

# CAT MAGAZINE



## BUILDING A RAILWAY ON A SEA OF SAND

**MORE RELIABILITY WITH NEW 10-20 TONNE  
HYDRAULIC EXCAVATORS**

**CATERPILLAR®**

**NEW OIL OFFERS TWICE THE LIFETIME**

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**CATERPILLAR®**  
TODAY'S WORK. TOMORROW'S WORLD.™



## DEAR READER,

Caterpillar's Chairman, Jim Owens, said: "With the best and broadest line of products and services and the best dealer network in our industry, we are ideally suited to serve our customers wherever they live and work."

Today, Caterpillar® is truly a global organisation. But the real benefit to you, our customer, is that we are always just a phone call away. Wherever you are located, we're always ready, willing and able to help you do more, and earn more.

The following pages are powerful examples of Jim Owens' observation. For example, our lead story describes how 400 new Cat® machines are toughing it out in the scorching heat of the Saudi desert. It also describes how our Saudi dealer is providing vital customer support with on-the-ground consultation, technical services and training.

There are also stories from Switzerland, Russia, and Mauritius. They all help illustrate that the Caterpillar organisation is geared up to support your business wherever you live and work.

Best regards,

**Paolo Fellin**  
Vice President  
Caterpillar

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Above is just a taste of what's in this issue of Cat Magazine – there's plenty more news and views. If you would like to see additional subjects in the next issue contact our publishers on [CatMagazine@cat.com](mailto:CatMagazine@cat.com).

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# CAT IN BRIEF

## CAT CHOPPER RAISES \$100,000 FOR CHILDREN'S CHARITY AT AUCTION



Built in 2005, the 150-horsepower, six-speed showbike was donated by Caterpillar last year to the Victory Junction Gang Camp for children. The camp, founded by the famous Petty racing car family caters to children with chronic medical conditions and serious illnesses.

Earlier this year the Victory Junction Gang auctioned the chopper on eBay, with all proceeds going to the organization's 30-hectare camp in North Carolina. The buyer, Jeff Green of Peoria Illinois, was handed the keys to the chopper by racing legend Richard Petty following his winning bid. Jeff commented: "I got the Cat chopper, I met a true racing legend, Richard Petty, and I got to help a worthy cause."

### CAT NUMBER

# 13,119

people last year experienced Caterpillar's famous Malaga Demonstration And Learning Centre (MDLC). Located in the sunny hills of Malaga, Spain, the 84 hectares site provides plenty of room for the 70+ Cat machines. In addition to learning how to optimize the machines' servicing and operation, visitors are entertained by specially orchestrated demonstrations in a large natural arena with a specially built grandstand. Have you had the Cat MDLC experience? Let us know your best memories.

## BOB THE BUILDER DISCOVERED IN BELGIUM



Admit it, you thought Bob the Builder was simply a world renowned kids' cartoon character, didn't you? But now, thanks to a teacher at the local school in Overijse, Belgium and Cat dealer Bergerat Monnoyeur, 48 children between two and four years old can prove you wrong. Their search of the dealership uncovered the real Bob (a.k.a. welder Geert van Haeren), who delighted them by demonstrating a number of Cat machines including – of course – Roley, Bob's own special steam roller.





## FIRST CHOICE FOR LUXURY CRUISERS



As one of the world's largest manufacturers of engines, and the only one with ACERT® technology, Caterpillar makes more than 500 types. Including the massive diesel-electric engines needed to propel luxury cruise liners, like the Queen Elizabeth and the one shown on the left. Recently, two of Europe's leading cruise operators placed orders for seven new ships, and they insisted having Cat engines in them. A total of 30 'MaK' engines will each provide up to 64,000 kW of power to speed the ships and provide the electricity that ensures the passengers enjoy a luxury cruise.

## MEET MISS CATERPILLAR, MAURITIUS STYLE



29-year old Michèle Marquet, technical supervisor at Mauritius Cat dealer Scomat, was recently named Miss Caterpillar by local French language newspaper BATIMAG. She says that she is proud of the honour and has always been a Cat fan – after completing her education she followed her father's footsteps and joined the Cat team.

## CAT COLLECTOR



Jerry Scott has a real passion for everything Caterpillar. He's not only worked in the Caterpillar organization for 30 years, currently as Project Coordinator for Cat dealer Pipeline Machinery International, but he also collects Cat memorabilia such as old training manuals, old price lists, old hand books, and of course old machines. "I have a 70-year old Caterpillar No. 33 grader and a 50-year old 'HUSKY' tow grader," says Jerry. But

pride of place goes to his 1929 Caterpillar No. 15 crawler tractor with a tumble bug scraper, shown above. Note the grey colour, which was correct for that period. "Remarkably it still goes, and I often ride it around my farm in Missouri."



# BUILDING A RAILWAY ON A SEA OF SAND

"It's not just the sun, the scorpions and the snakes that make it hard to work here," says machine operator Taufeeq Qasam. "There's also the sandstorms, they can be really bad. They can stop us from working for up to a whole week."

Taufeeq is one of the 2,000 people who are taking on the blistering heat and stinging sand of the Saudi Arabian desert to build an incredible 2,400 kilometre railway. It's a project so immense that no single construction company could handle it all. That's why it was split into four sections, each of which is handled by a group of construction companies.

[More ▶](#)





# “IT’S LIKE FILLING A SWIMMING POOL USING A TEASPOON”



The Nafud Desert is famous for its deep reddish colour, due to the high content of iron oxide, and was featured in the movie “Lawrence of Arabia”.

The dry, fine sand trickles like water through your fingers.

“Apart from the sheer size of the project, the main challenge is the sand,” says Ali Kassem, one of the project’s section managers. “The sand is very fine and

such an environment, the undercarriage is the main casualty, so the Caterpillar dealer, Zahid Tractor, has a team of product support representatives to keep a constant vigil via Custom Track Service.

visit the sites to train the contractors on S-O-S and contamination control.

## *Across 2,400 kilometres of sun-scorched, sand blasted desert in just 42 months*

very dry and behaves much like cement powder or even water. This means that normal tires on the Cat 740 articulated dump trucks were unable to gain sufficient traction which resulted in the use, by some contractors, of 29.5R25 sand tires.”

