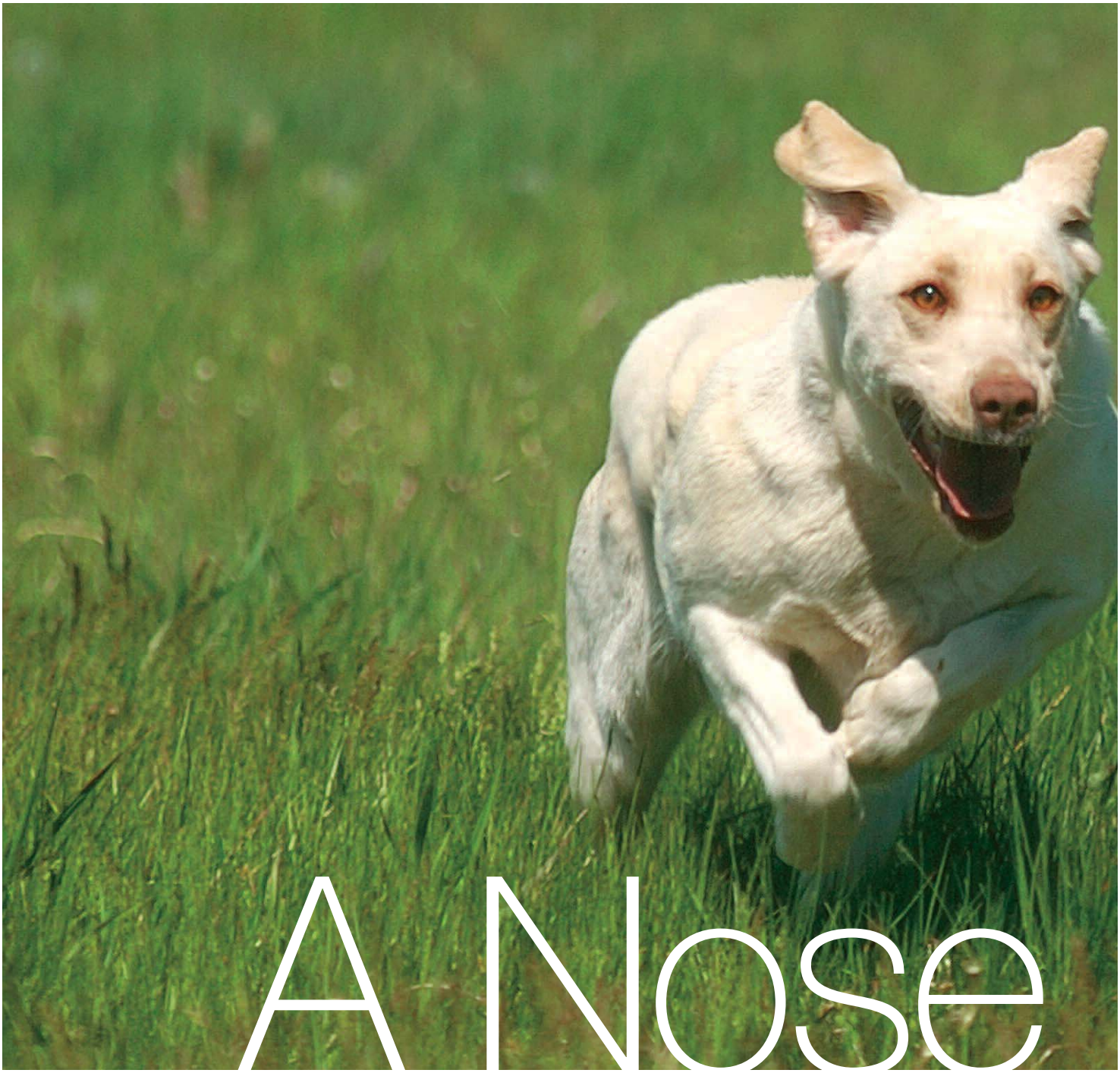

A Nose

BY JAKE KENNEDY

There's a slow leak in the pipeline. Weeks of searching have narrowed it down to a few hundred metres of real estate. But the best machines are still stumped as to where the source of the leak lies. It's time to call on man's best friend.

for Trouble

JAKE KENNEDY

She's beautiful: long blond hair, tall lean legs and a cold wet nose. This is Abbey. She's a two-year-old yellow Labrador retriever. She's whizzing around an open field of green grass as her handler, Jay Bissell, prompts her with calls of "good girl" and "find the leak." Abbey is a highly trained pipeline leak-detection dog.

