distances to a minimum—remain open. "We have to share the equipment," Lima said.

County crews are responsible for maintain-

ing 1,090 miles of paved road and 1,083 miles of unpaved roadways, as well as bridges, storm drain channels, and several landfills.

Cross-training operators on a variety of machines has enabled the public works department to increase efficiencies with both equipment and personnel.

"Operators were very specialized when we had four districts. Now, a truck driver also has to operate a loader, a motor grader, a track-type tractor and a backhoe loader," Lima said.

Empire Cat has provided county employees with training for the Cat® 140M Motor Grader, 963D Track Loader, 450E Backhoe Loader and 414E IL Industrial Loader. Cat equipment in Imperial County's fleet includes 13 motor graders, seven track-type tractors, four scrapers, three backhoe loaders, a track loader, a reclaimer and an asphalt paver.





Setting Priorities

The Cat Dealer is also helping the public works department stretch its budget by providing diagnostics for all machines. "They've become a component of our maintenance staff. We have good mechanics, but we only have three. We have to set priorities, and decide the size and types of jobs we want to tackle with our crew," said Lima.

Empire Cat technicians do major repairs, while county staff does maintenance and other repairs. "We do anything that doesn't take a lot of time," Lima said.

Splitting repair work ensures equipment is back on the job quickly. "Our motor graders are running all the time. They're responsible for our unpaved roads and shoulders for paved roads—they have a lot of miles to maintain," Lima said.

Computer-generated equipment reports have replaced hand-written ones. "It's a more efficient way to keep up with maintenance, and saves my mechanics a lot of record keeping," said Lima.

The county is also working with the Cat Dealer to accurately measure the true owning and operating costs of each machine. That information helps determine how long each piece of equipment should stay in the fleet. "We don't want to spend a lot of money for a major overhaul of a Tier 0 engine, for instance. We have a limited budget. We don't want to invest \$60,000 in a machine we know we're going to lose in two years," said Lima.

While halved from a year ago, the public works department is meeting the expectations of Imperial County residents. ⊕

PAY ATTENTION

When Danny Lima visits Imperial County's four public works department equipment yards each Wednesday, he makes a point of bringing doughnuts.

With his staff cut in half—down from 160 last year to 80 today—Lima makes every effort to show employees how valuable they are to the department's success.

Since he was hired as Deputy Director of Public Works last September, Lima has provided crew members with hard hats, safety vests, mechanics gloves, safety glasses, as well as drinking

water and sunscreen. "It's all part of keeping everyone safe and comfortable on the job," he said.

Lima also knows that open communication is key to helping employees adjust to the reduced staff size. "I can't be stuck behind a desk. That's why I visit each yard once a week. That's their time to ask questions, make suggestions and voice their concerns," said Lima.

He's also open to individual meetings. "I do a lot of talking with people one-on-one. Some people don't feel comfortable saying something in a group, but they will individually," Lima said.

Change is never easy, but sometimes a doughnut and a cup of coffee can be helpful.





S•O•Ssm Fluids Analysis cuts fleet costs, improves equipment uptime

our agency has done its homework. And you understand that $S \cdot O \cdot S^{sm}$ Oil Analysis and $S \cdot O \cdot S^{sm}$ Coolant Analysis drive down fleet costs, and also improve equipment uptime.

But you may not realize the importance of closely adhering to recommended sampling procedures.

Trained personnel provide equipment maintenance and repair recommendations based on analysis of samples, so clean, unadulterated specimens are essential.

Some tips to ensure accurate samples:

Take samples from your new oil source. This confirms your storage practices aren't contaminating the oil.

Keep sampling supplies clean. To avoid contaminating samples and causing inaccurate results, keep sample bottles, vacuum pumps, tubing and valve probes protected from dust.

Use a tube cutter. Using a tube cutter for oil sample tubing provides a clean cut, and is less likely to transfer contamination.

Inspect filters. Cutting open used filters provides valuable information about your equipment.

Use protective dust caps. Black rubber caps on all sampling valves indicate the system being sampled, and help prevent valve contamination.

Provide complete sample cards. Analysts need the information to make accurate recommendations.

Be patient. Because wear metals and oil condition parameters are unique to each system, it takes a minimum of three samples to establish a meaningful trend for each system. Monitoring the progress of each system with trending greatly increases the accuracy of data analysis.

