



The devastation is evident as an **S-2T firefighting plane** flies over the remains of dozens of homes destroyed when a wildfire swept through a community near **Santa Barbara, California**, last November.



Fighting Fire **from the Sky**

Forest fires are one of the world's deadliest natural forces. **Stopping them takes skill, planning, advanced technology** – and some of the bravest pilots around.

By DANIEL WEISS

Pilots who drop chemical retardant on wildfires know their job is dangerous. But veteran Bob Valette, who has flown retardant tankers over fires in California since 1976, was totally stunned by a midair collision that occurred in front of him in 2001.

“We were circling over a fire, and I was set to make a drop with the next pilot alongside me,” he recalls. “Then I saw him and another aircraft converging - I hollered at him, but they struck, they hit.” Both pilots were killed.

Just this past American summer, three crewmembers died in another crash in the neighbouring state of Nevada, and nine firefighters perished in a helicopter crash in a California national forest.

“If you’re around a tanker pilot for any length of time, you’re going to end up going to funerals,” says Bill Buckley, one of Valette’s colleagues at Sonoma Air Attack Base, located 100 kilometres north of San Francisco. “That’s the reality of it.”

Fire Hazard

California’s dry climate has always made it susceptible to wildfires. As recently as last November, fires destroyed hundreds of homes in the southern part of the state, while in June of the same year, a massive lightning storm set off hundreds of fires simultaneously in a single night. Within days, more than 2,000 fires were burning.

“It looked like we had been under attack,” says Craig Hunt, another Sonoma tanker pilot.

In the two weeks that followed, tanker pilots dropped retardant from morning to night, giving ground crews a fighting chance. More than 4,800 square kilometres of California (equivalent to an area just under the size of Bali) had burned less than a month into the official fire season, making it one of the worst years for wildfires on record. And that was before the November fires.

As more homes are built at the edge of wildernesses, fires that

Tanker 910, a former airliner (below), is the bear of the CAL FIRE fleet. The DC-10 can drop 45,000 litres of fire retardant. **Sonoma Air Attack Base** pilots (opposite page, from left) **Craig Hunt, Bill Buckley, Jerome Laval and Bob Valette** with an **S-2T** tanker.



PHOTOS: RICHARD ROSS





might have once been allowed to burn must now be nipped in the bud. Thankfully, out-of-control fires are the exception rather than the rule; CAL FIRE, the state's firefighting agency, keeps 95 percent of fires to smaller than four hectares (about the size of 150 tennis courts).

One of the key factors is an aggressive initial attack carried out by tanker pilots flying in conditions that would make other pilots blanch.

"You're flying an airplane heavy, slow and low to the ground. You're flying in mountainous terrain, in wicked winds," says Buckley. "You've got to be on your toes the whole time. There's no room for error. Absolutely none."

The Sonoma Air Attack Base is one of 13 bases sited to ensure it takes no more than 20 minutes to get to a fire anywhere in California.

On arrival at the fires, Valette and the other pilots circle 300 metres above the ground in their single-pilot, twin-engined Grumman S-2T propeller planes awaiting instructions to drop retardant. These come from an Air Tactical Group supervisor who directs operations from the back seat of an OV-10A Bronco spotter plane circling the fire zone at an altitude of 760 metres. While waiting for clearance, the tanker pilots

run through a checklist to ensure they have minimised the danger.

"Take a look around before you go down to see how to get in without bumping into something," says Valette. "[Check for] what's there to hurt you down in the drop zone, and how to get out of that hole if you have an equipment malfunction."

To provide maximum power in case of such a failure, Valette turns on the plane's auxiliary fuel pumps and sets the propellers to maximum revolutions per minute. He uses full flaps for a steep descent, which helps him see the target better, and keeps the plane's airspeed at a leisurely 180 kilometres per hour. A mere 40 metres above the ground, he releases a 4,540-litre load of fluorescent, red retardant onto the target. The low altitude and slow speed ensure that the retardant - a mix of water, a chemical salt, a thickening agent and a colorant - doesn't disperse as it descends and that it lands with no forward motion. Ideally, it should fall to the ground like gentle rain.

Flying Circus

Weighing nearly 5 tonnes, a full load of retardant makes up at least a third of the S-2T tanker's weight. As it drops, the pilot has to push the yoke forward to keep the plane from



The **Oakridge mobile-home park** in the northern Los Angeles suburb of Sylmar (top) stood no chance when a wildfire swept through it on November 14, last year. At least **600 homes were destroyed**. Sturdier houses in the Yorba Linda area of the city (middle) were no match either for the fires, which struck randomly throughout the greater Los Angeles area. A **firefighting plane dropped retardant** in an effort to extinguish another fire in the suburb of Diamond Bar.

PHOTOS (FROM TOP): GETTY IMAGES; AP PHOTO; REUTERS

Tools of the Trade

Key aircraft in CAL FIRE's firefighting fleet

S-2T

(Main pic, bottom right)

Manufacturer: Grumman Aerospace

Crew: Single pilot

Retardant capacity: 4,540 litres

Range: Loaded, 800 kilometres; empty, 1,280 kilometres

Endurance: 4.5 hours

Speed: Cruising, 435 kph; drop, 180 kph

Drop altitude: 46 metres

History: Original model used as a carrier-based, anti-submarine warfare airplane

Number: 23



UH-1H SUPER HUEY HELICOPTER

Manufacturer: Bell Helicopters

Crew: One pilot, two fire captains and eight firefighters

Retardant capacity: 1,220 litres of water/foam in Bambi bucket

Range: 400 kilometres

Endurance: 2 hours

Speed: Cruising, 203 kph; drop, 0-74 kph

Drop altitude: 12 metres

History: Originally used as a troop and cargo transport vehicle in the Vietnam War