Here in Okotoks, only a short drive south of Calgary, Alberta, Bissell runs Find It Inc. Green hills surround his country home, with the Rocky Mountains just visible in the distance. A chorus of dog barking greets anyone the instant they step out of their vehicle, after making their way up the gravel driveway. With room for 79 dogs, the kennels behind Bissell's house hold dogs being trained for pipeline leak detection, arson, explosive detection, drug detection, poacher tracking and firearms detection.

The idea of using dogs to detect leaks in pipelines isn't new. Bissell was a pioneer in the field back when he worked for Esso in the 1980s. However, Bissell says, today the practice is becoming much more commonplace. From the bayous of the southern United States, to cold reaches of northern Alberta – and even up into Alaska – Bissell and his dogs have been busy finding pipeline leaks. *Continued ...*

SHANNON OATWAY

"Our busiest time is right after the thaw," Bissell says. "The ground moves, the pipe moves, and leaks happen." And the further North you go, Bissell says, the worse this problem can be.

Ask any homeowner North of 60 what the worst time of year for structural damage is and they'll agree with Bissell. When spring hits, ground that's been frozen for six, seven, even eight months, starts to thaw. The resulting heaves tear apart roads, unbalance house foundations and generally wreak havoc. So with the prospect of a Mackenzie Valley pipeline through the Northwest Territories, and an Alaska pipeline carrying natural gas down and through the Yukon, pipeline leaks caused by freeze and thaw is something to be worried about.

That's why Bissell says he invests in a steady regime when training his dogs. If, or more likely when, a Mackenzie Valley pipeline and an Alaska pipeline are built, Bissell is sure to be in the Rolodex of the operators. Because when leaks happen, Bissell and his dogs may just be the best bet for finding the problem.

BISSELL REMEMBERS IT FONDLY. "This company had just laid a new pipeline," he recounts. "As soon as they turned it on, they realized there was a leak in there somewhere. They spent close to US$250,000 trying to find that pinhole leak." The company's method was to keep cutting the search area in half, and seeing if the leak was in the remaining pipe. Eventually, they had it down to only a few hundred metres of pipeline, but they still couldn't find the origin of their leak.

"I barely had time to get the dog on the leash before she found the leak," Bissell says with a laugh. "It was pretty funny because there were six big-wigs standing there. They'd just spent a bunch of money and time trying to find the leak on their own. And then we came in, and had barely taken 15 steps before we found it."

How can a dog detect a pipeline leak so effectively? Bissell says it's all in their nose. While humans have about five-million olfactory receptors, dogs have more than 250-million. That puts their ability to smell far above that of humans. And, it turns out, far above even our best technology.

In the mid-1980s, Bissell was working as a consultant in Calgary, and training dogs on the side as a hobby. (It's a passion he's had since he was a young boy and his family used to show dogs in competitions.) Then Bissell went to the U.S. to attend a special dog-training workshop. That's where he met Rudy Drexler, a legend in the world of training police dogs. At the time, Bissell says Drexler had trained more than 900 law enforcement dogs for more than 63 police departments.

Bissell returned to Calgary where he opened an obedience school and training centre for dogs to learn how to sniff out bombs, arson equipment, drugs, gunpowder, etc. Then in 1989, he was approached by Esso to work with them on a research project designed to study the effectiveness of dogs in sniffing out pipeline leaks. "Over three years of research," Bissell says, "the dogs were the best I could find in terms of sensitivity to the smell."

