

B E T W E E N the BRANCHES

Working Smart for a Quality Job and Quality of Life

New Hampshire CTL pioneer Gagne & Sons Logging moves to Tigercat harvester/forwarder combo for increased productivity and reliability.

– Paul Iarocci

Logging in New Hampshire has a long and rich history dating back to the 1600s when majestic white pines were felled and shipped to England to supply the British Navy with masts. By the late 1800s, the state was being logged intensively. This practice continued right up until The Depression when all American industry ground to a halt.

Today over 80% of New Hampshire is forest covered and the timber industry adds about \$1.7 billion to the state's economy. However, the industry is in decline. For example, in May 2006, the Fraser Papers Pulp Mill in Berlin shut down after many decades of operation. And according to northeastern New Hampshire harvesting contractor Pat Gagne, there are fewer loggers and those that remain have downsized their operations.

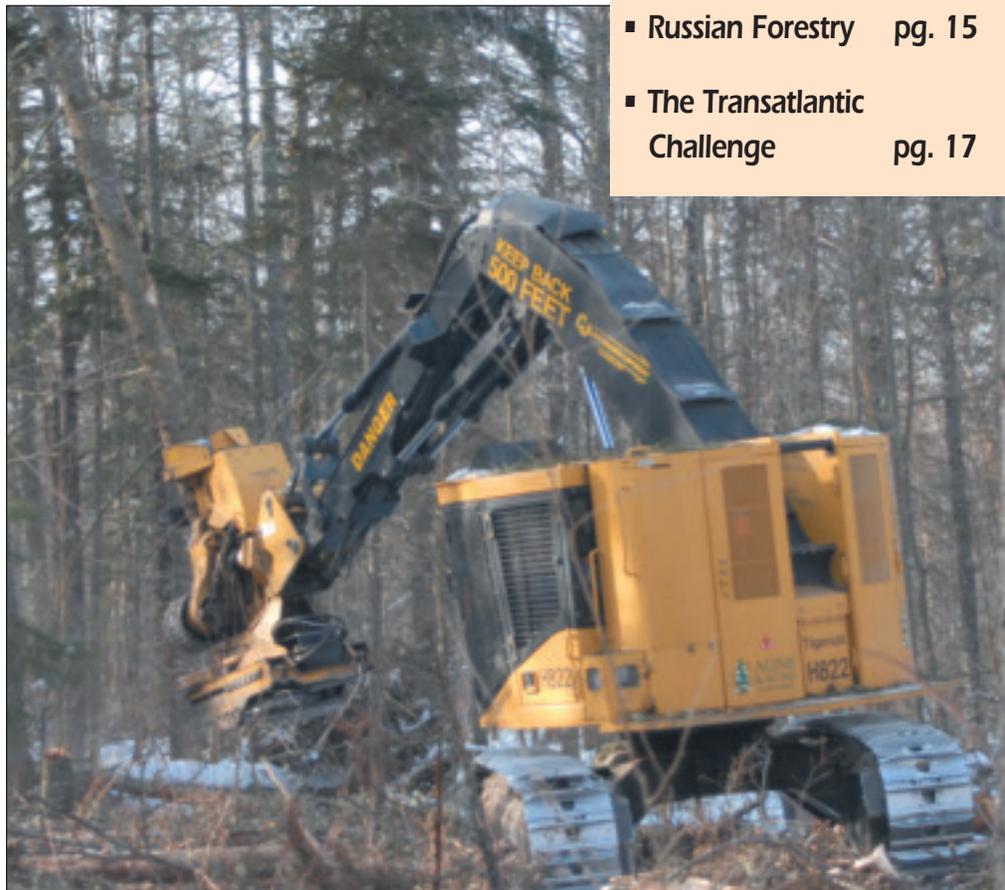
Pat manages Gagne & Sons Logging based in the small town of Dummer, just north of the White Mountains National Forest. The company is owned by Frederick Gagne (Pat's father) who has been logging for 45 years and was named New Hampshire State Logger of

the Year in 1997. "My father started with horses," says Pat who began working in the business straight out of high school in 1988 and converted the operation to cut-to-length in 1997.

The company owns three machines: a three-year old Tigercat H822 with a fixed
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Excellent control of the stems in tight quarters. Gagne prefers the Rolly for its durability. The H822 easily handles the 3,300 kg head.



The 1055 forwarder unloading at the deck.

Risley Rolly harvesting head, a Tigercat 1055 14-tonne forwarder and an older Timbco forwarder that is retained as a spare. Gagne's company was the first in the state to convert to CTL and the system has provided competitive advantages. Given the late start to the 2006-2007 winter, many contractors were unable to work due to soft ground conditions and were forced to wait for the freeze up. Gagne's low impact CTL system enabled him to work straight through the extended and balmy fall season. Gagne explains, "The big advantage of cut-to-length is that we can work 52 weeks a year. We might lose a rain day here or there but very seldom do we have to stop."

Since 1996 Gagne has been contracting exclusively to Wagner Forest Management, a company that manages large tracts of forestland for investment groups. Wagner manages three million acres (1.2 million ha) of timberland in New England, West Virginia, Nova Scotia and Ontario. The company's harvesting strategy in New Hampshire involves three partial cuts.

The first thinning targets the least valuable timber on the tract and generally about one-third of the trees are extracted. Three to six years later, after the softwood regeneration is well established, the tract is thinned again. This time half of the remaining larger, more valuable wood is extracted. The final cut takes the remainder of the mature timber. At this point the area has been

effectively clear felled but the regeneration is very well established for the next cycle. "Trees regenerate well in this area," says Gagne. Rather than marking trees, Wagner develops a prescription for each tract, outlining percentages, diameter range and species to be felled. It is left to Gagne's experience and judgment to determine which trees are to be felled to achieve the desired result.