Scheduled oil sampling is also playing a major part in the machine management programme. Samples taken at the remote sites are quickly transported by FedEx to the Zahid Tractor S-O-S laboratory located 900 kilometres away in the Red Sea port of Jeddah.

### **254 + 93 MILLION CUBIC METRES**

The railway will cross the forbidding Nafud Desert, and will require 254 million cubic metres of cut and fill. “Some of the dune gullies are really huge,” says Ali. “And even though we’re using Cat 740s with their 38-tonne payload, it’s an unbelievably huge task. It’s like filling a swimming pool using a teaspoon.”

Cat D8Rs and D9Rs, both configured for desert application, are used for the cutting and spreading. The desert arrangement has proven exemplary, while the turbine pre-cleaners and the protection on the radiator cores have prolonged maintenance intervals. As predicted in

The team at the Zahid Tractor S-O-S laboratory fully appreciate the importance of the analysis due to the harshness of the environment. So they complete the testing and get the results back to the sites in record times. To date, 8,360 samples have been processed from the site and every day more come in. In addition, the S-O-S teams regularly

The railway must then extend another 200 kilometres north of the desert to the phosphate mines. This section requires an additional 93 million cubic metres of both sand and rock to be excavated.

Unlike a road, which can include quite severe curves and grades, a railway must be built with much more gentle curves and grades. So typically,



Cooperation and planning – the key to success.



Even in the middle of the desert, service and spares are just a phone call away.



Zahid built and manned several temporary special service centres.

three times the amount of earth has to be moved in cut and fill operations.

This becomes even greater when using sand, because the base of embankments, for example, must be twice as wide as those using ordinary earth. “You also need to bring in clay-like earth from far away to cover the embankment and protect it against erosion,” says Ali.

In building the railway, the rails will be laid on sleepers, the sleepers will sit on ballast, and that will be supported by compacted sub-ballast – along the entire 2,400 kilometres.

These are just some of the special challenges being overcome by the section managers. It’s a project that would already be exceptionally challenging, in the extreme temperature cycles of -10 to +50°C, but working in this sea of sand makes it so much more demanding.

#### FOR THE ECONOMY AND THE PEOPLE

Construction started in the summer of 2007 and is planned for completion by 2011, at a total cost of \$2.7 billion. The project is being developed by Public Investment Fund (PIF) for the transport of minerals and passengers. The railway will transport phosphate and bauxite minerals from Al Jalamid and Al Zubairah mines in the north to the fertilizer and aluminium complexes at Ras Al Zour on the Gulf Coast in the east. The phosphate concentrate will be processed in the fertilizer complex and converted into three million metric tonnes per year of diammonia phosphate fertilizer.

The bauxite ore will be refined into alumina at a new refinery planned for Ras Al Zour and then smelted into aluminium at an adjacent smelter – making it a “mine to metal” operation. The diammonia phosphate and aluminium will then be exported from a new port being built at Ras Al Zour. The railway will also provide

around two million people with a faster and much more affordable means of travel.

#### WHY CATERPILLAR?

More than 400 new Cat machines were purchased by the four main contractors to prepare for this huge project. Everything you need to cut through the desert sand and rock, level and compact it and then prepare it for the railway. The new Cat machines included track-type tractors, articulated trucks, motor graders, hydraulic excavators, wheel loaders and more. “We bought Caterpillar because in a project like this, you can’t afford to take chances,” says Ghiath Alwani, project manager on the most northern section. “The whole project has an extremely tight deadline: just 42 months from start to finish. So our first choice has to be for the top brands for all our equipment. And that means Caterpillar for earthmovers, or in this case sandmovers.”

More ►

Operators work 12-hour days, after which a sip of mint tea is well appreciated.



Constant sand and temperature cycles of -10 to +50°C make for tough conditions – even for Cat machines.

## A TRULY MASSIVE-SCALE COOPERATION

More than 400 new Cat machines were purchased for this project. Our local Cat dealer, Zahid Tractor, supplied the essential machine specification advice, delivered and commissioned the machines and is continuously providing training and on-site servicing throughout the 2,400 kilometres of this four-year project.

Cat Magazine would like to thank the following organizations and their people, without which this article could not have been prepared:

- Al Omaier Co. for Trading & Contracting
- Al Rashed Trading Co.
- Mohammed Ali Al-Swailem Co.
- Public Investment Fund (PIF)
- Saudi Binladin Group
- Saudi Company for Railways (Saar)

Another powerful reason for the choice of Caterpillar machines was the associated training and servicing support. “Caterpillar itself sends two of its technical trainers from the United Kingdom for one week twice per year,” says Ghiath.

“Zahid Tractor advises us on spares inventories and supplies mobile service stations – manned by their own technicians.” Machine operators on all sections were also trained by Zahid trainers. “We got – and continue to get – newly recruited operators from all over the region: Egypt, Sudan, Jordan and India, and most recently from Vietnam and the Philippines,” says Ali Alomari, one of Zahid’s machine demonstrators. “Some of them are totally new to machine operation, but with the Cat machines’ ease-of-operation and intuitive controls, most of them are competent operators after just a few days of training.”

### BETTER WHEN IT RAINS

Unlike in northern countries, rain is actually welcomed on this project – it helps increase the articulated truck payload. That’s because normally any sand piled much higher than the sides of the truck’s

body would spill out. But when it is wet it can be heaped into a higher pile, making a bigger payload. “Unfortunately,” says Ali with a smile of resignation “that doesn’t happen very often.”

### AND ONCE COMPLETED?

The massive 2,400 kilometre railway is expected to open for business in late 2011. That’s when the Caterpillar dealer Zahid Tractor will continue to work on the project’s overall objectives by supplying equipment and services to help mine and ship the raw phosphate and bauxite ore. And this promises to be a huge long-term activity. The area has an estimated 3.1 billion tonnes of phosphate and 252 million tonnes of bauxite ore. “This railway is big,” says Awad Shilbayeh, project manager for the Al Farhd construction company. “But it is only the start of something even much bigger.”

