

Frozen in Time

Gloves? Check. Cockpit heater? Check. Engine insulator?

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Douglas DC-4 Skymaster starting at 40 below zero is a colossal event. Engines crank, whine, and cough before beginning to rumble in unison, louder than a parade of unmuffled Harleys. The exhaust from the 72 cylinders of the four Pratt & Whitney R-2800 engines streams into the frigid air and immediately creates an icy fog. By the time all four engines are firing, a crystalline haze obscures the rear half of the airplane.

The distinctive roar of a DC-4 is routine in Yellowknife, Canada, headquarters of Buffalo Airways. In an average year the family-run airline, which has been flying since 1970, hauls 6,300 passengers on scheduled flights, runs 1,200 charter flights, and delivers 11.5 million pounds of freight to villages across Canada's Northwest Territories, an area nearly twice the size of Texas. The company operates 11 DC-4s and 12 DC-3s, the largest flyable fleet of those aircraft on Earth. But what really sets this airline apart is that owner Joe McBryan and about a dozen of his pilots fly them in winter temperatures that keep lesser mortals on the ground.

Every morning McBryan flies a DC-3 load of passengers from Hay River, at the south shore of the Great Slave Lake, 140 miles north to Yellowknife, the capital of the Northwest Territories. The city boasts about 15,000 of the Territories' total population of 17,000.

During January Yellowknife has only six hours of sunlight a day. The town's residents live the rest of the time under mercury vapor lights that glow in the fog. Despite a handful of 12-story buildings, Yellowknife feels like an isolated border town.

The Northwest Territories needs an airline because its residents cannot rely on any year-round roads. Scattered in the high arctic vastness surrounding Yellowknife are dozens of Canadian Indian communities, fishing shacks, hunting lodges, and mining operations. Short runways, many unlit, provide the only link to the goods and services needed to sustain life. On McBryan's evening flight to Hay River, a wizened Inuit woman explains: "We used to go by dogsled. Now we move through the air."

McBryan, 61, is clean-shaven and gravelly voiced and sports a 1950s pompadour. He admits that his disposition isn't exactly accommodating, and he deflects interviews. "There's been too many stories about me," he says. "Talk to the pilots and mechanics. Talk to my sons. I've got cat boxes to empty." But his reverence for his fleet of airplanes, many of which are older than McBryan, gets the better of him. He can't resist talking about them.

"Rooms full of women built these planes during the war," says McBryan. "Rosie the Riveter built one hell of an airplane. If they made airplanes these days out of the alloys that they used back when these DC-3s and -4s were built, you could fly them well into the 21st century."

"It is the 21st century, Dad," his 22-year-old son Mikey chides. "Buffalo Joe," as the elder McBryan is widely known, smiles wryly.

Cost versus benefit, the heartless equation that sidelines old equipment, is calculated differently at McBryan's airline. "None of our freight haulers are less than 60 years old," Mikey boasts. "We also own the last DC-4 built."

But the pride of the fleet is the Arctic Distributor, a 61-year-old DC-4 that has spent nearly 70,000 hours in the air. Built in 1944, the old Skymaster served in the Berlin Airlift before becoming American Airlines' flagship. Qantas owned it for a few years, dubbing it the Pacific Trader, then Malayan Airlines flew it, after which it ended up in Latin America.

"She's the highest-hour DC-4 ever," Mikey says, an articulate teddy bear of a man who manages charter flights for the airline. "Which means she's probably the highest-hour plane in history."

The airplane now hauls heavy loads into short landing strips, a task that uniquely suits the DC-4.

When Joe acquired the airplane, he named it after the steam-powered stern wheeler on which his father, Red McBryan, worked as a teenager. The riverboat Arctic Distributor delivered goods to communities along the Mackenzie River and Arctic coastal villages during the five to six weeks in the summer when the river was ice-free. Today, the Buffalo Airways DC-4 puddle-jumps the same river route to the same settlements that Red's steamboat visited 70 years ago, when fuel was cordwood.

