F-100 pilot Lt. Harris Kirk races for the cockpit during an alert exercise at a USAFE base in West Germany.

The One-Way Nuclear Mission

During the Cold War, some Air Force fighter pilots had more firepower than range.

By John Lowery

President Dwight D. Eisenhower, upon taking office in 1953, officially recognized the tremendous threat to America's European allies by the Soviet Union's massive conventional military forces. NATO faced possible invasion by 175 active Soviet divisions, with another 125 reserve divisions deployable within a month. Neither the US nor the war-weary NATO countries could afford to rebuild armies that could match the Soviet numbers.

Eisenhower decided that the only reasonable counter was to equip Air Force jet fighters based in Europe with "tactical" nuclear bombs. These could be targeted at the massed Soviet forces and infrastructure, offering either a deterrent or, failing that, a way to effectively fight a third world war.

The advantage of this approach was that the US already had a significant inventory of atomic bombs, while Russia, which had detonated its first atomic bomb in 1949, did not (yet).

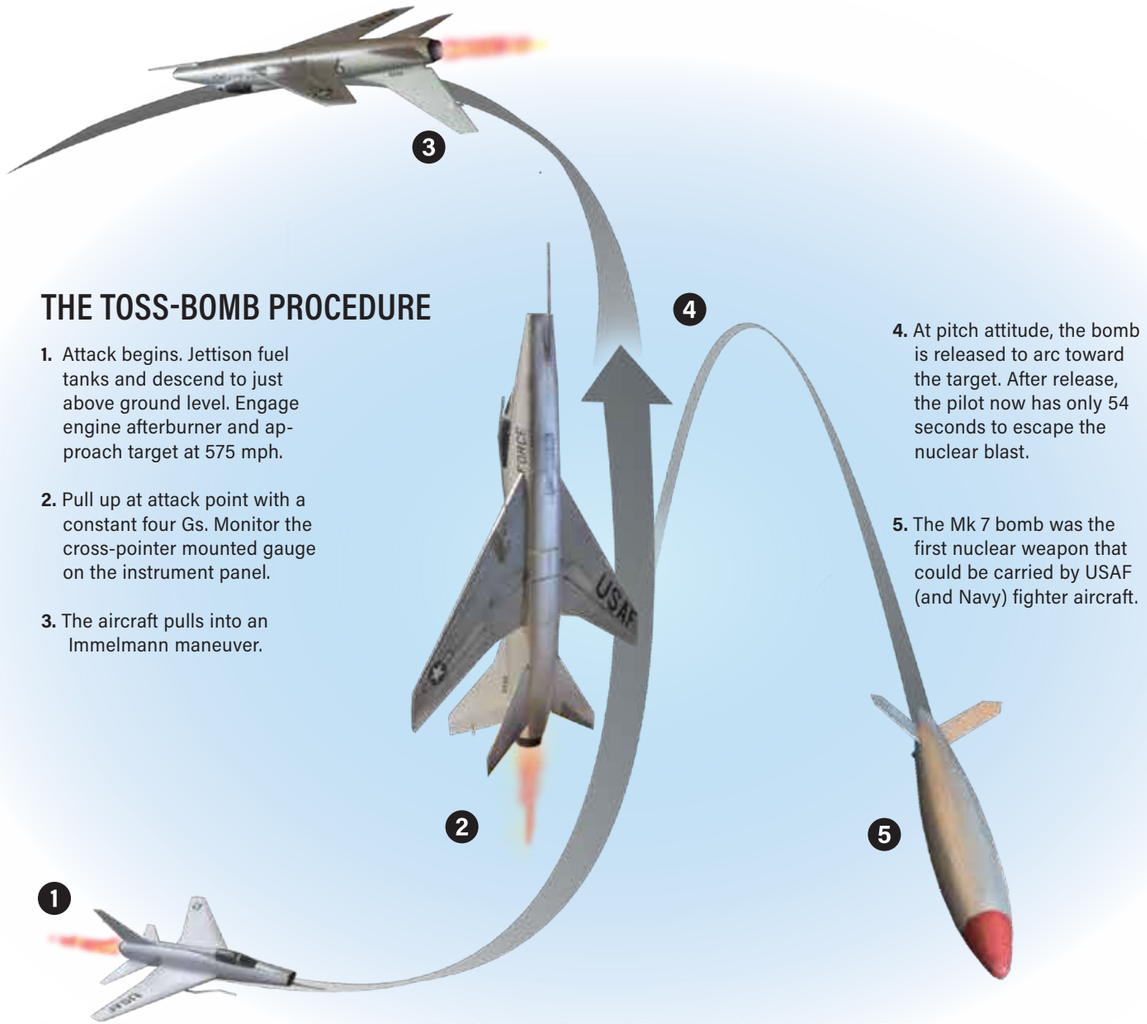
A principal target was the "Fulda Gap," a logical geographical highway for massive Soviet armored formations to pour into West Germany. A bottleneck there could buy valuable time for NATO to respond to an invasion.