Visit our dealership or log onto **Cat.com** to learn more about the saving and improved efficiencies made possible using S•O•S Oil Analysis and S•O•S Coolant Analysis. ®

Pretty Slick

Synthetic oil brings new life to tired engines

f oil is the lifeblood of your fleet's engines, sluggish performance could mean it's time for a transfusion.

Switching to synthetic motor oil provides better engine performance and longer equipment life.

A lubricant that remains liquid and slippery under a wide range of temperatures, synthetic oil helps prevent wear, reduces friction, maintains viscosity and prevents rust.

Synthetic oil outperforms conventional oil in low temperatures, and also provides improved high-temperature oxidation stability. In extreme heat, synthetic oil doesn't oxidize and break down, but retains high viscosity. That means your engine runs smoothly, no matter the temperature.

Cat® DEO SYN is a full synthetic diesel engine oil developed, tested and approved by Caterpillar to exceed industry standards.

While Cat DEO SYN 5W-40 has the same high-temperature range as most SAE 15W-40 oils, its unique synthetic polyalpaolefin (PAO) molecular structure and higher viscosity provide a better protective film at high temperatures.

It also remains fluid at subzero temperatures, and provides rapid cold-engine start-ups at ambient temperatures as low as minus 22 Fahrenheit (-30° C) without flow loss to critical engine parts.

- Extended oil drain intervals while providing excellent engine protection and performance.
- Increased fuel economy and significant reduction in engine wear because of reduced friction on internal engine parts.
- Excellent thermal protection reduces the likelihood of engine overheating.

Visit our dealership or ${\bf Cat.com}$ to learn more about how synthetic oil can improve your fleet's performance. ${\mathfrak G}$





Select true low bid using Life Cycle Costing

hen purchasing equipment, Life Cycle Costing (LCC) helps assure your agency that tax dollars are being used effectively.

With LCC, your board is able to select a true low bid—for the life of the machine, not simply a purchase price that might appear to be a low bid.

All owning and operating costs are considered—not just the purchase price—so your agency is able to buy based on actual owning and operating expenses for the life of the machine.

Your agency is buying based on the total, longterm costs of the equipment. All major owning and operating costs are established in advance for the length of time you own the machine.

Additional LCC Benefits:

- Helps in Writing Specs. With LCC, you can write specs to buy the machine best suited to your agency's needs, not simply the one with the lowest purchase price. Tailor your specs to include detailed information on machine performance, maintenance—anything that helps you meet your agency's equipment needs. It's possible when you look beyond purchase price to the total cost of ownership.
- Lowest Cost. LCC evaluates all owning and operating costs over a machine's working life (purchase price, maintenance and repair costs, and the expected resale value of the machine). This provides you with an accurate measure of the total cost for the life of the machine, enabling your agency to buy at the true low cost.

• Simplifies Budgeting. With all costs known up front for as long as you own the equipment, there are no budget surprises. All maintenance and repair costs are set, so all service expenses are known at the time of purchase. There are no hidden costs with LCC. Specs can be written to include caps on maintenance and repairs, so your agency doesn't have to scramble to find funding for unexpected breakdowns.

Visit **GovBidSpec.com** or contact our dealership to learn more about LCC, and how it can help your agency make the most of your resources. **3**

BRIGHT, SHINY, EFFICIENT

Every three years, the Fallon County, Mont., fleet of seven motor graders is replaced with new machines.

"It's best economically for our county to change the whole fleet of motor graders on the third year," said Don Rieger, county commissioner.

Currently, the county is using seven Cat® 16M Motor Graders to maintain 1,200 miles of unpaved roadway.

Rolling the motor graders every three years keeps uptime high, and maintenance costs low. "The machines are under full warranty the entire time we own them. Our maintenance costs are minimal," Rieger said.

Fallon County uses
Life Cycle Costing (LCC) to
accurately determine that the
regular sale of motor graders is
the most economical method of
fleet management.

LCC includes the purchase price, anticipated maintenance and repair costs, and the

expected resale value of the machine to determine the total cost of ownership during the useful life of the equipment.

Because Cat machines retain their value as well as they do, Fallon County is able to operate a fleet of likenew motor graders.

At the end of three years, each of the motor graders has approximately 3,000 hours of operation. "By turning them in at the end of three years, we don't even have to buy tires," said Rieger.

With the outstanding resale value of the Cat machines, Fallon County's cost-efficient program of replacing motor graders every three years keeps rolling on. And the savings to the county—and taxpayers—continue.