Around Yellowknife's snow-whipped airport, the thick fog partially obscures the collection of hangars big enough to house 737s. Inside the biggest hangar in the Northwest Territories, Joe McBryan prowls around his airplanes in a beaver skin hat and arctic coveralls. He seems overdressed. It's warm enough in the hangar to paint, which a couple of his pilots are doing, layering the Buffalo Airways aquamarine livery on a welding cart.

When Buffalo Airways pilots aren't flying, they sweep, mop, answer phones, clean parts, paint, load freight, and generally do Joe's bidding. Suddenly a bell begins ringing and the four-story-high doors open slowly as a mechanic in a "mule" starts pushing the Arctic Distributor, registration C-GPSH, out the door. It's 10:00 a.m., and the air temperature is -41 degrees Fahrenheit. Within three minutes the hangar is the same temperature as the wild white yonder, and within another minute another DC-4 has been tugged inside the hangar. The great doors rumble closed as soon as the 117-foot wings clear, and a couple of 20-ton airplanes have swapped places at a cost in lost heat, according to Joe, of a thousand Canadian dollars.

The extreme temperatures shape every decision made at Buffalo Airways. "Companies reflect the personality of the boss," McBryan says. "The boss up here is the weather."

But everyone working for Buffalo Joe acknowledges that he is the man in charge. Any employee who doesn't measure up to the unforgiving environment—and to McBryan's insistence on safety, heedfulness, and propriety—won't last long at Buffalo Airways.

"Don't take his every word as gospel," Mikey says about his father, with a grin. "Once he told a reporter that the cockpits are so cold that his teeth ached, so he had them all pulled."

Every human activity undertaken in the Arctic is made more difficult by the many layers of clothing required. Upon contact with the -40 degree air, exposed skin begins freezing immediately.

When Ken Bews, Buffalo's chief pilot, prepares for a morning freight trip up the Mackenzie River, he dons heavy fleece long underwear, track pants, another fleece undershirt, a wool flight vest, another pair of wool pants, and a heavy work jacket.

He wears a beaver skin hat, but when he flies, he switches to a heavy wool one that doesn't restrict his peripheral vision.

When handling freight on the ground he wears leather mitts over thinner gloves and, like the rest of the crew, packs himself into coveralls that seem to reduce normal mobility to less than half. The crewmates toddle, looking as though they are holding oranges in their armpits.

Gloves render hands unfeeling and clumsy, so in flight Bews and copilot Peter Woodbury try to go barehanded. While airborne, they wear athletic shoes rather than their felt-lined boots so they can feel the response of the rudder through the pedals.

At 6 a.m. Bews, Woodbury, and flight mechanic James Dwojak arrive to warm up the Arctic Distributor for a grocery run up the Mackenzie Valley. When the airplane was put to bed the night before, all four engines were hooked up to heaters and wrapped with quilted covers. The rest of the airplane is frigid, however, so the crew fires up two Frost Fighters: 250,000-BTU, diesel-powered space heaters with dirty yellow hoses the size of culverts that blow hot air into the cabin and cockpit. There are 600,000 BTUs of heat pouring into the DC-4, enough to warm a dozen three-bedroom homes.

After the spectacle of the start, Bews rolls out toward the taxiway. Woodbury monitors the right wingtip, which barely clears the 14-foot-tall berms of snow plowed away from the hangar apron. Bews repeatedly feathers the props as he taxis because the oil in the prop hubs is coagulated like, well, molasses in January. The pilot loudly worries about stiffened lubricants blowing seals.

"It takes extra power just to taxi when we're this cold," Bews says. "Another three degrees colder I wouldn't want to do this."

On takeoff, the icy mist in the old airplane's wake expands like a living thing, rising from the ground, swirling and thickening, becoming a linear cloud 40 feet high along the length of the runway. "We can shut down the airport for half an hour until the fog dissipates," Bews suggests, a hint of glee in his voice as he retracts the landing gear.

Four minutes after takeoff, when Bews has 68,000 pounds of airplane and cargo moving through the air at 2,800 feet, he throttles back to 50 percent, burning 1,600 pounds (approximately 267 gallons) of aviation gasoline per hour, fuel that is all but unavailable in the high Arctic.

