

# SKIMMERS SWARM B.C. FIRES

Small Air Tankers Play a Big Role



Air Bosses attacked B.C. forest fires in packs and were known to thousands of grateful residents as 'skimmers.'



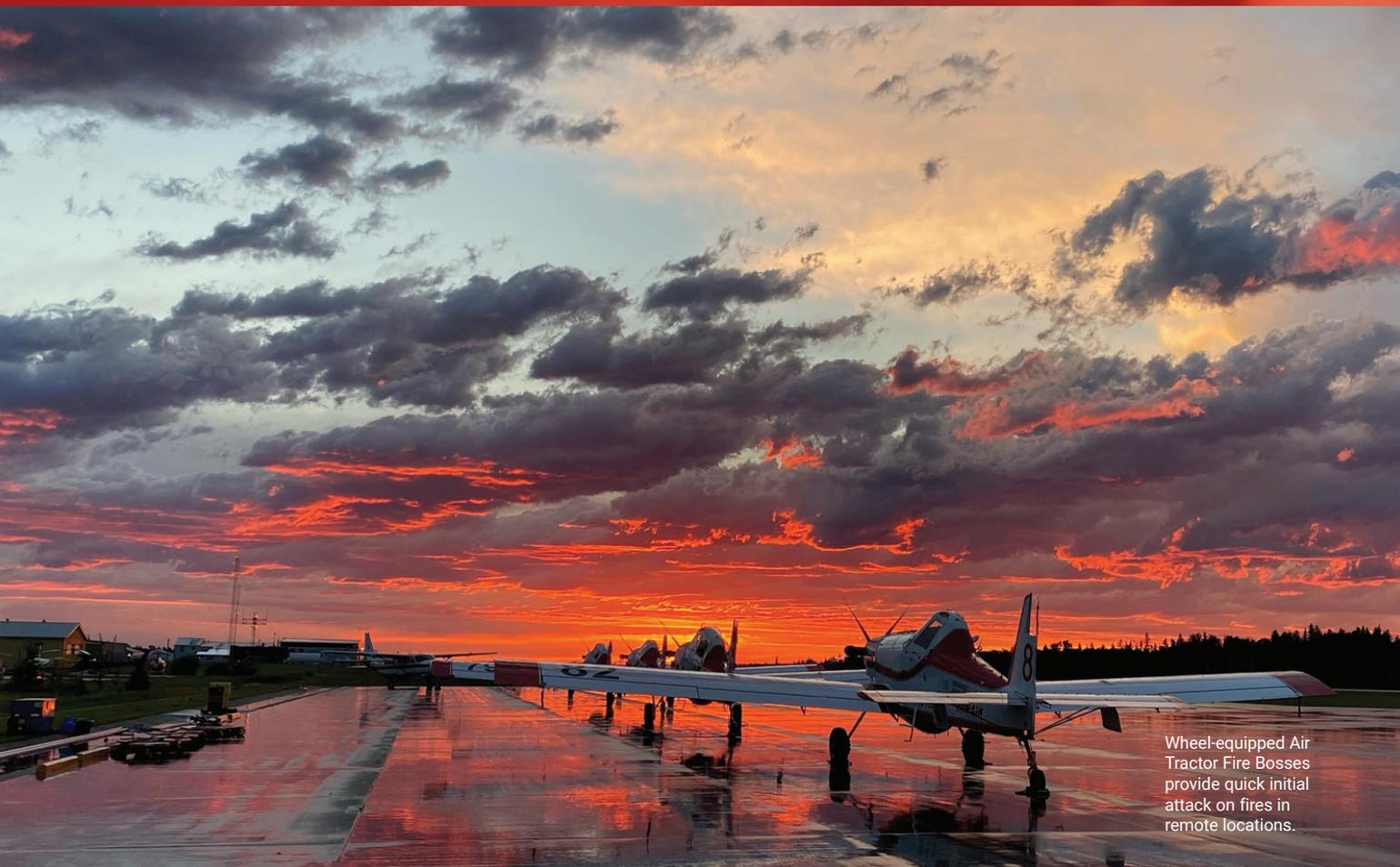
**Summer came hot and fast to the British Columbia Interior when a meteorological phenomenon known as a ‘heat dome’ set up over the province in late June and sent temperatures into the high 40s. A massive ridge of high pressure deflected the normal June monsoons and the province baked under temperatures normally seen in mid-August. All it took was a few lightning strikes and some human inattention to ignite some of the largest and most intense forest fires ever seen in B.C. | *By Canadian Aviator Staff***

**F**orest fires are nothing new in B.C. and aerial firefighting has been used for decades as an important tool in limiting damage. But as the fires have grown in intensity and size, so have some of the aircraft employed in the fight. Large airliners, including Boeing 747s, have been converted for firefighting but one of the most significant new developments has been in small, agile single engine aircraft that attack the fire in well-coordinated swarms.