Mohammad Abu-Snaineh, project manager for the most northerly section of the project, summed up what it is like to be part of such a major activity: “At the start of a project like this, everyone is eager and enthusiastic. Everyone, the engineers, the site managers and the

machine operators. There’s a real ‘buzz’ of anticipation. But there are always setbacks and unforeseen obstacles, and these can dampen spirits. To help you keep going you keep in mind the difference that your work will make. And towards the end of a project you remember previous roads and railways that you have helped build and how much people appreciated them. That’s what keeps me going, and that’s what I believe ultimately keeps everyone in the project going.”

Meanwhile, at the end of another 12-hour day, Taufeeq Qasam and his four-man team sip mint tea by their camp fire. And plan the next day’s challenges. ■

*"The sand is very fine and very dry.  
You can push it around like it was water."*





# CAT AP655D TRACKED PAVER HELPS SAVE VENICE

Think of the ancient city of 'Venice' and you will almost certainly picture images of a town that has canals instead of roads – water instead of asphalt, and boats instead of cars. So how come a massive Cat tracked paver is there working 24x7?

It's all part of a multi-billion Euro project that started more than 20 years ago. That's when the Venice Water Authority, through the Consorzio Venezia Nuova, drew up a whole range of plans to protect the city against flooding caused by high tides and rising sea levels. Since then flood defences have been installed along more than 45 kilometres of coastline, and the final stage of the project is the installation of 78 enormous retractable floodgates. This system provides inlet channels so that boats can still sail in and out of the harbour.

Normally these floodgates will remain retracted, fixed to the seabed, and totally

out of sight. When a dangerous rise in sea level is forecast, the barriers will swing up and combine with the permanent barriers to create a continuous wall encircling the lagoon, blocking out the incoming water.

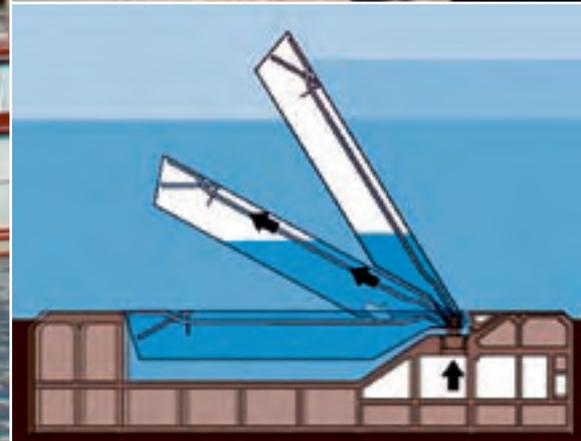
With current sea levels, the gates will be operated about three to five times per year, for about five hours each time. However, since the high water problem is expected to get worse – due to the expected rise in sea levels caused by global climate change – the floodgate system is designed to cope with high waters of up to 60 centimetres above the norm: twice that of the worst case scenarios estimated by the scientific community.

#### **SO WHERE DOES THE PAVER COME IN?**

This is a massive construction project and it needed plenty of land to store the plant and machinery, to prepare the materials, and to erect the massive concrete

floodgates. In order not to interfere with the territory nearby the jobsite (the lagoon-sea boundary), temporary artificial areas were built to house all the equipment and enable assembly activities. The temporary artificial site built at Malamocco needed to have a strong and flat paving, to ensure the construction vehicles could operate smoothly. That's where the Cat AP655D tracked paver came in – to create a site covering an area of 13 hectares, on which 18 prefabrication yards of 60 metres by 50 metres had to be built. Each of these yards had to support the weight of the concrete floodgates that are 25 metres long and 15 metres high.

“To ensure correct construction of these enormous high concrete structures, and to avoid possible differential settlements at their base during construction, it was essential for the support surfaces of the structures to be exceptionally sound and



comply with extremely precise levelling tolerances,” explains Enrico Pellegrini, site manager of Grandi Lavori FINCOSIT SpA. “This is why we decided to use the new Cat AP655D paver for construction of the lean concrete layer, with a thickness of approximately eight centimetres.”

#### **CAT MACHINES TRIED AND TESTED**

The initial trials of the AP655D were supervised by a Cat engineer who explained the functions of this new model to the operators. The results were extremely satisfactory, and the machine was immediately chosen to perform the work.

“The advantages of its use on site (productivity, precision and timing) are obvious,” says Enrico “14 plots have been constructed, with an average daily production of approximately 2,500 square metres. This is a major achievement.”

Vincenzo Saragnese – site foreman of Grandi Lavori FINCOSIT SpA – and his operators, share the same satisfaction for the manoeuvrability of the machine, the exceptional stability, the millimetre-precision and the exceptional uniformity of the paving works. “Due to the excellent firmness of the material placed, which was obtained by means of the tamper vibration, no subsequent compaction with a roller was necessary,” says Vincenzo.

All of which means that Venice will be safe from flooding and could continue to be the most romantic city for another thousand years. ■

The gates normally lie, full of water, in their housings on the bottom of the inlet channels.

When needed, compressed air forces the water out and the gates rise to block the flow of seawater entering the lagoon.



# START THE JOB ON TIME, FINISH ON TIME

The new Cat D-Series of small hydraulic excavators is proving a big success with owners and operators across all segments of the construction industry. Cat Magazine found out why.

“We’ve really got inside the customer’s head with this release,” says Marco Franchino, Caterpillar’s small excavator product specialist. “We asked customers what they wanted, and then built in the systems to give it to them. Basically customers most want to get jobs done faster, with less cost. That’s why, for example, we built in an ‘On-Demand Power Supply’ so you get maximum power the instant you need it. But just as importantly, it also switches off the instant you don’t. And that can save an awful lot of fuel.”

The ‘On-Demand Power Supply’ is possible thanks to the new four-cylinder, electronically controlled load-sensing engine. The electronic control enables the engine and hydraulics to communicate and work together to deliver flow and pressure on demand, but only in the amounts required for the particular load. This optimises fuel efficiency because only the required engine horsepower is generated. Another benefit of this system is the reduced risk of contamination.