Because of the high quality, low environmental impact work that Gagne & Sons performs, the company is often placed in sensitive or high visibility tracts. Pat recalls a particular thinning contract along Scenic Route 16, a popular tourist route in New Hampshire. "They are not afraid to put me next to the highway," he says. When looking over a tract recently thinned by Gagne, it is difficult to determine that mechanized equipment ever operated there. The company also performs tricky blow-down and salvage work.

At this stage in the life cycle of Wagner managed forests in New Hampshire, Gagne is mostly involved in first thinning. The timber is quite small and there are a number species to deal with including spruce, balsam, white and yellow birch, hard maple and beech. There are usually six to eight sorts and although stem volumes vary, six inch (15 cm) diameter trees reaching a paltry height of 30-40 ft. (9-12 m) are not uncommon.

Small average stem volume and multiple sorts have an adverse effect on production. This is not high volume logging. Gagne feels that his system has an advantage over conventional full-tree systems that require more iron and manpower and must achieve a volume that may not even be sustainable in New Hampshire's market. Additional complications include rocky, steep terrain and temperature extremes. Again Gagne has tailored his equipment to meet the demands of the application, opting for a durable, low maintenance system.

In the face of tough industry conditions and less than optimal forest resources, it is good decision making, a precise understand-

ing of costs and production and a simple, tight CTL operation that has kept Gagne & Sons in business.

Gagne's is a two man operation. Pat manages the business and runs the H822. His only employee, Mickey Poirier, operates the 1055 forwarder. Pat keeps careful track of his time on the harvester, averaging 20-25 hours of actual cutting time spread over four days per week. Mickey works five days per week, averaging about 60 hours in total. They process four to five loads per day for a weekly volume of 650-750 tons (590-680 t). The hauling is contracted to Mike Gagne Trucking (Pat's Brother) who owns three trucks, two of which are self loading.

Gagne has built flexibility into the operation to accommodate his family and lifestyle. "I always know how much wood is on the ground and I try to stay two or three days ahead of the forwarder," explains Pat. Since he can put his weekly volume on the ground in four days, his fifth day is free for other tasks or he can choose to operate the spare forwarder.

The H822 is equipped with a Risley Rolly fixed processing head. Gagne purchased this package three years ago and has put 3,800 working hours on it. At 7.5-8.5 gph (28-32 l/hr), the machine burns less fuel and is more productive than the machine it replaced. Gagne also notes that the hydraulic oil temperature runs 40-50 F (approximately 27 C) cooler. Hinting at how the operating temperature differences might affect the life of the Rolly head he comments, "That is the temperature difference measured at the tank. Who knows what the temperature at the head is." Although the machine is often required to work on hillsides, Gagne opted for a flat bottom machine. "It is one less system on the machine to worry about," he explains.

Working in first thinning applications, fast boom and swing cycles and a great deal of manoeuvring, track travel and multi-functioning are necessary to get the required production out the machine. Gagne feels that this duty cycle is more characteristic of a feller buncher than a harvester and he appreciates the ruggedness of the H822.

The same goes for the Rolly head, Gagne's third. He prefers the fixed head to a dangle head, citing better control of hardwood trees, far greater durability and added versatility. "I can't afford to turn down work that is inappropriate for a dangle head." This latest head that is mated to the H822 is equipped with a more robust intermittent disc saw instead of a bar saw, further reducing maintenance. Of course durability adds weight but the H822 easily handles the 7,300 lb (3,300 kg) head.

Mickey Poirier put 2,000 hours on the 1055 in its first year. Poirier previously ran a Timbco forwarder and at first missed the functionality of the rotating upper. "I was used to being able to work in front of me with the boom for brushing road," he explains. However, soon the advantages of the 1055 outweighed this short coming of conventional forwarders. The machine is more fuel efficient, consuming an average of 3-4 gph (13-14 l/hr). From an operator's perspective, Poirier feels he has better vehicle control, contributing to a smoother ride as he can set both the maximum vehicle speed and engine rpm depending on the terrain and load. (See sidebar)

Poirier also likes the 360 degree visibility and the high comfort level of the cab. There have been no mechanical problems save one blown crane hose and structurally, both Poirier and Gagne feel that the 1055 has no equal. Although centre section rebuilds were

"If you surround yourself with good people and good equipment, you can do alright."

cont. on pg. 4.

Mickey Poirier appreciates the visibility and comfort of the cab as well as the work lights.





Forwarder operator Mickey Poirier (left) and Pat Gagne.

a 2,000 hour recurrence on his previous forwarders, Gagne does not anticipate ever having to rebuild a centre section on the Tigercat.

Gagne, who is not interested in double shift-

ing and does not believe it is beneficial to have more than one person running a machine, speaks highly of Poirier who was formerly a skidder owner/operator. “Mickey is a really good and careful operator. He treats the machine as if it was his own and takes pride in his work. If you surround yourself with good people and good equipment, you can do alright.”

By working smarter, Gagne has the time

he needs to devote to family interests. His children, Lane (9) and Brittany (13) play basketball in winter and are heavily involved and very competitive in New England Motorcross in summer. Pat and his wife Rita spend a great deal of time travelling to races, raising sponsorship funds and maintaining the bikes.

Gagne emphasizes that with a two machine system, he cannot afford unplanned downtime. In order to have the free time available for his family's recreational pursuits, he has to run reliable equipment. He and Rita visited the Tigercat facilities prior to purchasing the H822 and Pat was impressed with the build quality of the machines. “This is one of the main reasons I switched to Tigercat.” ■

Pat looks on as his brother Mike loads a truck.



Tigercat forwarder drive control

Tigercat forwarders provide a number of methods for the operator to control drive speed and the way the machine behaves during travel. The forwarders have a two speed transmission. Generally speaking, low range is used during actual machine operation and high range is used for roading the machine between sites.

