

RECOLLECTIONS OF A NUCLEAR STRIKE PILOT

by Eric Mold

Very few people remember, and many don't even know, that 45 years ago Canada was a nuclear power—and a pretty potent nuclear power at that.

In the late 1950s the air threat to NATO was changing. The Soviets were thought to be relying more on missiles than on manned bombers. The bomber interceptor role, to which Canada's No. 1 Air Division in Europe had been committed for many years, was starting to diminish. The trustworthy and reliable F-86 Sabre, with which our air division squadrons were equipped, was past its prime and no further updates or modifications were practical to prolong its usefulness.

To maintain an effective contribution to NATO, a new aircraft was needed for the Royal Canadian Air Force. There was much speculation between my contemporaries as to what was the best plane to replace the Sabre. At the time I think most of us would have preferred the McDonnell F-4 Phantom because it seemed more able to continue in the interceptor role to which we had become accustomed. We were somewhat surprised when we learned that Canada was re-equipping No. 1 Air Div. with Lockheed Starfighters. Two hundred of these machines were to be built under

licence from Lockheed by Canadair Ltd. in Montreal. Deliveries began in the very early 1960s.

I was an ex-Sabre pilot doing my ground tour as the station adjutant at RCAF Cold Lake in Alberta when the Starfighter entered service there with the Strike/Reconnaissance Operational Training Unit. Subsequently, I was posted to No. 3 Course and then to 427 Squadron in Germany where I flew the Starfighter for 6½ years.

We pilots knew that the Starfighter was a pretty "hot ship." In those days it held just about every record going, speed, altitude, time to height, etc. It was great fun to fly, but it had virtually no wings—just a seven-foot slab on either side of its 55-foot-long fuselage. Wings give aircraft the ability to manoeuvre and in those days manoeuvrability was absolutely essential for air fighting.

What we didn't know at first was that we were not going to use the aircraft as interceptor fighters but as nuclear bombers. Eventually eight of Canada's air division squadrons were re-equipped with CF-104s—the official name of the Canadian-built Starfighters. Six squadrons

Above: A CF-104 soars above the clouds. Below: Pilots pose with their aircraft in 1963, and (inset) instructors at Cold Lake, Alta., in 1962.

were assigned to the nuclear strike role and two to the photo reconnaissance role. There are usually about 22 to 24 aircraft per squadron.

The nuclear strike role was extremely interesting and exciting and not without its scary or white-knuckle moments. Almost all of the flying was done at low level. In peacetime that means about 250 feet above the ground, but in some places and times we flew as low as 50 feet. Training missions consisted of approximately 400-mile-long cross-country flights with dummy attacks at the end.

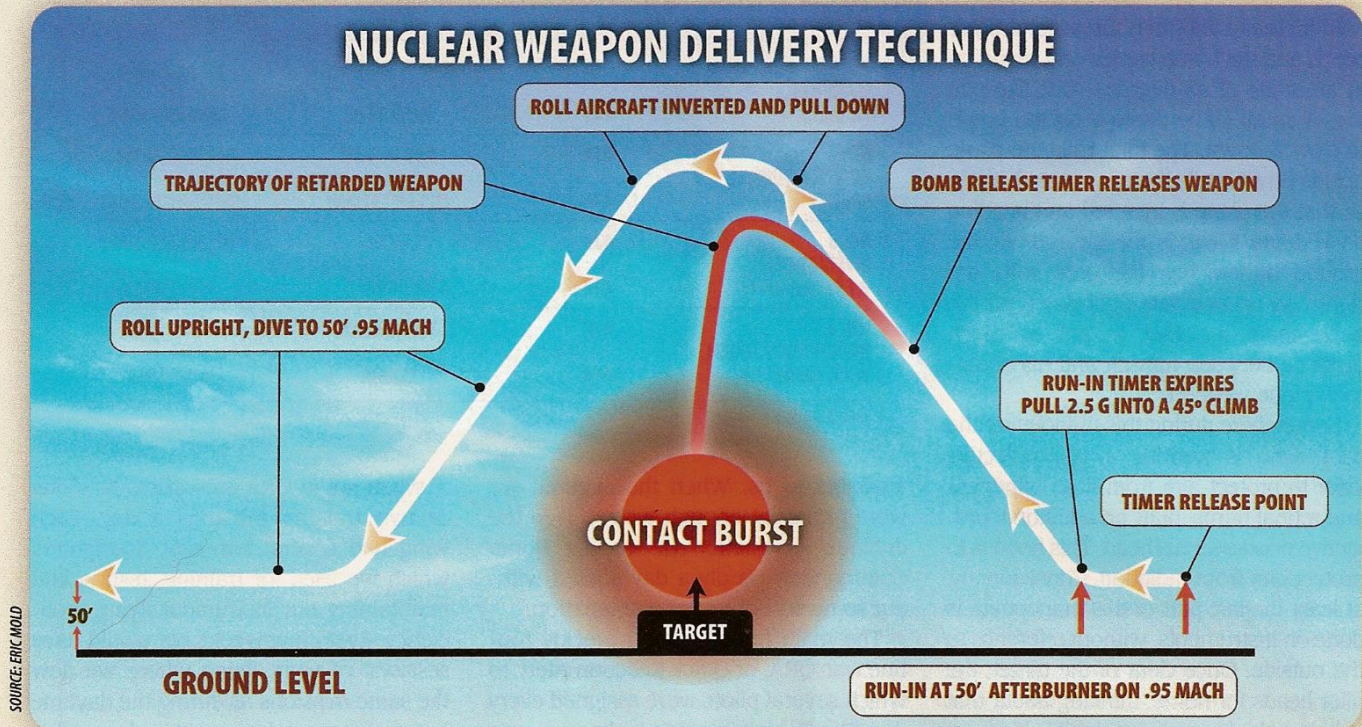
In some places—on simulated targets—we dropped 12-pound practice bombs which had similar fall characteristics to the real thing. These practice bombs were carried in a special dispenser beneath the aircraft, and releasing one required the pilot to perform a switching sequence similar to what was required to arm and release an actual nuclear bomb. These training flights were usually flown at a speed of approximately 600 miles per hour. The final run in to the target was done at almost the speed of sound.