To further aid speed and productivity, an automatic boom and swing priority function prioritizes the oil flow and pressure to where they are the most needed. This gives the impression that the machine automatically selects the best mode based on joystick control.

**IMPROVED RELIABILITY**

Machine reliability is at an all-time high: the new C4.2 four-cylinder engine has been redesigned and re-engineered from bottom up. It includes improved fuel injection reliability using proven Cat components, it also has a new third fuel filter. Reliability is further enhanced with the on-board service scheduler and easier daily servicing.

In addition, customers get world-class support from their Cat dealers – who offer a range of service contracts to help ensure the machines keep running and fully productive, no matter what the workload or project type.

The result is that these new 10- to 20-tonners enable people to take on a wide variety of different jobs and, most importantly, with the reliability and performance to finish them on time.

**REDUCED COSTS**

“With the D-Series we wanted to give customers the option to either outperform the C-Series – with more digging force, lift and stability, for example,” says Marco. “But we also wanted to offer the choice of the same productivity as the C-Series but at lower cost. This is achieved by the ‘On-Demand Power Supply’, Economy Mode and the four-cylinder engine. It’s a choice that makes sense since these machines are mostly used as utility equipment on jobsites.”

**SIMPLIFIED SERVICING**

The full-colour graphic display simplifies machine servicing, by alerting the operator when oil and filters need changing, for example. It also incorporates a pre-start check, which verifies the levels of engine oil, hydraulic oil and engine coolant fluid. And since this on-board graphic display is available in 27 different languages, everyone will be able to take advantage wherever they are located.

**MAXIMISED VERSATILITY**

The new machines can be very quickly adjusted to tackle jobsite changes – thanks to the tool control system. This enables fast and easy configuration of hammers, thumbs, grapples, multiprocessors, shears, pulverizers, and compactors. And importantly, all pins are interchangeable between the C-Series and the D-Series.

**MORE:**

- Digging Force
- Lift
- Stability
- Reliability

An optional universal hydraulic quick coupler circuit, allows you to fit either a pin grabber or a quick coupler.

To optimize operator comfort and to help keep him as fresh and productive as possible the cab is sealed and pressurised, to keep dust out and clean air in. There are also a variety of new ergonomic controls and a new 70/30 split windshield option on all models.

It all adds up to maximum reliability, maximum performance, and enhanced operator comfort – to help you get the job done quickly, efficiently and, most of all, on time.

On the following page read what Alec from Northern Ireland and Philippe from France had to say about the models they tested. ■

	311D L REDUCED RADIUS	312D/312D L	314D L COMPACT RADIUS	315D L
OPERATING WEIGHT, KG	12,450 / 13,885	12,940 / 13,470	13,900 / 14,900	16,675 / 17,275
ENGINE TYPE	Cat C4.2 ACERT	Cat C4.2 ACERT	Cat C4.2 ACERT	Cat C4.2 ACERT
NET POWER, KW	60	67	67	86
HYDRAULIC PUMP FLOW 2X, 1 MIN.	117	127	127	150

# WHAT PEOPLE ARE SAYING

As with all new Caterpillar product introductions, the new D-Series of small excavators has been thoroughly tested in genuine, real-life jobsites. Experienced operators get a chance to try out the latest improvements and they tell Caterpillar exactly what they think of them.



*Alec Morrison  
Machine operator, Black & Francey  
Northern Ireland*

## 311D LRR: "SHE'S GOT PLENTY OF REACH AND PLENTY OF POWER"

"The hydraulics are very quick. I suppose that's because of the new power management system on board."

"It's easy to work with in tight areas – the reduced tail swing is a real advantage, you don't have to stop all the time looking around your back. This is especially good when there's a lot of scaffolding and other stuff around."

The best thing about it is... "The longer tracks – they give her more stability. And also the seat adjustments, you can easily change the settings and make things very comfortable. That's pretty important, especially for a little fellow like me."

"I tested the 312D myself for seven days, lifting 2-tonne concrete pipes – we're mainly in the pipe-laying sector. And even with the machine's long-reach boom, its stability is outstanding."

"I was also impressed with the power of the shovel. It really makes a difference in getting the work done faster."

"Overall, the comfort is great. The increased stability lets you go on for hours without being thrown from side to side. All the steering controls are very visible and accessible, while the excellent visibility means you're not constantly stretching to see where you are going."

"I also like the heated seat – it's great for those cold mornings."

## 312D L: "OUTSTANDING STABILITY AND COMFORT"



*Phillipe Gallo  
Site manager, Midali Construction Company  
France*



# THREE NEW MIGHTY MINIS

## NEW D-SERIES MINI HYDRAULIC EXCAVATORS

**In the never-ending quest for increased performance, greater versatility and reduced operating costs Caterpillar recently introduced three new mini excavators – with higher bucket and traction forces and what has been called ‘best-in-class’ versatility. Cat Magazine took a closer look.**

“Obviously, we’ve retained all the best features of the C-Series,” says Hayden Murray, Caterpillar product specialist. “But on the 308D machine we’ve added 22 percent more bucket force and 10 percent more stick force. In addition, we have a completely new model that not only has a compact radius but also a swing boom for even more versatility.”

The 308D reduced tail swing models can perform equally as well as their standard counterparts with larger upper structure overhangs, but are extremely useful on sites where working space or access is restricted. The compact radius design reduces the risk of damaging structures on construction sites or swinging into parked cars, for example, when working at roadsides. They also have advantages when lifting or working over the side, because their boom foot location and counterweight configuration make them more stable.