On the right hand joystick control is a 'turtle' switch. When this switch is in the 'off' position the factory default drive settings will control engine speed as well as drive pump and motor displacements in response to the operator's input from the drive pedal. With the drive pedal is fully depressed, the control system will accelerate the engine speed to 2,200 rpm, move the drive pump to maximum displacement and move the motor to minimum displacement, achieving the maximum travel speed possible. The control system will then automatically adjust pump and motor displacements according to load and terrain conditions, allowing full

power operation at the maximum possible travel speed.

When the 'turtle' switch is activated, the operator can use controls on the joysticks to limit both the maximum travel speed and the engine rpm in order to customize the machine to personal preference and specific operating conditions.

Dialing back the travel speed alters the drive motor displacement until the motor reaches maximum displacement. Continuing to dial back the travel speed control will begin to destroke the pump, further reducing the maximum vehicle speed. Once the speed is set to the operator's preference, the operator can fully depress the drive pedal and maintain the selected speed with the engine operating at full rpm.

Dialing back the engine rpm control will increase fuel efficiency and reduce engine noise but also reduces total available horsepower. ■

New Tigercat TH575 harvesting head

Saskatchewan based Almar Limbing -- owned by brothers Marcel and Alain Chalifour -- has been operating the prototype TH575 harvesting head mounted on a Tigercat H860C harvester in a mixed spruce and poplar roadside processing application near Fort McMurray in northeastern Alberta. Marcel is impressed with the productivity and uptime of the head and carrier. His operators have put over 1,000 hours on the machine and so far both the head and carrier have been trouble-free.

The new TH575 harvesting head is specifically designed to match the high performance capabilities of Tigercat track carriers in harvesting, processing and debarking applications. According to Duane Barlow, product manager for attachments, the combination of a heavy-duty structure, taper-lock pins, isolation mounted valve assemblies and clean hose routings will provide high uptime.

For fast cutting performance, the TH575 is standard equipped with a Hultdins Supercut 100 main saw with an option for the Supercut 300. An optional Hultdins Supercut 100 topping saw is also available.

According to Barlow, “Three knife arms and two fixed knives provide excellent delimiting capability and the patent pending three-wheel drive system achieves faster feeding speeds and superior feeding power.” A unique measuring control with a larger diameter measuring wheel improves accuracy. The standard Motomit IT computer system can be programmed for up to eight species and 100 preset selections per species with an option for full value-optimization.

Depending on the options, the TH575 weighs between 2,300 and 2,700 kg (5,200-5,900 lb). It is best suited to dedicated forestry carriers from 200-300 hp for harvesting softwood and hardwood in the 5-580 cm (2-23 in.) diameter range. Contact your Tigercat dealer or go to www.tigercat.com for detailed specifications and options. ■



The prototype TH575 has been working trouble-free for over 1,000 hours.

Redhead sales manager for Saskatoon, Chuck Miles with Marcel Chalifour and Richard Beaulac who operates the Tigercat harvester.

Between The Branches Team:

Judy Brooks
(circulation)
Mike Ross
Paul Iarocci

Please send any comments to:

comments@tigercat.com



Big Production In Big Timber

Australian contractor Danny Richards of Richards Harvesting & Haulage purchases fifth Tigercat.

– Modified from original article and reprinted with permission, *Australian Forests & Timber News*, March/April 2006



The L830 bunches trees to a prepared extraction or 'snig' track in native forest. It is fitted with the Rosin CF750 head.

“We now have five Tigercat purpose-built machines in our various harvesting operations. The operator feedback is good, the availability of the machines is high and the maintenance is minimal,” says Danny Richards of Richards Harvesting & Haulage in central Gippsland, Victoria.

Danny has expanded his harvesting operations from four crews in early 2004, to the five full crews he runs now. With this expansion, he has based his machine purchases around Tigercat. Danny now has an annual harvest of around 270,000 cubic metres of regrowth and plantation stands of mixed eucalypt native hardwood.

“Our two Tigercat Tier II L830 feller bunchers are both working in hardwood operations,” says Danny. The first one purchased in September 2004 -- now with 3,000 hours -- is working for Grand Ridge Plantations in plantation hardwood in the Strezlecki Ranges of southeastern Victoria. The second 2,000 hour machine is working

on a Vic Forest fire salvage operation in the Connors Plains region.

“In the plantation situation for Grand Ridge we have a Tigercat L830 fitted with a CF750 Rosin [fixed bar saw] felling head. We often shovel the wood out to where the machines are picking up bunches to skid down to a processing area where all four log types – large and medium saw log, E-grade and pulp are processed with a Waratah 624 on a Komatsu PC300-7 high wide. Also on that job we have a CAT 535 grapple skidder pulling to the processing area. In all cases we will forward from the processing area with the 1018 Tigercat forwarder [6,500 hours]. This machine is built strong and can carry a good cart load. All the wood is stacked at roadside and loaded from there,” says Danny.

Danny describes the Vic Forest operation: “We tend to fell and bunch with the L830 and then pull the regrowth to the landing with a Tigercat 630C skidder [2,000 hours] which operator Larry Siemens is extremely impressed with. In the regrowth for Vic Forests, we manually measure and cut off the sawlog then process the remainder of the tree into E-grade and pulp using a Waratah 624 fitted on a Komatsu PC300-6. The Tigercat L830 in the regrowth is fitted with a Waratah FL235 fixed bar saw felling head which had come off a Komatsu 300-6 which was burnt.” Danny explains.

“Our latest machine is the new Tier III LH830C harvester.” The machine was delivered in December 2006 and has acquired 250 hours thus far. “This machine has the two-piece harvester boom set, with a Waratah HTH622B harvesting head and is working medium sized native eucalypt in the Licola region,” explains Danny.

The Tier III updates, like the fully automatic variable speed cooling fan, 24 volt system and increased engine horsepower are well appreciated by Danny. “The new machine is a fair bit quieter with the new cooling fan system. The operator Rob Escreet is very impressed,” Danny comments.