The airport at Norman Wells is the last place on the Mackenzie River that still sells avgas, which can be delivered only via truck along an ice road in the winter. By late summer, stocks of the fuel are often short, and the fleet of DC-3s and -4s will be grounded due to the scarcity.

"We're the only piston pounders left up here," Bews says. "All the other aircraft that haul freight and passengers are turbines, and they burn Jet A or B. Like the rest of the world, we're just hoping the fuel keeps flowing."

Every breath the pilots exhale turns to fog in the cockpit, and Bews's headset mic keeps freezing. He removes it and thaws it on the windshield defroster every ten minutes. On this trip the Janitrol cockpit heater is working at about 30 percent capacity, and the 250,000-BTU cabin heater must be devoted to keeping the cargo from freezing. "There's vegetables back there," he says. "The perishables get the heat."

On this morning's run, the sun rises about an hour after the 9 a.m. takeoff. The rays come in sideways, as though the heavens were tipped over. The landscape becomes painted with a palette of pastels—tributaries and sloughs braided turquoise, the snow-blanketed tundra in tones of cream. Stubby spruce trees cast light violet shadows.

The landscape around the Mackenzie and its environs is soft, worn rock. At three billion years old, some of the oldest exposed rock on Earth is found in the Northwest Territories. The area's surface gold lured miners at the start of the 20th century, and since the 1990s diamond mines have been profitable, despite the remoteness and weather extremes.

During the six hours of mid-winter light, today's miners, pilots, and other Arctic habitués work under peach- and salmon-colored skies. As the day goes on, the clouds coagulate into streaks of crimson and deep blue.

When arriving at remote Arctic airports, every effort must be made to preserve the heat in the engines after they shut down. At the first stop, in Deline, James Dwojak opens the cargo door even before the big airplane slides to a stop on the ice. When the airplane is at rest, he lowers an oily one-inch-thick rope attached to the doorframe and slides down to the ramp.

Hustling across snow-packed ice to the belly hatch, he grabs four insulated "doughnuts," four-inch-thick, three-foot-diameter covers for the openings in the engine cowlings. Dwojak moves awkwardly, shoving the covers between the propeller shaft and the cowling, which he can barely reach. After stuffing quilted blankets in all four air intakes, he backs into the wind, lights a cigarette, and watches Woodbury lower a stepladder from the cargo door. Several snowmobiles towing basket sleds pull up, and the cargo is quickly thrown out the big rear door.

At the next stop, Norman Wells, named for its nearby oil fields, Bews parks as far from the terminal building as possible to avoid leaving puddles of oil where people walk. By now all four engines have left copious oil streaks along the chord of the wings. The fuel truck pulls up to top off the wing tanks. The seals on the truck's hose connections have frozen, and fuel leaks out under the truck by the gallon. In what looks like a well-practiced move, the truck driver

uses paper towels the size of tablecloths to soak up spilled fuel that hasn't percolated into the ice. The air crewmen look on, rolling their eyes at one another.

The crew makes two more stops, first at Fort Good Hope, less than 50 miles from the Arctic Circle, and another during the return trip south, at the hamlet of Tulita. By 4:45 p.m. it is completely dark. The crew sees no lights on the ground except those of a solitary semi truck plying the ice road where it crosses the Mackenzie River above Great Bear Lake.

On the return to Yellowknife, a cowl flap on the number-four engine won't close, causing cylinder heads to cool to the point that Bews must shut it down. At 2,500 feet the engines are running so cold that Bews again comments that the thickened oil may cause another one to fail.

"We can fly the Four home empty on two engines, no problem," he says reassuringly and issues a quick laugh, forming a cloud of vapor that hits the windshield defroster and disappears.

At the end of the eight-hour, 1,030-mile Mackenzie Valley flight, suffering through deliveries of 12 tons of cargo in and out of four airports at sub-zero temperatures, Arctic Distributor needs maintenance. In the number-three engine, which used 10 gallons of oil in the first half-hour of flight, a breather line froze, then thawed, reducing the engine's consumption to an acceptable 2.5 gallons of oil per hour.

But the generator on that engine is not working either. And the number-two engine's left-hand magneto is not delivering enough spark to the plugs—not "getting the juice to the engine," Bews notes.