In fact, at one point the project wanted to test just how good that ability was. Bissell packed up 12 of his dogs, and flew them down to Alabama. There, a joint study was done on the dogs by the University of Oxford and University of Auburn to determine the range of capability of a dogs nose. The scientists discovered that the dogs can determine scent at one part per trillion. That's a one followed by 18 zeros. "It reached a point where they just turned to us and said: 'Sorry, but the dogs noses have gone beyond our mixing capabilities,'" Bissell says.

In other words, we still don't know the full extent of the dog's capabilities. Only that it's beyond human capability to measure with our current technology. Bissell puts it another way: "The capability of these dogs is incredible. It's like taking the entire state of Washington and filling it a foot high with water. Then put in a drop of scent. These dogs have the capabilities to find it." *Continued...*

SHANNON OATWAY

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SHANNON OATWAY

ONE OF THE MOST memorable times Bissell has had with his pipeline leak-detection dogs, is in the swampy bayous of Louisiana. Bissell was called there to do a job. "The only problem," he says, "was that the pipeline ran underneath a couple feet of bayou."

And where there's bayou, there are alligators. That meant that it wasn't safe for a dog and handler to be in the water. So instead, Bissell trained his dogs to ride in a swamp boat. "When they'd pick up the scent, they'd scratch at the bottom of the boat. We knew to stop and check for the leak. And sure enough: there it was."

Bissell and his dogs have done jobs in all sorts of conditions, from the dry desert heat of New Mexico to the chilling cold of Alaska. If he had a choice, Bissell says he'd always take the cold. "The cold weather doesn't really bother the dogs. It bothers the handlers more."

Dogs can be trained to wear boots, body blankets and other gear to keep warm. In the heat, Bissell says he continuously worries about heat exhaustion and dehydration. "In cold weather, we'll switch the dogs out every two to four-kilometres to give them a chance to heat up," he says. In the heat, however, the teams need to rotate every 1,000-metres to avoid dehydration and overheating.

The ability to deal with different elements is just one of the factors that makes Labrador retrievers ideal for Bissell's use. "Our work may take place in Alaska or Texas," he says. "So we need a breed that can take temperature extremes." He also likes labs because they have longer legs than, say, a bloodhound – making it easier for them to step over obstacles, or walk through snow or muskeg.

Though the breed has certain characteristics that make it excellent for pipeline leak-detection work, Bissell says it's still only a small number of labs that are suited to the job. "We're very careful about choosing our dogs," he says. "If I can't turn a dog into one that can detect pipeline leaks, I've just lost a lot of money and time in the training."

He usually aims to buy a one-year-old puppy. Bissell says he avoids breeding his own dogs because "with a puppy, what you see is not necessarily what you get." As the dog grows, his or her personality and aptitudes may change.

Bissell says he looks at about 15 to 20 dogs before finding one that is suitable for what he wants it to do. "We need to find them born with a high retrieval drive. That drive has to be half or three-quarter full, and we'll fill it up the rest of the way," he says. His careful selection process leads to good results: Bissell says he has only a two percent failure rate in the training of his specialty dogs.

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WHILE SPENDING the workday with a furry, four-legged animal may sound like a lot of fun to some people, Bissell says the job is not like most others. "You're married to this job," he says. "These dogs need to be fed; they need to be exercised; they need to be cleaned up after. They don't stop at five o'clock each day, so I can't either." Owning and operating these dogs isn't like using technical equipment, he adds. Machines can be placed on a shelf until they're needed. With the dogs, however, constant training is needed to keep their skills sharply honed.

Finding and fixing a pipeline leak isn't cheap. Bissell estimates it costs between $3000 and $5000 to excavate a short length of pipe. Then add the costs of re-pressurizing the line, the downtime, escaped gas and any environmental clean-up that needs to be done. On average, Find It leak detection runs about $4,200 – making it not only a faster option, but also a more affordable choice.

And the dogs love it. "At the end of the day, it's rewarding for us when the dog has accomplished its goal," Bissell says. "The dogs are nuts about this. They love doing it. And their rate of pay is pretty good: We throw them a bone now and then."