The leveling machines are operating on grades approaching 60%. “The leveling feller bunchers work very well in the steeper country that we are getting into,” confirms Danny.

“The thing I like about Tigercat machinery is that it is strongly built and rugged with a heavy frame to handle the heavy work in logging,” Danny continues. “The machines we have purchased came straight off the float, all pre-delivered and went straight to work. We have seen only minimal need for maintenance beyond routine servicing and hence there has been very little downtime.”

Wayne (Chop) Caldwell operates the 1018 forwarder and Damien Shaw and Pete Vaninetti operate the L830 carriers. “They go so well. The hydraulics are powerful and responsive and there are no overheating problems even during the height of summer. The base machine issues have been minimal to date and we have achieved even higher availability than we budgeted for,” says Danny.

“I am extremely happy with the performance of the Tigercat machines and they certainly provide a secure base for ensuring



productivity across a range of conditions and seasons,” Danny says in closing. ■

Top
The 1018 unloads at roadside. The first generation Tigercat forwarder has great visibility for the operator and high payload capacity.

Above
One of the company's L830 carriers fitted with a Waratah FL235 head. The machine works in mixed species eucalypt.

Left
The Tigercat 630C brings out a bunch of pulpwood for processing at the landing.



High Value Hardwood Logging In The Allegany Forest

– Mike Ross

The Allegany mountain region is a large forest in western New York that reaches the Pennsylvania border.

It is comprised of more than 500,000 acres (200,000 ha) of relatively contiguous forestland and contains over 5,600 acres (2,300 ha) of mature old growth forest, the largest such occurrence in New York outside the Adirondacks and Catskills. The forests contain various hardwood species including oak, black cherry, hard and soft maple, ash and a rich diversity of understorey plant species.

Potter Lumber Company is a fifth generation logging and sawmill operation located just outside of Olean, New York. Ernest (Ernie) Potter started the company back in 1907. Today, Ted Potter Jr. (great-great grandson of Ernie) is in charge of all functions for both the sawmill and logging operations.

Potter Lumber Company has always used simple yet effective motor-manual harvesting techniques. Up until the spring of 2005, all trees were felled by hand and

pulled to the landing by cable skidders and a dozer. Today, trees are felled with a six-wheel feller buncher equipped with an intermittent disc saw. This machine is operated by Ted's son, Jason Potter. Long-time and hard working employee Dave Brown operates a 2006 Tigercat 610 grapple skidder. Tim Potter, also Ted's son, operates a knuckleboom loader with a bar slasher. The trees are manually delimbed and topped in the woods.

Potter Lumber Company currently owns 11,000 acres (4,450 ha) of forestland. Half of Potter Lumber's harvesting activities occur on its own land. The other half comes from timber rights purchased on other private land. Focusing exclusively on high value hardwood, Potter Lumber is typically harvesting 14-24 in. (35-60 cm) diameter maple, oak and cherry. The harvested wood feeds the company's own sawmill which produces around five million board feet per year. The lumber is exported to furniture producers throughout the world.

The logging crew works five days per week, averaging eight to ten truck loads daily. Skid distances average one mile (1.6 km) and can get as long as two miles but productivity is adversely affected. Landings are located downhill from the harvesting area wherever possible. According to Dave, "The Tigercat machine is just as fast traveling up hill as it is skidding down. I am comfortable with the speed of the Tigercat skidder. If I drove it any faster, I probably would find myself in some uncontrolled situations."

Shortly after purchasing the 610 from Lyons Equipment salesman Clyde Houser, based out of Little Valley, NY, it was outfitted with ECO-Wheel Tracks from Hultdins. Potter had previously run double diamond studded chains but was persuaded to try out the tracks. "The Tigercat machine is ten times better than the old Timberjack 460 equipped with the chains," says Ted Jr.

"I couldn't believe Tigercat could have built a better suited skidder for this region"

(L-R) Dan Brown, Tim Potter, Jason Potter, Ted Potter Jr, Mike Ross (Tigercat) and Clyde Houser (Lyons Equipment)



With the delayed winter, the tracks helped tremendously. “We have taken that machine in places where we would have never taken a machine before,” confirms Dave. “It walks through spots where a machine without tracks or chains would have no chance in getting through.” According to Dave, the speed of the machine was not effected when the tracks were installed as the newest IQAN program was also installed. “Stalling the machine is next to impossible,” he says. Fuel consumption averages 4.1 gph (15.5 l/hr).

Prior to the purchase of the 610, Houser demonstrated a 620C to the Potters while they were working at a ski resort in nearby Ellicottville. “At the time, the smallest grapple skidder we had to demo to them was the 620C,” explains Houser. “I knew it would be too big for their application but I wanted them to try it out until we could get our hands on a 610.

“I couldn’t believe Tigercat could have built a better suited skidder for this region than the 620C,” says Dave. “But the 610 is ideal and the best machine I have ever run. I’m not getting any younger, so comfort and ease of operation is very important to me.”



The late start to winter made ground conditions challenging.

“Preventative maintenance and care for the machines is what makes them last longer and helps keep them productive,” says Ted. “You will not find a better operator who takes very good care of his equipment than Dave. He is proud of the equipment he works with so keeping it in top order is regular practice to him. He looks forward to operating the Tigercat 610 for many more years to come.” ■

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More Mulching, Less burning

The driving force behind the emerging mulching industry in Alberta is a preference for mulching rather than burning. Whether it is a lease site for a drilling rig, a new pipeline installation or road construction, mulching has taken over from traditional methods used by pipeline builders and construction companies.

Traditionally, trees and brush were removed using various methods. Merchantable timber was sent to the mill and everything else was piled with dozers and excavators and burnt.

With mulching, the remaining organic material is simply mulched and scraped to the side with a dozer. After the job is complete, the organic material is spread back

onto the site during the reclamation process.