The fuel nozzle on the Janitrol that heats the cockpit has been running at about 30 percent capacity all day, and the pilots and mechanic are chilled through. They spend the next half-hour—in a wind chill of 66 below zero—putting the Arctic Distributor to bed after its long day of labor.

In 1980 Joe McBryan went bankrupt, as did most of the Northwest Territories' mining operations he served. "If you weren't broke in those days, you hadn't been trying very hard," he quips.

He sold a fleet of helicopters and turbine and piston airliners, holding on to one DC-3 so he could start again. As diamond discoveries in the region began to add up, he was able to reform a fleet of old piston-engine airplanes. Most operators moved to turbines, but McBryan stayed with what he knew and loved.

Today he runs a thriving business with his family. His 33-year-old son Rod, a slim man with a quick mind, is Buffalo's maintenance director.

One reason McBryan was able to rebuild his fleet is that Rod knew what to look for at auctions. "I can spend a day at an auction, look at a dozen planes and pick out the best one," he says.

There are certain flaws that predictably accrue in the old airplanes, but not everyone can see them. Given a couple of hours, Rod says that he can survey any DC-3 or DC-4 and know within a few dollars what it will take to get it flying again.

Keeping a fleet of 60-year-old airplanes flying requires a huge parts inventory. Joe McBryan could measure his cache of DC-3 and -4 parts in acres. He's been building his inventory for 30 years, to the point that he's had to rent several hangars in order to house it. With this accumulation of parts, McBryan would rather pay mechanics than buy new airplanes.

A few years ago Joe McBryan sent his brother, Ronnie, and mechanics Roald Sorenson and Cliff Dyson to an Aero Union airplane graveyard in California to bring back three DC-3s. Ronnie McBryan, 44, is a handsome, hefty mechanic with a reserved personality.

He has spent more than half his life maintaining his brother's DC-3s and -4s. California didn't suit him. "It rained a lot in California," he says. "We were wet. I missed the frickin' snow and being dry."

"Ronnie and the boys amazed everyone," recalls Rod. "Those planes had been parked for 12 to 15 years. We paid \$35,000 apiece and spent another \$40,000 to get another DC-3 ready to ferry home."

Rod explains that it takes another \$250,000 or so to get such aircraft ready for continuous use. "We've looked at Convairs and Hawkers and Dash 8s," he says, "but you're talking five million bucks and you can't put skis on them, eh?"

Ronnie and fellow mechanics Sorenson and Dyson can swap engines out of a DC-3 or -4 in a couple of hours. To keep the fleet ready, they often just pull an engine and replace it with a rebuilt one, giving themselves time to rebuild the down engine in the shop.

"We've got 200 Pratt & Whitneys in rotation," Rod McBryan says. "Dad's got more parts for these old planes than the African countries that still use them."

Buffalo's corps of winter pilots are about the age of the first pilots to fly the stout airplanes during World War II.

Pilot Kelsey Boll, 27, says the pay is only okay, but learning multi-engine airplanes is invaluable.

"The DC-3s and -4s don't do much [of the work] for you," she says. "These are busy cockpits. We rack up hours sticking ourselves out there in some challenging weather and planes."

As Boll and the other young pilots add hours to logbooks each week, they seem to be in denial about the decreasing supply of avgas in the high Arctic. Like Joe McBryan, they hope the fuel will still be available when the airplanes are 80 years old.

"The physical art of flying an airplane with your hands and feet is going away," Joe McBryan says with a shrug. "Kids grow up now playing computer games and they don't want to go back to pinball. These planes are pinballs."

"The people who designed these planes have passed on. The people who built them are probably gone too. They can rest in peace knowing that they designed and built the most

successful proliners in the history of aviation. As long as we can keep buying avgas, we'll keep this going. Things are changing faster all the time."

Call it an anachronism, or nostalgia, but while Buffalo Airways remains Joe McBryan's airline, the roar of Pratt & Whitney engines will resonate across the Canadian arctic.

"He loves flying, it's simple," Mikey says. "A lot of people think he keeps the whole deal going just so he never runs out of old airplanes that he wants to fly."