### **ONE MACHINE – HUNDREDS OF JOB TYPES**

The 307D, 308D CR and 308D CR SB are designed to do more jobs in more places than ever before. “Versatility was a key design objective for this new series,” continued Hayden. “The new 308D-Series models will now offer three different types of track option, standard triple grouser, segmented rubber pads or the new all rubber tracks similar to the rest of the mini-hex range. All three models accommodate a complete range of work tools – the standard high-pressure auxiliary hydraulic circuit and optional medium pressure circuit are controlled on thumb rollers for low effort, precise ergonomic control while the standard Cat Tool Control System lets you pre-set flows and pressures for up to eight work tools using the in-cab monitor. The tools can then be used at the touch of a button, without resetting the hydraulic system.” ■

# DIGGING UP LAND MINES SAFELY

WITH ACCUGRADE™

In 1944 the German occupation force laid thousands of land mines along the Danish coast. This was to prevent enemy troops from landing near the strategically important port of Esbjerg. Fortunately, these land mines were cleared within two years of the war ending – except for a particularly difficult stretch of about 100 hectares. This land was fenced off from the public and remained highly dangerous. For almost five decades the Danish authorities believed that ‘Skallingen’, a beach on the west coast of Jutland, was simply too difficult to clear.

“This stretch of coastline is battered by severe winter storms, which makes working here highly problematic,” says Bo Bischoff, project manager with the Danish Coastal Authority. “Also, the problem has become worse over the

*The hard part is accurately sifting through such a vast volume of sand and ensuring that we don't miss any mines or pieces of mines.*

years, the mines have eroded and many of the detonators have detached. You can compare the task of mine clearing here to that of being in a sandpit filled with hundreds of thousands of cubic

metres of sand, in which you must find objects no bigger than your little finger.”

In addition, since the area is designated a place of outstanding beauty and is covered by several preservation orders, any mine clearance work must return the landscape exactly back to its original state.

It all adds up to one of the most difficult mine-clearing operations anywhere in the world. Nevertheless, in 2005 the Danish government decided to take action. It issued a request for tenders from companies who believed they could handle the challenge. “Clearing the mines is not the hard part,” said site

manager Gunnar Gross Jensen of the tender-winning company Per Aarsleff Construction. “The hard part is accurately sifting through such a vast volume of sand and ensuring that we don't miss any mines or pieces of mines. That's why we planned to use AccuGrade.”

## ACCUGRADE HELPS WIN THE CONTRACT

One of the reasons that the Per Aarsleff company won the contract was their planned use of the AccuGrade machine control system. This would provide extremely precise excavation and documentation for the vital last stage of the project. It would also help guarantee a quick and efficient operation. It is the



Below: The Cat 345B hydraulic excavator was fitted with a special cover, this protected the operator in the event of a mine exploding.



Photography by: (Luftfoto-syd) Helge Knudsen

first time a GPS machine control system has been used on this kind of project, but it helps ensure that all the sand is checked and returned to its original place.

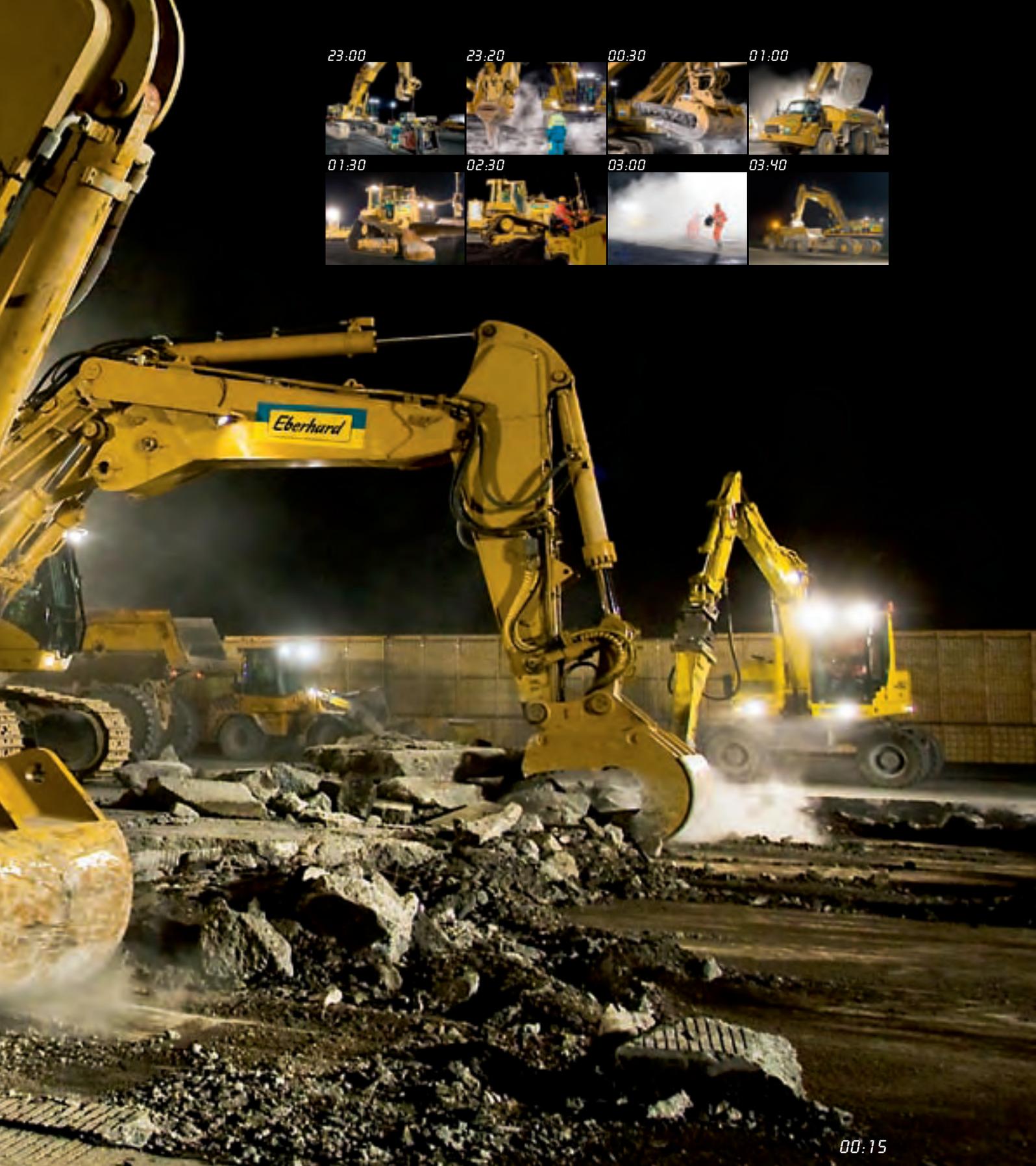
#### **ALL SAFE**

In April this year, the Danish Minister for Transport cut the ribbon to open the Skallingen beach – now completely free of landmines. Over the past few months more than 450,000 cubic metres of sand have been moved. A Caterpillar 345B hydraulic excavator and a D6R track-type tractor (both fitted with AccuGrade) dug up 150 mines, 1,100 mine parts and 27,000 pieces of metallic waste. The Cat machines then helped to re-establish the area.