Mulching is being used extensively in the development of the oil sands in northern Alberta. Tigercat recently sold two M760 mulchers equipped with ATI track modules for reduced ground pressure for oil sand related applications. The M760 carrier is now equipped with a CAT C-13 415 hp Tier III engine.

The oil in oil sand is called bitumen. In order for bitumen to be processed in refineries, it must first be upgraded. Upgrading involves removing carbon and adding hydrogen. The end product is synthetic crude oil which is transported by pipeline to refineries across North America. ■



The M760 with ATI track modules for low ground pressure.

Upgrading facilities similar to this will be popping up all over northern Alberta and the vast network of pipelines will continue to expand.



Tigercat Awards for Outstanding Performance in 2006

U.S. Sales Awards

Top Stores

Tidewater Equipment - Hazlehurst, GA
 Patrick Miller - Many, LA
 A.G. Lassiter - Chocowinity, NC

Top Salesmen

Jimmy Watkins - Tidewater Equipment, Hazlehurst, GA
 Jeremy Strickland - Tidewater Equipment, Conway, SC
 Van McLoon - Tidewater Equipment, Brunswick, GA
 Cleve Altman - B & G Equipment, Hattiesburg, MS
 Ben Smith - Tidewater Equipment, Walterboro, SC
 Todd Mathews - Tidewater Equipment, Forsyth, GA
 Reece Mincey - Tidewater Equipment, Hazlehurst, GA
 Wayne Ammons - Patrick Miller, Many, LA
 Brian Smith - Tidewater Equipment, Thomasville, GA
 Von Dennis - Tidewater Equipment, Newberry, SC
 Tommy Kirby - Cotton Hutcheson/Tidewater, Evergreen, AL
 Tommy Parks - Bullock Brothers, Smithfield, NC
 Rick Diggs - Tidewater Equipment, Starke, FL
 Jim Lattay - Tidewater Equipment, Thomasville, GA
 Jimmy Harris - A.G. Lassiter, Chocowinity, NC

Canadian Sales Awards

Strongco Equipment Top Tigercat Sales Awards:

Quebec	Dave Quimper
Central Region	Maurice Boudreau
Atlantic Region	Danny St John
Alberta	Richard Parslow

Parker Pacific Top Tigercat Sales Awards:

Prince George	Rick Datoff
Quesnel	Tom Mower
Houston	Darren Brook
Fort St John	Link Snider
Williams Lake	Doug Parchomchuk



Top. Wayne Ammons with Tigercat district manager Heinz Pfeifer.

Above. The Tidewater organization award recipients. (Back row) Reece Mincey, Van McLoon, Jim Lattay, Tommy Kirby, Brian Smith; (Front row) Tony Iarocci (Tigercat), Todd Mathews, Brad Crews, Von Dennis, Jimmy Watkins, Ben Smith, Jeremy Strickland, Ken Trowbridge (Tidewater vice-president).

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Understanding Grease

– Rick Routliffe, service representative

Common to all mechanical equipment is the need for grease. Any components that have relative movement require lubrication.

Many component failures are diagnosed as the result of lack of lubrication. This diagnosis can point to several problems. Lack of lubrication can mean no lubrication was applied to the component. It may also mean lubricant was applied less frequently than required for the application. An often overlooked reason for component failure due to lack of lubrication is the quality or type of grease used.

Tigercat recommends Lithium base EP 2 with Moly (Molybdenum Disulphide) for all the equipment it manufactures. Selecting a quality grease that provides proper lubrication can be difficult since many of us know relatively little about what grease actually is or how it works.

What do we expect grease to do?

“The function of a grease is to remain in contact with and lubricate moving parts without leaking out under gravity or centrifugal action or being squeezed out under pressure. Its major practical require-

ment is that it retain its properties under shear at all temperatures it is subjected to under use. At the same time, grease must be able to flow through grease guns and from spot to spot in the lubricated machinery as needed, but must not add significantly to the power required to operate the machine, particularly at start-up.” (Boehringer 1992)

What is Grease?

Grease is a semi-fluid to solid mixture consisting of:

A fluid lubricant. The most common lubricant used is mineral oil but synthetic oils and vegetable oils are also used.

A thickener. This is commonly referred to as the base or soap. The thickener is used to emulsify or suspend the oil and allow it to flow in a controlled manner into the required area. Think of this as soaking a sponge in oil. When the sponge is squeezed, the oil flows out.

Additives. A wide variety of additives can be added to grease to enhance performance under specific conditions.

Lubricant

As stated earlier, the lubricant used in grease can be one of several types, mineral oil being the most common. By volume, oil is the largest component of any grease and can make up 75% to 90% of the total product, depending on the type of grease and its intended use. Aside from the quality of the lubricant used to manufacture a particular grease, the viscosity of the lubricant is the critical consideration. Viscosity is identified by the number in the specification. For example when looking at Tigercat's grease specification (Lithium base EP 2 with Moly), it is the '2' that tells us this grease is of suitable viscosity for the application. Generally speaking, low viscosity oil is used for low temperature, low load and high speed applications. High viscosity oil is used for high temperature, high load and slow speed applications.

When lubricating certain components like the saw drive spindle bearing shown here, it is important to use a manual grease gun to prevent seal damage. Always refer to the operator's manual.



Thickener

A wide variety of thickeners (base or soap) can be used depending again on the application. Thickeners are generally made of fatty acids and animal fat as well as calcium, sodium, metal hydroxide, aluminum or lithium. Lithium based grease adheres well to metal, is non-corrosive, provides water resistance, remains stable under heavy loads and has a drip temperature of 190-220 C (350-400 F). It is interesting to note that some inexpensive, low performance greases use clay as a thickening agent.

Labels often identify the base or thickener as complex, for example *Complex Lithium Base*. Complex base thickener contains two dissimilar fatty acids in its composition and improves performance of the final product at higher temperature ranges.