Number: 11



DC-10 TANKER 910

Manufacturer: McDonnell-Douglas

Crew: Captain, first officer and flight engineer. Accompanied by lead plane (King Air E-90)

Retardant capacity: 45,400 litres

Range: 925 kilometres (one way)

Endurance: 2 hours

Speed: Cruising, 740 kph; drop, 280 kph

Drop altitude: 60-90 metres

History: Previously an airliner

Number: 1, with a second ordered



OV-10A

Manufacturer: North American-Rockwell

Crew: Single pilot with ATGS (Air Tactical Group Supervisor) in back seat

Range: 1,610 kilometres

Endurance: 5.5 hours

Speed: Cruising, 410 kph

History: Originally used as counter-insurgency aircraft and for close-air support to US Navy and Marine ground forces

Number: 14



Flying as low as **60 metres** above the ground, Tanker 910's interior is fitted with **extra heat protection**. Some of its windows are lined with decals featuring an impish firefighter urinating on a fire, along with the name of each fire the plane has helped contain.



PHOTO: RICHARD ROSS

pitching up. At the same time, he has to contend with convection currents and turbulence created by the fires, reduced visibility due to smoke and flying embers up to 50 centimetres long. "It's an art," says Valette, who also instructs new CAL FIRE pilots. "It's a skill not everybody has."

Only half of the aspiring tanker pilots make it through the rigorous 18-month training programme, which starts by shadowing a veteran pilot and gradually eases into doing practice drops. It was different when Valette became a tanker pilot in 1976. "They just took a pilot on his laurels and let him go out there and learn how to fly," Valette says. "It's a wonder I'm alive the way it was 30 years ago. When I started, you'd go to two or three funerals a year."

Size Does Matter

CAL FIRE's newest and biggest weapon is Tanker 910, a DC-10 airliner retrofitted with tanks that can hold 45,420 litres of retardant - ten times the capacity of an S-2T - enough to lay down a line 1.2 kilometres long by 15 metres wide.

"When a fire gets past 4 hectares, you want to hit it hard and you want to hit it fast, and the 10's been able to do that," says CAL FIRE aviation chief Mike Padilla. "We've attributed a lot of saves to this aircraft. It's one of the best tools I've seen in a long time."

Operations have gone relatively smoothly for the giant firefighting machine, although on one of the 200-plus missions it has flown since coming into service in 2006, it hit some bad air in a mountainous region and sank far enough to clip a number of treetops. No serious damage was sustained, and extra safety measures were added to ensure against future mishaps.

Band of Brothers

The tanker pilots form a tight community. Valette, the 33-year veteran, is known as "The Master";

Bill Buckley, a US Army Ranger who served in Vietnam and was formerly a lead-plane pilot with the US Forest Service, is "The Deacon," always ready with a dollop of wisdom for the others. "In God we trust," he says. "Everything else we check."

During downtime, the pilots enjoy cigars and hand-rolled cigarettes, and the occasional practical joke. Once, after flying into a flock of sparrows, Buckley found a bird's head stuck in an air vent. He received a letter the next week, marked US Department of Interior, stating that the bird was endangered and that he was under investigation for deliberately hitting it. After other flights over the coastline and a local vineyard, Buckley received more letters alleging he spooked an experimental seal population and tainted unharvested grapes. All got laughs back at base.

Beneath the levity lies an unbending devotion to protecting the vulnerable from the ravages of wildfires. Valette keeps a radio tuned to the emergency bands. On occasion, he has heard of fire reports and requested authorisation to drop retardant before receiving official orders.

"If there's something going on, I call dispatch. I don't care what time it is," he says. "It's more than a job to me."

Once, while en route to one fire, he dropped retardant between a fire and a trio of children whose escape route was blocked by a 2.4-metre fence. The next day, as a supervisor was about to reprimand him for dropping without authorisation, the father of two of the children arrived to thank Valette for saving their lives.

"Sometimes you have to make a decision on your own. As long as it's sound and it's safe and it's gonna be effective, go ahead and do it," Valette says. "It's a lot easier to ask for forgiveness than it is to ask for permission." ■



Helicopter Hero

Nick Mullet could hear the firefighters' screams of agony over his helicopter radio. Just a few hours earlier, on September 29, 1987, Mullet had dropped the men off to fight a run-of-the-mill fire in the hills of northern California's Mendocino County. The fire unexpectedly blew up and surrounded the firefighters with superheated air, leaving them desperate for assistance and screaming for their lives.

With the terrain too steep to land, and no other way to rescue the trapped firefighters, Mullet flew to a nearby pond and scooped up a 1,230-litre bucketful of water to drop on the slowly-cooking firefighters. They had taken refuge inside reflective fire shelters which helped make them stand out in the dense smoke. "They looked like aluminium-wrapped baked potatoes on coals in a campfire," says Mullet.

Unsure whether the water would soothe or scald, Mullet let the bucketful drop. "They called back, all just screaming. 'Bring more water! Bring more water!'" he says. He shuttled five or six more bucketfuls before running low on fuel.

Airlift helicopters eventually arrived on the scene, but one of the five firefighters died, while others suffered severe burns requiring months of recovery. Mullet says it was worse than anything he had experienced flying military helicopters in the Vietnam War.

"You go to war, you expect to see bad things happen," he says, his voice halting with emotion. "You don't go out and fight a fire and expect something like that to happen. Everybody's supposed to come home at night and go back to their families, and that day it didn't happen."