At the end of the project, Gunnar Gross Jensen said that the AccuGrade system exceeded his expectations considering that the equipment had been operated in areas under extreme influence of sand and salt. “Working with Pon, the local Caterpillar dealer, has been an excellent experience. There is no doubt that GPS is the future for this kind of project. Having saved both time and money we can look back on this project satisfied and proud.” ■



# RACE AGAINST TIME ON RUNWAY 16/34



**Kloten Airport, Zurich, Switzerland.**

Every night at 23:00 hrs. after the last airplane lands, a fleet of construction machines races onto the runway, led by a team of Cat hydraulic excavators, articulated trucks, and a D6N track-type tractor from locally based Eberhard Construction AG.

Their mission: to rip out another 60+ metres of the 40-year old concrete runway, and new electrical cable, and a new 38-centimetre deep, 23-metre wide asphalt strip before the next morning's first flight from Johannesburg arrives.

# RELIABILITY MAKES THE SIGNIFICANT DIFFERENCE

Speed and coordination are essential; they'll have to be finished and off the runway by 04:00 hrs., leaving time for the freshly laid asphalt to cool to below 80°C before 06:00 hrs. If they fail to make the deadline, the morning's scheduled landings will be disrupted and the consortium doing the work will face a heavy financial penalty. So the reliability of their equipment is vital; it's tough work and there's no place for construction machinery that isn't up to the job.

"Work began in March and will be finished in October", says Eberhard jobsite manager Ueli Huber: "It's the first time an operation like this has been undertaken anywhere in the world and first we had to convince the airport authorities that it



was a viable way to build a new runway." But the benefits of asphalt, he claims, are clear: "Unlike concrete, there are no seams or joins that need filling and constant maintenance. Asphalt is flexible, doesn't crack and is easier to repair when that eventually becomes necessary."

So every night hammers on the Cat excavators break the first concrete, following which special buckets are



Eberhard jobsite manager Ueli Huber (right),  
Andreas Mayer from Swiss Cat Dealership Avesco

fitted to lift and remove it. Then over 500 cubic metres of asphalt are laid, using the Cat D6N for speed. On another night, when the asphalt has fully hardened, the top layer will be milled off and a final surface layer applied.

But meanwhile tonight, as on every night, there's no time to lose. And with 3.7 kilometres of asphalt to be laid, only pouring rain is allowed to stop them. ■

# NEW HYDRAULIC OIL LASTS TWICE AS LONG

Until now the standard drain interval for genuine Cat hydraulic oil (and other oils approved by Caterpillar) has been 2,000 hours – but a new, improved formula, can increase that period to 6,000 hours.

When you use Caterpillar's Scheduled Oil Sampling, S-O-S<sup>SM</sup>, the drain interval of standard oil is increased from 2,000 hours to 4,000 hours. With S-O-S and the new Cat<sup>®</sup> HYDO<sup>™</sup> Advanced 10 oil, drainage intervals can be up to 6,000 hours. This means reduced operating costs and increased uptime for Cat machine owners everywhere.

The new oil is called 'Cat<sup>®</sup> HYDO<sup>™</sup> Advanced 10' and during extended field and lab evaluations it lasted twice as long in severe applications as the previous recommended oil: Cat<sup>®</sup> HYDO<sup>™</sup> 10W. "This extended life is due mainly to the new fluid's premium additives and base oil," says Alex Panov, of Cat Filters, Fluids and S-O-S department.

"New formulations for all oil types are frequently introduced. And nearly all new formulations improve the performance over the previous formulation, but this new oil increases the drain interval while also significantly reducing the wear in the system. Which makes it a truly huge breakthrough for Cat machine owners."

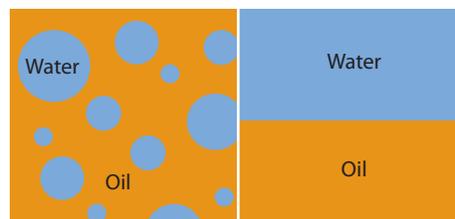
## LOWER COSTS:

*The extended drain interval means*

• Fewer oil changes • Less oil to buy and dispose of • Less downtime

## A SMARTER WAY TO DEAL WITH WATER CONTAMINATION

Cat<sup>®</sup> HYDO<sup>™</sup> Advanced 10 includes special emulsifiers that prevent water from going through pumps, motors and valves. Once the system is hot, the water evaporates. This means that any water contamination in the oil does not harm the moving hydraulic systems. Most industrial hydraulic oils (often described as anti-wear) do not contain



Cat<sup>®</sup> HYDO<sup>™</sup> Advanced 10

Industrial hydraulic oil

emulsifiers and are specifically designed to separate water as shown above.

When this separated water is drawn through a hydraulic system it can damage pumps and other components. And if this water freezes, it can cause even more serious damage.



The test with conventional oil was terminated after 178 hours due to catastrophic failure caused by the slipper wear.

The new Cat<sup>®</sup> HYDO<sup>™</sup> Advanced 10 was tested for the same period, with almost no slippers socket wear at all.