Additives

Additives are used to inhibit oxidation, resist corrosion from water, chemical or corrosive elements and to provide anti-wear

properties. Heavy loading can over stress the thickener causing the excessive release of the emulsified lubricating oil, resulting in a lubricating film that is too thin. Extreme pressure or EP additives are solid lubricants, usually graphite or molybdenum disulphide (moly). EP additives provide protection against scoring and galling under heavy loading conditions. These solid lubricants bond to the surface of the metal and prevent metal-to-metal contact and the resulting friction and wear that occurs when the lubricant film gets too thin.

Both graphite and moly are quality EP additives. However, moly is more than twice as dense as graphite. The low density of graphite will cause it to break down under severe loads while moly, a far superior material, will support severe loads and maintain a lubricating film. It is very important to note that grease containing molybdenum disulphide or graphite is best described as being dark grey to black in colour. Any other colour of grease (red,

An often overlooked reason for component failure due to lack of lubrication is the quality or type of grease used.

cont. on pg. 14.



The boss drives one to work and now you can drive one at work.

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green, blue, etc.) does not contain either of these materials.

To illustrate the need for quality lubrication, consider the main boom on a Tigercat 860C feller buncher equipped with a 5702 felling saw. The load created by the weight of the boom, felling head and the trees in the head is focused on the main boom base pin. With the head loaded with stems and the boom fully extended, the force acting on the contact area between the pin and bushing is approximately 50,000 lb (22,680 kg) and the contact area is about four square inches. When the load is spread over the contact area, this joint will see 12,500 psi. 12,500 lb (5,670 kg) is the weight of an average sized male African bull elephant. Shock loads to the boom frequently double or triple the load on the contact area for brief periods of time.

Always refer to the operator's manual for grease requirements specific to each machine and contact your dealer if you

require more information. Using a high quality grease that meets the equipment manufacturer's specifications and following the manufacturer's lubrication schedule should not be viewed as an expense. It is an investment that will maximize equipment life, productivity and resale value. In short, using high quality grease maximizes the return on your capital investment and contributes to a reduction in cost per ton of your entire logging operation. ■

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The Russian Forest Industry Re-emerges

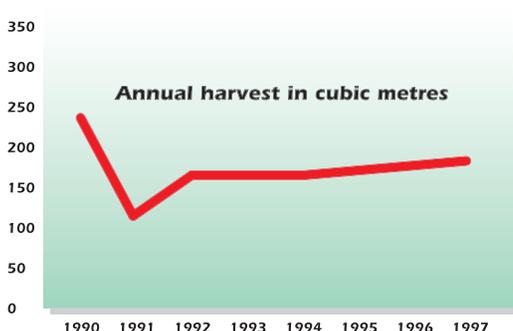
– Zach Wilkie, international sales coordinator

Spanning eleven time zones from the Baltic Sea to the Pacific Ocean, Russia has approximately 22% of the world's forest area – more than any other country.

By comparison, Brazil accounts for sixteen percent of the world's forest cover. Canada and the United States have seven and six percent respectively. In view of Russia's staggering forest resource, it is no surprise that in the late 1990s Tigercat took notice and embarked on a plan to enter into the Russian forestry equipment market.

During the latter years of the Soviet era, the annual harvest was estimated at over 300 million cubic metres per year. This is just behind the United States and Canada, the world's largest timber producers. In 1987 Mikhail Gorbachev introduced a series of economic reforms termed Perestroika (literally translates as reconstructing) in an effort to replace the planned economy with a decentralized market-oriented system.

An unforeseen consequence of this top-down approach to change was a shift from stagnation to all out deterioration of the Soviet economy. The forest industry did not escape this general trend of decay and the annual harvest dropped below 100 million cubic metres. Since then, harvesting levels have steadily increased (see graph below) and Russia is poised to recapture its ranking as a leading producer and supplier of industrial round wood.



Distribution

One of the key relationships Tigercat established in Russia was the 2004 signing of Perm based Forest Machines Ltd. as its representative for sales and service. Situated on the western edge of the Ural Mountain Range, Perm is 1,300 km east of Moscow. Capital of the province of Perm, the city is the industrial centre of the Urals and the gateway to Siberia. Perm is an ideal base for Forest Machines. It is situated in proximity to massive forest resources and is also a transportation hub -- the Kama River, the Great Trans-Siberian Railroad and main highway from Moscow to Siberia all pass through Perm.

Tigercat has worked closely with dealer principal Yuriy Torokhov to develop the necessary industry contacts that have laid the groundwork for the first direct commercial sales by Tigercat into Russia.

Customers

The initial sale in Russia was complex. It was only after two years of proposals and negotiations that Tigercat signed the first contract with Solikamskbumprom for the sale of seven machines. Solikamskbumprom -- a forward thinking company and key player in global newsprint -- decided after

Members of the Solikamskbumprom crew with James Farquhar and Rick Routliffe.

cont. on pg. 16.



On site classroom training for the Solikamskumprom employees was part of the machine start-up program.

an exhaustive review of available methods and harvesting systems that its expansion plans were best achieved with Tigercat equipment.

The first sale included the following machines: one 870C feller buncher, two H822C harvesters, two 630C skidders, a T250B loader and a 1055 forwarder. Since the closing of this deal Tigercat has shipped two additional orders. As of February 2007, Tigercat will have 29 machines operating in the northwest and south-central Siberia.

Service sells the second one

As the adage goes, service sells the second one. Tigercat and Forest Machines are committing technical and financial resources to ensure the machines are properly supported. Forest Machines has invested heavily in a parts inventory that will allow for delivery anywhere in Russia in under a week.

Further expansion is underway to appoint sub-dealer representatives throughout Russia. Each service contractor will be required to meet Tigercat's stringent standards regarding tooling and customer service. The first service centres are planned

for south-central Siberia in the cities of Irkutsk and Krasnoyarsk, providing customers in the region with a choice. Tigercat and Forest Machines will closely monitor the performance of the service centres.