But the most critical evaluation factor was how well the machines could be supported by the manufacturer throughout the world. The DoD evaluated each manufacturer's worldwide dealer network, which meant closely looking at their United States operations as well as key overseas locations such as Korea, Europe, Iraq, and Afghanistan. Machines used by the military work in unforgiving environments for long hours and simply must perform. Downtime can literally be deadly in many military applications.

"The U.S. military's demand for superior global support and Caterpillar's ability to demonstrate this support worldwide was graded excellent in the government's evaluation," Sharp said. "The government felt Caterpillar's superior global dealer network and our staff's ability to assist

with solving parts or service problems anywhere in the world."



customers order more than 43 million items for use on Cat equipment. To support this activity, Caterpillar has 22 parts facilities worldwide, with 10 million square feet of combined storage space. When you add the most reliable, strategically located dealer network in the industry, there is no other logistic support system that can offer the same parts and service support for all governmental agencies.

These resources, coupled with experienced, well-trained personnel, result in more than 99 percent of parts shipped within 24 hours of order. It's more than just parts delivery. Nearly 3,000 Cat distribution centers, dealer facilities and rental stores worldwide are ready to deliver the right part when and where it is needed.

Sharp noted that many U.S. Cat Dealers have operations near U.S. military installations and are staffed with personnel trained in working with large construction equipment used by the military. Such a close support network also helped make Caterpillar's bid more attractive.

"Although these were all highly competitive bids, the Government Source Selection Evaluation Board clearly saw that Caterpillar and its dealer network were best positioned to service and maintain the equipment," Sharp said.

Caterpillar's Service Life Extension Program (SLEP) is popular for the modernization of the U.S. military's construction equipment. The SLEP efforts have proven to be a great value for the Department of Defense, enabling the machines to meet mission requirements and realize an



additional machine life cycle. The SLEP process is performed at strategically selected dealers throughout the worldwide Cat dealer network. The fact that this work can be done at the dealer sites saves the government millions in shipping costs, which competitors cannot claim due to the fact that their SLEP programs require shipment back to a centralized U.S. location.

About the machines

The five Cat machine models were designed and built to exceed the harsh demands of military applications and to offer optimum protection to crew members.

The machines are protected with Chemical Agent Resistant Coating (CARC), which resists corrosion and the penetration of chemical agents.

It does not soak up chemical agents the way alkyd paint does. CARC also resists removal by decontaminating solutions.

Each machine also comes with armored protection, which includes an optional armored cab. Armored cabs provide the operator 360-degree protection from small arms fire and fragmentation threats

Motor graders are fitted with specially designed blackout lighting systems so a machine can operate in darkness.

The D7R-II dozer is designed to ford fresh water up to 30 inches in depth while the D6R is capable of fording up to 24 inches.

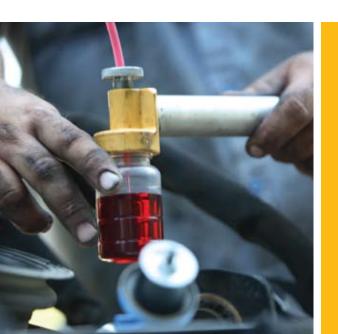
Other military modifications include:

- Rifle brackets
- NATO start receptacles
- Keyless engine start switches
- Military oil sampling valves

Caterpillar is committed to all branches of the military, U.S. federal government agencies and state and local government customers alike. The products are known the world over for quality, reliability and durable performance.

Unlike the military, your governmental agency may not face life-and-death situations on a daily basis. But you have a unique set of goals to achieve when purchasing machines that many other contractors and agencies may not face. If the military can trust Caterpillar to help complete its mission in Iraq and Afghanistan, so can you. ®

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IMPROVE EQUIPMENT UPTIME WITH FLUIDS ANALYSIS

Protect your agency's equipment investment with Cat® S•0•Ssm Fluids Analysis. Monitoring your fluids will improve uptime, while driving down service and operation costs.

The core tests for the S•O•S program consist of the following:

WEAR METAL ANALYSIS (copper, iron, chromium, lead, tin, aluminum, molybdenum, silicon and sodium).

PHYSICAL TESTS (fuel dilution detection, water detection and glycol detection).

OIL CONDITION (FT-IR: soot, sulfur compounds, oxidation and nitration).

Contact our dealership to learn how S•O•S Fluids Analysis can protect all your oil lubricated systems and cooling systems.