## BETTER WEAR PROTECTION

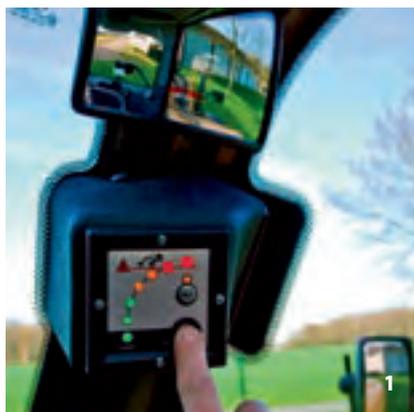
In addition to extended drain intervals the new formulation also offers superior wear protection for high-pressure piston, vane, and gear hydraulic pumps, as shown in the photographs above. The excellent protection abilities of Cat<sup>®</sup> HYDO<sup>™</sup> Advanced 10 is a result of the balanced combination of highest-quality base oils and the most advanced additive system. Wear properties are further improved because the oil has much more anti-wear zinc than the competition. "But it's not just a question of simply adding more zinc," says Alex. "To get the best protection, it's essential to have the correct type of zinc compounds together with a balanced combination of the base oil and additives. And we believe we've achieved just that." Also, the oil's fast air release and exceptional anti-corrosion properties help further protect the hydraulic systems.

The new oil is also easier to filter, and stays cleaner and lighter in colour," continued Alex. "What's more, the additives in Cat<sup>®</sup> HYDO<sup>™</sup> Advanced 10 do not interfere with the optical particle counters used in the S-O-S. This allows for a simpler (no dilution method needed), and therefore more accurate contamination control." ■

# REACHING NEW PERFORMANCE HEIGHTS

WITH THE LATEST CAT TELEHANDLERS

Not long ago, many people judged telehandlers mainly on their reach and load capabilities. But today, the clever constructor knows it's more about getting the right combination of compact dimensions, sharp turning radiuses, manoeuvrability, and versatility through a wide variety of work tools.



All of these features are now essential to work productively in today's tight jobsites and yards. Of course, boom height and load capacity are still important but a housebuilder, for example, who generally works on two- or three-story buildings knows that a lift height of seven to ten metres and a lift capacity of 3,500 kilograms is enough to carry a pallet of brick or block. Alternatively, for those constructors building new offices or other multi-storey buildings, a 14 to 17-metre lift height may be necessary. He may also want to lift loads of up to 5,000 kilograms.

It's that type of increasingly varied customer need that prompted

Caterpillar to re-design and re-engineer its highly popular line of Telehandlers. The result is eight new TH-Series machines that include new chassis, new booms, new engine option, new cabins, new axles and a revised hydraulic system. A combination that offers optimised performance, but also that all-important solution of 'wide choice'. A choice that ensures you get the right machine for your unique needs.

### FROM SMALL...

The smallest machine in the new series, the TH255, is just over 3.5 metres long, 1.8 metres wide and less than two metres high – perfect for getting around the very constricted

building sites. Although this machine is highly compact it can easily lift 2.5 tonnes. It also has the most spacious cab in its size class, with an advanced automotive-style interior designed to keep operators comfortable and highly productive. The suspension seat, optional air conditioning, and single joystick control combine with an advanced hydrostatic drive transmission to deliver smoother directional changes and load placement. Lastly you'll spend less time on daily maintenance with the side-mounted engine and easy access to all major service points.



Model	Rated load	Lift height
TH255	2500 kg	5600 mm
TH336	3300 kg	6100 mm
TH406	3700 kg	6100 mm
TH337	3300 kg	7300 mm
TH407	3700 kg	7300 mm
TH414	3700 kg	13700 mm
TH514	5000 kg	13700 mm
TH417	4000 kg	17000 mm



1. Standard Longitudinal Stability Indicator for increased safety

2/3. Ideal for construction and agricultural applications

4. Excellent visibility enhances productivity

5. Easy access to service points helps ensure daily servicing

### ...TO LARGE

The larger machines are also designed to handle virtually any jobsite – from agriculture to industrial to construction. Packed with new performance-enhancing features. For example, the new electronically controlled “load sensing” and “hydraulic flow-sharing” system enables all boom functions to be operated simultaneously and proportionally. It provides smooth, logical control of the boom and work tools for greater accuracy and efficiency, especially when placing loads in challenging applications.

Well-designed, spacious, comfortable cabs help keep your operators fresh

and productive throughout the working day. Controls are simple and logically designed. Keeping your operators happy also helps reduce costly staff turnover.

The standard single lever joystick with roller switches allows operators to become proficient in a short time. Two new access work platform options and a range of Cat work tools will further enhance the versatility of the new TH-Series.

### EASY TO SERVICE

All the new TH-Series telehandlers come with a highly reliable Caterpillar turbo charged engine, certified to meet the latest

Stage IIIA emission regulations. All service points are easily accessible, and all accommodate a wide range of work tools. ■

# PEOPLE

## THE WELDER WITH THE GOLDEN SMILE



**DMITRY KOUZMINE**

Globally, there are more than 100,000 people working at Caterpillar – and thousands more at the 182 Cat dealerships. Everyone of these people has a story to tell about what it’s like being a part of ‘Team Cat’. In this issue we hear from Dmitry Kouzmine, a welder at Caterpillar’s Tosno facility near St Petersburg, which produces components for Caterpillar factories in Europe.

### WHAT’S THE BEST THING ABOUT YOUR JOB?

It’s the satisfaction of seeing all the components come together as a complete part. And then having the Quality Assurance engineer check out the welded joints – first the visual check of the surface, and then within the joint itself with the ultrasound system. It’s nice to know that you’ve done a good job and that the quality of your work is measured, verified, and appreciated.

I also like the variety of my work. The parts I work on change once a week, and there are also engineering modifications every quarter. This means I’m constantly learning and discovering something new every day.

### HOW DID YOU BECOME A WELDER?

I first started during my military service. I was a foundry man at a machine factory and my best friend was a welder. I was interested in the techniques and he showed me how to use the tools during lunch breaks. I liked it a lot and thought: “That’s it, when I leave the army I’ll become a welder.” And that’s what I’ve been since 1989.

### WHAT QUALITIES DO YOU NEED

#### TO BE A GOOD WELDER?

I think a good welder needs to have attention to detail and the desire to do a good job. And oh yes, you also need to be patient – if something doesn’t work out it’s best to step aside, smile, and come back with a positive attitude.