In addition to parts availability and the service centres, Tigercat has offered training in Russia for the start-up of each operation. In late 2006, Canadian district manager James Farquhar and service representative Rick Routliffe accompanied me to Russia. With the assistance of Forest Machines personnel, we completed an in-depth training program that focused on service and the successful operation of the Tigercat equipment. This program will be repeated in south-central Siberia to coincide with additional machine start-ups.

The Russian forest industry faces many challenges. Much of Russia's forests are located in extremely remote regions with insufficient infrastructure and an incomplete transportation network. Environmental constraints and a high mortality rate related to forest fires and insect outbreaks add further complications.

The success of the participants in the Russian forest industry will be based on each party's ability to adapt, outperform and persevere in the face of change. Offering innovative, low cost per tonne harvesting systems and full after-sale support, Tigercat and Forest Machines are well positioned to serve this re-emerging market. ■



Secret City

During Soviet times, Perm was a fortress. The city and surrounding area was a major producer of military hardware. Artillery, rocket vehicles, intercontinental ballistic missile launching systems, engines for MiG jet fighters and other weapons were produced in Perm. The Soviets virtually hid Perm from the rest of the world and most people outside of the Urals had no idea of the city's existence or the million plus citizens it contained. It was not until the end of the cold war that Perm even appeared on maps. Today Perm is one of Russia's fastest growing cities and enjoys a great measure of economic prosperity based on its strong manufacturing sector.

The Making of Mean Machines II - The Transatlantic Challenge

Tigercat vs. Ponsse

– Jon Cooper, product manager forwarders and wheel harvesters

In November 2006 Cream Productions approached Tigercat and Ponsse about participating in a television production scheduled to air in North America and Europe in mid-2007. The episode would be part of a series called Mean Machines II - The Transatlantic Challenge.

A follow up to the successful Mean Machines series that featured machines with extraordinary capabilities, each new half-hour show pits a North American designed machine against a similar European designed machine in challenges intended to showcase the unique capabilities of the equipment. The Tigercat-Ponsse episode will involve a friendly competition between Tigercat and Ponsse forwarders.

Cream Productions found a Ponsse dealer in Timmins, Ontario that agreed to provide a new 18-tonne Buffalo King forwarder. Timmins based contractor Stephane Thibault, owner of Mid North Logging Inc. generously allowed the use of his six-month old Tigercat 1075 20-tonne forwarder and permitted the episode to be filmed at his job site. With everything falling into place and all parties agreeing to participate, two days in December were scheduled to shoot the various machine challenges. Additional participants from Tigercat were forwarder designers Jeff Lotz and Sean Phillips and Ontario district manager Derek Tremblay. Maurice Boudreau, salesman for Strongco Equipment in Timmins was also present.

The challenges proposed by the production company were designed to be impressive to the viewing audience and did not really



reflect the productive capabilities of the machines. Some of the proposed challenges were not feasible for one reason or another. For instance it was not possible to build an obstacle course that was difficult enough to negotiate. A test proposed to determine which machine could hold the most logs in the grapple was not agreed to by Ponsse because the Tigercat grapple is quite a bit larger than the Ponsse grapple. In the end, five challenges were agreed to by all parties.

The Pick Up Sticks Challenge

The first was an empty speed test through the woods. A pile of logs was located at the base of a gentle 250 m (275 yd) long slope. The machines would start at the top of the slope and travel as quickly as possible to the single grapple load of logs at the base of the slope. After loading the logs, the machines would continue forward, making a large turn back up the slope to the finish line at the top.

With no practice run, the Tigercat 1075

The film shoot for the half-hour show took two days.

cont. on pg. 18.



The load capacity challenge. 1075 operator Luc Varano proved that he could indeed travel with the load.

went first. Breaking trail, it completed the course in 3:06 minutes. The time would have been better except a slight miscalculation in one turn required operator Luc Varano to stop, reverse and manoeuvre around a standing tree. Ponsse, having the benefit of seeing this, followed the 1075 tracks but negotiated the standing tree without backing up. The Ponsse bettered the 1075 time by four seconds. It was fun to watch but no measure of how much wood the machines could move to roadside during regular production.

The Log Cabin Challenge

The next challenge involved stacking 2.4 m (8 ft.) logs in a square pattern to build a structure similar to a log cabin. The logs were to be stacked four high and the operator who completed the task in the shortest time won. The Ponsse operator went first. With his small grapple he had a fairly easy time building the structure. Luc stated that he would have a hard time with this challenge. The 1075 is equipped with a giant Hultdins 520 grapple which opens to nearly eight feet. It barely fit between the stacked eight foot logs. Releasing the logs without touching the others was nearly impossible. With a smaller grapple, a Ponsse forwarder can definitely build log cabins more quickly than a Tigercat forwarder.

At the end of the first day the Buffalo King had won two challenges. The huge Ponsse

entourage could not contain themselves with the success of the day...

The Load Capacity Challenge

This challenge was quite straight forward and simple; pile as many logs as possible on the machine and see if the other machine can match or exceed the volume. The Tigercat 1075 went first. Luc did an exceptional job of loading the machine to its maximum. Then he filled the massive grapple to capacity and set the logs perpendicular on top of the load, signalling that he was finished. Director Stavros Stavrides called the Ponsse people over. They were not happy, claiming that this was not a fair test; the machine was overloaded and could not possibly travel with that size of load.

Luc, now mildly indignant, drove around the site, demonstrating that the machine could in fact travel with that size of load. I suggested they load their machine in the same manner. Despite endless claims the previous day that the Ponsse could carry the same volume of wood as the Tigercat, the Ponsse representatives realized they could not load the machine in the same manner.