Officially known as Single Engine Air Tankers or SEAT, the aircraft have become known to the public and in the industry simply as ‘skimmers’ for their high speed pick up of water. The most popular design was developed by agricultural application plane manufacturer Air Tractor. The AT-802F Fire Boss is a single turboprop mounted on amphibious floats that include scoops for picking up as much as 3,000 litres at a time.

As the massive White Rock Lake fire approached B.C.’s Okanagan Valley, the skimmers went to work. Not only were they an important tool against the flames, the sight of squadrons of the aircraft swooping down on Okanagan Lake with military precision became a source of comfort for an anxious population, many of whom spent the normally laid-back summer worried about their properties and livelihoods.

The tactics and technology developed by Abbotsford-based Conair Aerial Firefighting have leveraged the natural attributes of the fast, nimble airframes into a potent firefighting tool that is part of a team approach to addressing the infernos.



Wheel-equipped Air Tractor Fire Bosses provide quick initial attack on fires in remote locations.

The Fire Boss group works together in groups of four or more. “Working in a group adds an element not found in more conventional types of aviation,” said Michael Godwin, Operations Fleet Manager — Amphibious for Conair. “Normal air operations get excited if airplanes get less than a mile apart. We do drops at the fire 10 seconds apart which would mean we’re within 1,500 feet of each other. Do that in a tight circuit with smoke, helicopters and other air tankers mixed in, you need to have your head on a swivel.”

When conditions allowed, the aerial ballet went on for hours, with the loose formations of Fire Bosses skimming and dropping dozens of times.

Conair introduced SEAT to Canada more than 20 years ago and has been improving them ever since as part of its ‘do it better’ approach. First it

modified the fire-gate doors for higher flow rates to penetrate the dense B.C. forests and redesigned a new scoop to reduce drag. Conair also realized the Fire Boss was underpowered for the scooping role in western Canada, especially when scooping in mountainous locations in high temperatures.

“We teamed up with Air Tractor and went to Montreal to present to the Pratt & Whitney executive. We successfully lobbied to increase the shaft horsepower output of the PT6-67F engine from 1350 to 1600 SHP,” said Larry Pahl, Conair’s Director of Engineering. “They [P&W] had just developed higher heat components for a military trainer aircraft and were able to apply that technology for the agricultural variant of the PT6-67F engine.”

TCCA issued the STC to Conair to operate the Fire Boss for the first time at 1600 SHP, providing a huge safety

and efficiency improvement for Fire Boss operations at higher altitudes, which are prevalent in western North America. The PT6-67F engine is installed in all Conair Fire Bosses and some wheeled AT-802As. The 1600 SHP means the aircraft climb faster, reducing the time from the target to the base.

“Having the bigger engine is a real improvement over the original 1400 hp 67AG. Doing the steep climbs from a lake in the valley bottom to a fire up near the treeline really makes the Fire Boss very effective in steep terrain,” said Godwin.

Although the amphibious aircraft are the best known, Conair also has a fleet of Air Tractors on conventional gear that can use small remote bases to stay close to the action. With quick-start capability and fast departure, the ‘wheelies’ are excellent for responding

to forest fires on initial attack missions. A single AT-802 can drop over 3,000 litres of retardant or water on a single pass, and when combined in a pack of four, dumps 12,000 litres in a matter of minutes, with each drop building on the next to create a long line of containment.

The red retardant lines the perimeter of the fire, slowing its progression by slowing combustion. "Even though the Air Tractor AT-802 was designed as an agricultural airplane, it's really come along as an aerial firefighting machine. Conair has added many STCs and other modifications to enhance the AT-802 as an aerial tanker. It can do runs that the larger aircraft can't and is a very effective tool in the AAO's toolbox," said Godwin.

Large air tankers, including Conair's CV580, the Avro RJ85 and the Dash 8-400AT, partner with amphibious aircraft, working in concert together to help firefighters on the ground progress towards containment.



De Havilland Q400s are the next generation of Conair's large air tankers.

**LARGE AIR TANKERS, INCLUDING CONAIR'S CV580, THE AVRO RJ85 AND THE DASH 8-400AT, PARTNER WITH AMPHIBIOUS AIRCRAFT, WORKING IN CONCERT TOGETHER TO HELP FIREFIGHTERS ON THE GROUND PROGRESS TOWARDS CONTAINMENT.**



Firefighters on the ground, not the aircraft, put out the flames. While air tankers drop retardant to slow combustion, amphibious aircraft blanket the fire with water to cool the flames so firefighters on the ground can continue their work.