### HOW LONG HAVE YOU BEEN WITH CATERPILLAR?

I’ve been working at the Tosno factory for just over six years. There is a lot of employee interaction here, we regularly get together in teams to discuss process improvements and new techniques, so it’s not surprising that I know lots of the 700 people who work here.

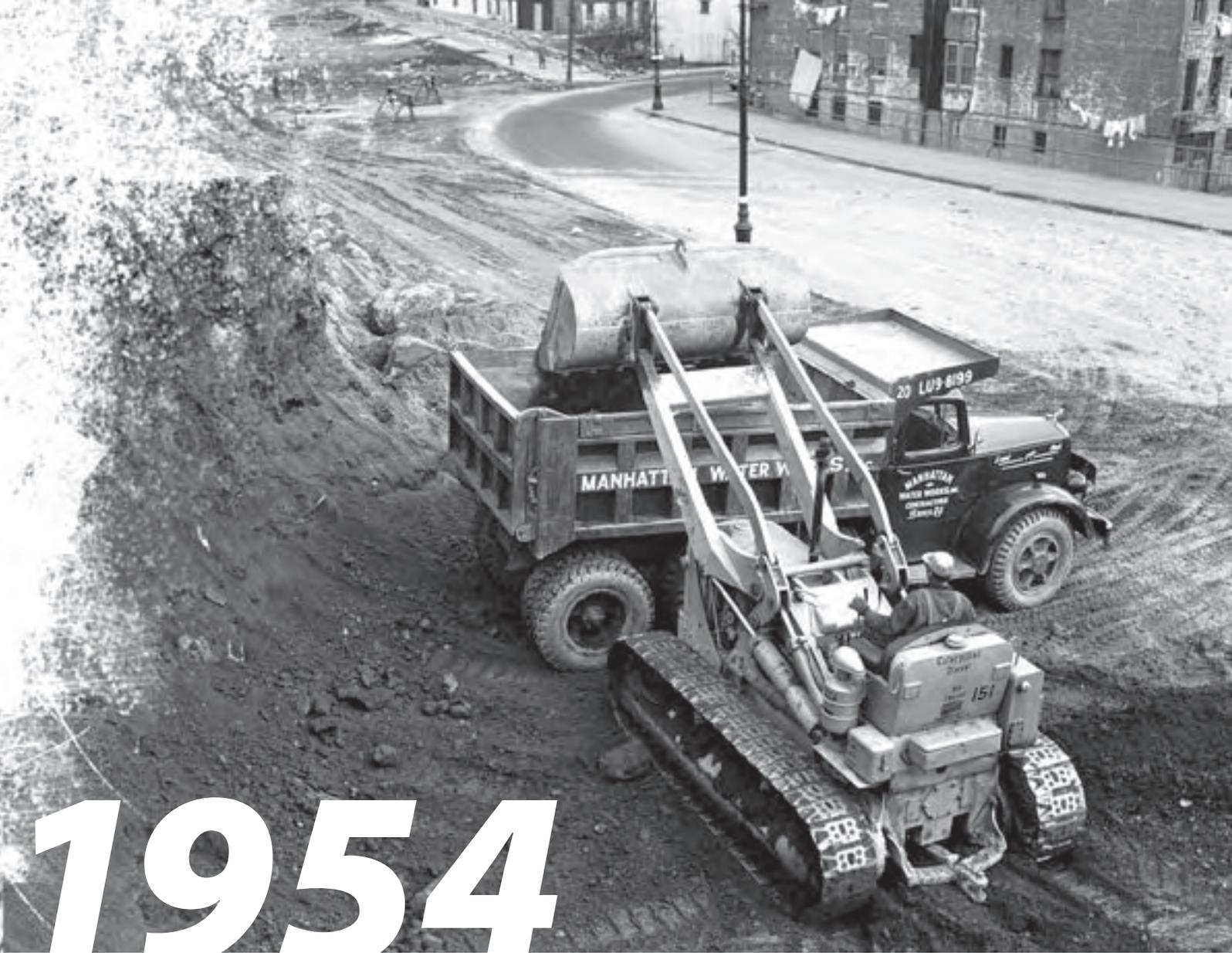
### WHAT’S IT LIKE BEING PART OF TEAM CAT?

Firstly, the work is stable and, unlike welders for other companies, I have no fears that the company will go bust. I like my job and all of us at Tosno have a lot of opportunities. I for example, am not only a welder, but also a foreman, a trainer, and a member of several ‘Quality Circles’. You can request to train for other professions, but I’m happy being a welder. ■

### MORE ON THE TOSNO FACILITY

Tosno produces 275 different components for track-type and wheel excavators and wheel loaders. It is strategically located near St. Petersburg and therefore has a good road network to deliver its products to Caterpillar facilities in Belgium, France, United Kingdom and Poland.

Following many months of outstanding teamwork, Tosno has recently been re-certified as a Class A facility. It also celebrated a significant safety achievement: 375 days injury free operations.



# 1954

## CAT FLASHBACK

This 1954 “no. 6 Shovel” was an industry-first when it was introduced. Cat engineers combined a front-end loader attachment with a track-type tractor to create the integrated-design track loader.

*Photo courtesy of Caterpillar Inc. Corporate Archives.*

### Other notable events of 1954



Bill Haley’s “Rock around the clock” is released and dominates radio stations across the world to mark the arrival of Rock & Roll.



The first Boeing 707 takes off. As the first commercially successful jet it ushers in the Jet Age.



The Union of European Football Associations (UEFA) is founded. Currently 14 of the top 20 teams in the FIFA World Rankings are UEFA members.



# REASSURANCE

As you would expect, our work tools are characterized by exceptional reliability and high quality. They are also extremely durable, which means they retain a high resale value. And with our extensive range of grapples, multi-processors, shears, rippers, buckets, quick couplers and compactors, we make sure you have the right tool for any demolition and recycling challenge.

But there's more. With the unique combination of Cat machines and work tools, you have the perfect performance match. Uninterrupted productivity. Equipment you can be proud of. A single point of contact. And the backup of our unrivalled spare parts service and vast dealer network. In other words, the reassurance that comes from choosing the leader in work tools.

[www.cat-worktools.com](http://www.cat-worktools.com)