Instead they suggested that the machines be loaded to the top of the stakes on the load bunks. We agreed and Luc removed a few grapple loads of logs. Then the Ponsse was parked beside the 1075 and the operator began removing logs from the 1075 wagon and loading up the Buffalo King. The operator picked each log individually to load the bunk as efficiently as possible. Despite a valiant effort from the operator who piled well above the stakes, a hefty load of logs still remained in the bunks of the 1075. It was gratifying to see that the first win for the Tigercat was a challenge that actually reflected the productivity of the machine.

The Hat Challenge

The intent of this challenge was to demonstrate the precise control possible with the cranes on these large, strong machines. Originally the plan was to place eggs on golf tees. It sounds impossible but might have worked had the tips of the

grapple tongs passed closer together. Hard hats were substituted for the eggs. A short pole was placed in the ground on either side of the machine and a hard hat was placed on top of the pole. The task was to move the hard hat from one pole to the other three times. Both operators easily completed the task. Unfortunately a gust of wind blew the hat out of the 1075 grapple. Luc, a highly skilled operator, easily picked the hat off the ground and placed it on the stick anyway. The director was so impressed with the manoeuvre that he declared it a successful placement and the challenge ended in a draw.

The Stability Challenge

This challenge was devised to demonstrate the ability of the machines to stay upright while exposed to overturning forces. With the machine bunks empty, a grapple full of 4.8 m (16 ft.) logs would be held over the side of the machine using the crane. The grapple load would try to tip over the rear frame of the machine. The further over the side of the machine the logs were held, the more the load of logs would try to tip the machine. The winner would be the machine that could hold the logs furthest over the side while driving forward and steering fully from one direction to the other. Ponsse elected to go first.

The operator filled his grapple with a load of logs. While sitting still with the machine steered straight ahead, he positioned the load of logs over the side of the machine. Then he stopped. He radioed to say that he could not move without the rear of the machine tipping over.

It is important to note that the Ponsse forwarder is equipped with an oscillation locking device that connects the front frame solidly to the rear frame when engaged. When the machine is stopped the lock engages automatically. When the machine begins travelling the lock disengages automatically. Locking the front frame to the rear frame gives the rear frame more stability when the machine is stationary. This prevents the rear frame from tipping

over when large loads are lifted with the crane. However, it does not help while the machine is moving as it cannot be engaged while travelling. During travel the front and rear frames must be allowed to oscillate relative to one another to ensure that all wheels stay on the ground. The oscillation also prevents high stresses from damaging the machine structure.

The operator was advised to move the load closer to the machine before attempting to travel. He moved the load within a metre (3 ft.) of the side of the machine. Even at this position, the machine was unstable. When the operator tried to steer the machine, the wheels came off the ground and the rear frame tipped over until the load in the grapple was on the ground. With the machine fully steered to the left while travelling, the operator could barely hang the grapple over the right side of the machine without the rear frame tipping over.

The Tigercat 1075 was designed with careful consideration to machine stability and does not require a centre joint oscillation lock. Luc picked up the same grapple load and quickly moved it to full reach while driving forwards and backwards and steering completely from left to right. He used the crane to bounce the load in an effort to destabilize the machine. Later Luc confided to me that when he realized what this challenge was going to entail, he knew that he could not lose. He explained that he had operated competitors' machines designed similarly to the Ponsse and they were not nearly as stable as the 1075.

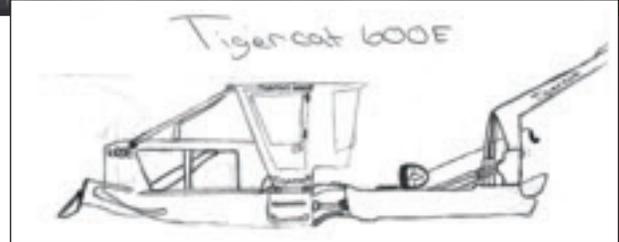
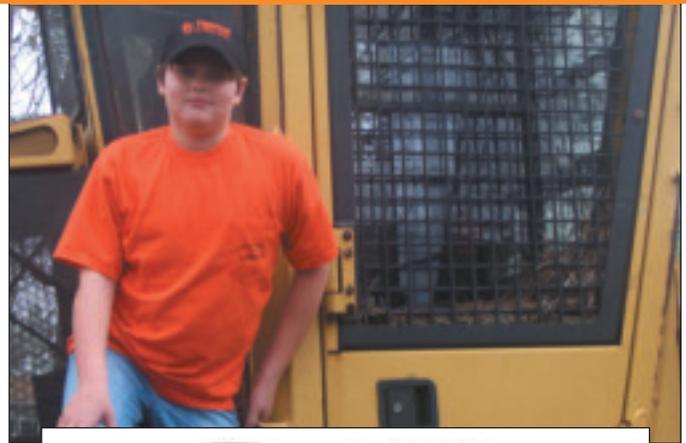
At the end of day two the production crew congratulated both sides, declaring the challenge a draw. Watch for the episode to be broadcast on the Discovery Channel later this year. Thanks to Strongco Equipment and especially to Stephane Thibault and operator, Luc Varano for all their assistance. ■

LETTER TO THE EDITOR

I am Kance Nicholson. I am eleven years old and I love Tigercat equipment. I want to some day own my own logging equipment like my father. His name is Russell Nicholson and he has his own logging equipment company named Russell Nicholson and Son's Logging. He has gotten me really interested in the industry as I grew older. I got my first experience at four years old. I played on a loader at this age and I have loved it ever since. I want to be a Tigercat equipment owner.

My life's dream is to one day have my own equipment and maybe have children one day to love logging as much as me. I am going to have a Tigercat 620C skidder, 720D cutter and a 244B loader. I want to have my invention of the Tigercat 600E skidder to be one of the best designed. Maybe one day Tigercat can use my drawings and plans for a new design in the future.

-- Kance Nicholson
11 years old



Kance's 600E engineering drawing. "I want to know if you like my plan about a new kind of Tigercat. It is a 600E. It might be small but you can put the same engine as a 630C."

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