Conair operates two types of water bomber — the Alberta government-owned Viking CL-215T and the Air Tractor AT-802 Amphib Fire Boss. The CL-215T was purpose-built for aerial firefighting, scooping up to 5,345 litres of water per aircraft from water sources on each pass.

“We operate the CL-215Ts as a group of four aircraft. This requires us to coordinate ourselves from the time we taxi for departure to the fire until landing after the mission is completed. By working as a formation, each individual aircraft can adjust the placement of their water drop with reference to the drop from the aircraft they are following. This allows for accurate drops as directed by the Bird Dog team,” said CL-215T captain Arnold Cottrell.

**Below:** Air Tractor AT-802 Amphib Fire Boss being serviced after a day of firefighting.

## SUPPORT CREWS KEEP THEM FLYING

On bases, the groups of pilots and AMEs are tight, working together for months with only short periods of time off to visit family and friends back home. The aircraft crew were on alert during the day for call-outs and AMEs were ready to respond at any time, often working into the night on busy days to ensure all aircraft were safe to deploy in the morning. Circumstances were intense this year, not only with regards to the number of fires and fire behaviour, but tough conditions, with the groups often having to work in heavy smoke and heat, particularly on the tarmac where temperatures pushed over 45°C.

“If the airplanes and pilots are the heartbeat of the operation, then support staff are the bloodline. Without dispatchers, fuellers and loaders who fully buy into the program’s goal of providing ground firefighters with timely and accurate suppressant delivery, the aircraft loses efficiency to the point of being ineffective. The Conair maintenance staff are especially crucial and are present for all dispatches, loading turnaround and recovery. They often work into the next day in less-than-ideal conditions, including outside in the dark on hot or cold aprons. Little known is the fact they also keep an eye on non-Conair aircraft as they come through the loading bays in case they can spot something untoward or can lend a hand in the spirit of the larger goal of firefighter support,” said Anthony Ussher, RJ85 air tanker captain.

The crews on base were supported 24/7 by the Conair team in Abbotsford, including Flight Operations, Purchasing and Stores, who ensured deployed crews had everything they needed onsite throughout the season to respond quickly and safely, from parts to spare aircraft to relief crew coverage.

Aerial firefighters, like all emergency responders, work within a large team of individuals, with each completing their defined task to ensure pilots stay safe while executing missions in an unforgiving environment.

“Our support crews are great and really are the unsung heroes of the operation. Not just loaders and AMEs but the administration staff that book the hotel rooms, coordinate rental cars and fill out all the paperwork. They enable us to do the ‘hero’ work of fighting fires in a safe and comfortable environment,” said Godwin.

**“THE CONAIR MAINTENANCE STAFF ARE ESPECIALLY CRUCIAL AND ARE PRESENT FOR ALL DISPATCHES, LOADING TURNAROUND AND RECOVERY.”**

—Anthony Ussher, RJ85 air tanker captain





Turbo Commanders make up most of the bird dog fleet but Cessna Caravans are also used.

### BIRD DOGS MANAGE THE ACTION

In Canada and Alaska, aerial firefighting aircraft operations on forest fires are often under the command and control of an air attack team, comprised of a Bird Dog pilot and a government agency air attack officer (AAO). The air attack officer's role is to assess wildfires and develop strategies and tactics for an aerial attack, supporting firefighters on the ground. After circling the wildfire from the air, the pilot and AAO plan the best approach, the most effective drop location and the ideal coverage level for an air tanker response given the fire behaviour and environmental conditions such as fuel type, wind, temperature and humidity. Often the Bird Dog then leads the air tanker over the site, releasing a smoke trail to indicate where the drop should be placed by the air tanker.

In an initial attack scenario, there are often multiple aircraft in the air at the same time, with the Bird Dog team orchestrating a complex series of drops in a challenging environment. Conair operates Cessna Caravan C-208B and Turbo Commander TC-690A aircraft in this role.

"We will often set up a 'geo-fence,' an obvious landmark that can divide parts of the fire and allow us to continue working helicopters and tankers while keeping them safely separated from each other. Coordinating action between multiple aircraft is about concise and clear communication. Both over the radio and visually, the Bird Dog team can keep track of many aircraft, and we can run skimmers and retardant aircraft concurrently, with retardant drops occurring while the skimmers have gone to the lake for another load," says Bird Dog captain Jason Pineau.



**"COORDINATING ACTION BETWEEN MULTIPLE AIRCRAFT IS ABOUT CONCISE AND CLEAR COMMUNICATION."**

— Bird Dog captain Jason Pineau