PHOTO: LEGION MAGAZINE ARCHIVES

PHOTO: CANADIAN FORCES—PL143227; CANADIAN STARFIGHTER ASSOCIATION



NUCLEAR WEAPON DELIVERY TECHNIQUE



The Starfighter was equipped with the LN-3 inertial navigation set. As pilots and maintenance personnel became more experienced with the system they were able to coax extremely accurate navigation information from it. The aircraft was also fitted with an advanced, forward-looking radar set that enabled the pilot to "see" the ground and avoid obstacles in bad weather and at night. One virtue of the aircraft's stubby wings was that it made it very stable to fly. All in all, the machine was capable of delivering an extremely accurate navigation package. After training, it was quite normal for pilots to fly 400 to 500 miles and then deliver a practice bomb within 10 to 20 metres of the target, and within 10 seconds of time.

Accuracy and timing were very important because the aircraft was capable of carrying bombs many times more powerful than the ones dropped on Hiroshima and Nagasaki. Accuracy was key because we were not the only ones playing this game. Hundreds of other NATO planes and weapon systems were also expected to hit their respective targets at the same time. Time accuracy was vital because all of these flights in theory were supposed to have been co-ordinated by SHAPE (Supreme Headquarters Allied Powers Europe) to make sure one plane didn't run into another plane's exploding bomb. Fortunately, we were never called upon to test this theory for real.

I should also point out that it is easier

to navigate a plane from an altitude of two or three thousand feet from where the pilot can see a few miles ahead and to either side. But flying at that altitude would make you a sitting duck for enemy defences. Right "down on the deck" limits the aircraft's exposure to enemy radar, flak and surface-to-air missiles.

Low-level flying is exciting, but dangerous. We made every effort to avoid areas where things like gliding, parachuting and light-plane flying were taking place. You also had to be alert to avoid TV towers, hydro lines and tramway cables. Bird strikes, which have brought down many an aircraft, were difficult to avoid. A bird usually does very serious damage when it is struck or ingested by an aircraft doing 600 miles per hour.

During its long service from 1962 to 1986, the CF-104 Starfighter was involved in accidents in most of these categories. In the early days it experienced some engine reliability problems. Fortunately, the plane was fitted with a state-of-the-art ejection seat that saved the lives of many pilots.

In a real situation we would be called upon to make it to the target with other planes coming and going, and with bombs going off all over the place, not to mention flak and surface-to-air missiles exploding all around you. Bomb delivery calculations were normally done before takeoff. They took into account such things as the size of weapon and type of burst. A ground burst is where the bomb actually hits and penetrates the ground

before exploding. A contact burst is where the bomb goes off before it hits ground but the fireball touches the ground. An air burst is where the bomb detonates in the air and the fireball does not touch the ground. The size of weapon and type of burst is dictated by the targeting people after studying the target and the damage required.

Other items considered in the delivery calculations include such things as target elevation above sea level, ambient temperatures, reflectivity of the day, whether it is clear, hazy, foggy, etc., and of course, the target area wind speed and direction. All of these parameters are reduced to two simple timer settings; the run-in timer and the release timer. The timer interval is set in respect to some really solid and obvious landmark on the ground, a few miles back from the target.

The bomb delivery sequence goes something like this. You are on time and precisely on track a few miles back from the target. You light the afterburner on the engine, which greatly increases the thrust, you push down to 50 feet, and the speed rapidly increases to Mach .95. You head for the target either visually or with your radar cursor, allowing your pre-calculated offset for wind speed and direction. You pass the "can't miss it landmark" and then start your timers running. When the first timer runs out you hear a beep in your headphones and immediately pull back on the control stick to put the plane into a 2.5-G, 45-degree climb. You

hold it steady and then the second timer beeps and the bomb comes off—going up at an angle of 45 degrees—just like you are. A small chute deploys on the bomb to slow it down. The pilot rolls the plane upside down, pulls the control stick again so that the plane is inverted and heading back down towards the ground. As the ground approaches the pilot rolls the right way up and gets right down on the deck again in order to put as much distance between himself and his about-to-explode weapon.

Somewhere during this manoeuvre the pilot, who is wearing a gold-reflective visor to protect him from flash blindness and retinal burns, pulls an additional protective hood over his head. This hood is to protect him from radiation. Consequently, at least the last part of this manoeuvre is done on instruments, without reference to the outside. Once clear of the target, the pilot heads for home, thinking about that cold beer he hopes is waiting for him.

Most pilots were assigned at least two targets, all of which were also 'held' by others. The most important targets were often scheduled for multiple strikes and so these were held by other NATO forces as well.

Targets were divided into primary targets and follow-on targets. Mission planning produced folders for each target which contained highly detailed route maps, calculations, tables, pictures, any other details or intelligence about the target or route to it, including where enemy defences were likely to be encountered. These folders were always classified Top Secret. It was the pilot's responsibility to continuously study and be completely familiar with every detail of his routes and targets. We were also frequently called upon to react to what were called "cut and paste" missions. These were targets of opportunity for which there were no preplanned mission folders. When assigned one of these missions the pilot dashed over to the mission planning section where a team of assistants was waiting to help him cut out and paste up his route maps and start on his bomb and takeoff calculations, etc.

The mission planning people had the nasty little habit of calling snap examinations on every aspect of the job. Not just our routes and targets but also nuclear safety, aircraft systems, safety and emergency procedures, etc. The Americans, who actually owned our weapons, also insisted on regular exams on every aspect of each of the several devices

ORIGINAL EUROPE BASING PLAN FOR CF-104 STARFIGHTERS

WING	SQUADRON NO.	SYMBOL	ACTIVATION DATE
NO. 1 MARVILLE, FRANCE.	439	SABRE TOOTH TIGER	MARCH 1964
	441	SILVER FOX	JANUARY 1964
NO. 2 GROSTENQUIN, FRANCE	421	RED INDIAN	DECEMBER 1963
	430	SILVER FALCON	SEPTEMBER 1963
NO. 3 ZWEIBRUCKEN, WEST GERMANY	427	LION	DECEMBER 1962
	434	BLUENOSE	APRIL 1963
NO. 4 BADEN-SOELLINGEN, WEST GERMANY	422	TOMAHAWK	JULY 1963
	444	COBRA	MAY 1963

SOURCE: DAVID L. BASHOW

available to us. When they figured we were proficient enough we received the dubious designation of Nuclear Bomb Commander. Hardly a day passed without some sort of test or examination.

The main feature of our weekly routine was QRA, or Quick Reaction Alert, to which several pilots were assigned every day. The Q, as it came to be known, was a barbed wire enclosure containing several loaded aircraft. Each plane was kept at constant readiness with its navigation systems continually running and aligned. These aircraft were guarded by Canadian and American military personnel and each plane sat within a white square painted on the ground. This was called the No Lone Zone. No one was allowed inside the zone alone; you had to have someone else with you at all times. If a pilot wanted to check something in his plane, he had to have a ground crew member accompany him. Pilots were assigned to the Q for 24-hour periods.

We had the normal accommodation facilities plus a kitchen, and we watched movies when we weren't involved in target study or aircraft checks. I must have seen every movie ever made prior to about 1966. We were always at constant readiness—ready to scramble at a moment's notice.

When the balloon went up pilots would run to their planes and jump in. The technicians would help you strap in and start up. Over the radio you would hear Wing Operations giving us the Canadian weapon enabling codes and an American Custodial Officer giving us the U.S. enabling codes. This would prove that the Canadian government had approved the launch and the American government had given us control of the weapons. We would scramble and the rest was up to us. After QRA we usually had the day off so it was nice if your day in the Q turned out to be Thursday.

When not in QRA most pilots flew one or two training missions a day. Each wing had several two-seat Starfighters which we used for training, testing and maintaining our instrument flying proficiency. Every few weeks we would have sessions of night flying where we flew the same missions as during the daytime but used a special map with radar predictions of the ground features below. Twice a year each pilot flew down to southern Sardinia in the Mediterranean where NATO maintained a bombing range. We would fly three or four missions a day there, honing our bomb delivery skills.

Deployment to Sardinia was always popular since the RCAF allowed us to take family members with us. They flew in the support Hercules transport plane that followed us. Some enterprising locals had a couple of beachfront villas, which they rented to us by the week. Also, all of the pilots clubbed together and bought a Volkswagen camper which was fitted out with a barbecue, cooler, deck chairs, sun umbrellas and all of the other paraphernalia one needs at the beach. The deployment was particularly welcomed in winter when one escaped northwest Europe's fog, rain and snow for a few days of balmy sunshine.

The Cold War was a perfect war and our side prevailed. It was a model, which regrettably has not been replicated since. All of the personnel involved in Canada's Nuclear Strike program made a significant contribution to the deterrent, which prevented Soviet aggression in Europe.

Canadian Starfighters roamed the skies of Europe for nearly 25 years. During that time 37 of their pilots were killed in flying accidents of one kind or another. Their sacrifice in the name of our freedom is just as noble as if they had been killed by a sniper's bullet or roadside bomb. It is to their memory that I dedicate this article. ■