The North Atlantic Council had previously approved this strategy for NATO in September 1950, with tactical nuclear weapons deemed essential. The Air Force responded by forming a Quick Reaction Alert, later termed Victor Alert, that paired jet fighters with nuclear weapons. (See "Victor Alert," March 2011.)

The mission fell first to American fighter pilots, later joined by those in allied air forces, who planned and prepared for predominantly one-way nuclear strikes against massed Soviet forces. A few targets were close enough to NATO bases that a return trip was feasible. But for most, the limited range of the fighters meant they would only have enough fuel to escape the nuclear blast, bail out, then escape and evade back to friendly territory.

LARGELY UNSEASONED

Soon after Eisenhower's decision, the new F-100C Super Sabre began replacing F-84G fighter-bombers and F-86 interceptors throughout Europe. It was larger, faster, and had longer range than the jets it replaced. The "Hun" was delivered to fighter wings in England, West Germany, Spain, Italy, and Turkey. There was also a training group at Sidi Slimane AB, Morocco, and there was an F-100C-equipped air defense squadron in the Netherlands.



The European-based fighter wings were tasked to carry the new Mk 7 nuclear bomb. Their targets were airfields, railroad yards, radar sites, even major bridges—anything that would help slow or stop the Soviet juggernaut lined up against NATO's forces.

During the late 1950s to early 1960s, the cadre of F-100C fighter pilots was largely unseasoned. Predominantly, they were 23-year-old, recent graduates of flight school who had received minimal type training in the F-100. With about 250 to 300 flying hours, flying an airplane with demanding aerodynamic characteristics—particularly when configured for nuclear war—they suffered a very high accident rate.

In the nuclear mission configuration the specially modified F-100Cs were programmed to carry the Mk 7 weapon on the left intermediate pylon station, a 200-gallon fuel tank on the left outboard wing station, a similar fuel tank on the right inboard wing station, and a larger 275-gallon tank on the right intermediate station. Still, despite all the extra fuel, the Super Sabre's combat radius was limited.

Targets closer than 450 nautical miles (518 miles) from home base did offer a potential round-trip mission. These short-range targets also allowed up to 20 minutes of loiter time in the target vicinity, while the National Command Center awaited a presidential order declaring H hour, (weapon delivery time). Still, a delay in declaring H hour while the fighters were en route meant a one-way mission. Yet, the pilots accepted this as part of the job.

Some targets were more than 1,000 miles away. One of the more distant targets was a Soviet air defense center located about 60 miles southwest of Kiev, Ukraine. Part of the attack route was to be flown at high altitude to Vienna; once inbound to the target the pilot was to turn at a large Danube River bridge and descend to 50 feet for a low-level dash to deliver the weapon.

While weapons and delivery methods evolved over time, a primary technique for the F-100C was the Low Altitude Bombing System (LABS) over-the-shoulder, toss-bomb pro-

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Photo: USAF. Staff illustration: Mike Tsukamoto and Betsy Moore

cedure. As he approached the target, the pilot would have already jettisoned his empty wing fuel tanks, and at a designated point he descended to 50 feet above ground level. Then, with the engine's afterburner engaged for maximum thrust, he raced toward the target at 575 mph (500 knots). At the proper point he pulled up with a constant four Gs into an Immelmann maneuver (a half loop). Meanwhile, he monitored the aircraft's track to the target and his applied G force with a cross-pointer gauge mounted on the Hun's instrument panel. At a pitch attitude approaching vertical the LABS released the bomb and it would arc toward the target.

Once the weapon released the pilot had just 54 seconds (about 10 miles at maximum speed) to get clear of the nuclear blast. As the bomb fell through 1,500 feet, it would radar-detonate, to maximize its destructive shock wave. Meanwhile, the pilot faced the threat of the intensely bright flash from the nuclear explosion, which could potentially blind him. To mitigate this, pilots were issued eye patches to cover one eye, to have one functional if the other was blinded by the flash.

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At this point in the nuclear mission, pilots had little fuel left, and there was a good chance their home base would have already been destroyed in a retaliatory Soviet strike. Then too, there were bound to be other American-launched nuclear strikes in the area, delivered by other fighters or from a USAF TM-61A Matador missile with a W5 nuclear warhead (replaced in 1962 by the TM-76B Mace surface-to-surface missile). These so-called "pilotless bombers" were to be launched from bases in West Germany by USAF's 701st Tactical Missile Wing.

Though there were some nearby areas designated as friendly for evading pilots, the (optimistic) escape and survival plan devised by the young pilots called for turning north toward neutral Sweden or Finland and continuing until their fuel ran out. If they didn't reach neutral territory, their survival, if captured by the people they had just bombed with a nuclear weapon, was problematic.

BLUE BOY

Training for nuclear warfare began with Air Force-wide classroom instructions for fighter pilots on how the Mk 7 bomb was constructed, armed, and detonated. This included training in weapon delivery techniques and use of the instrument panel-mounted cross-pointer gauge.

A special concern with Super Sabres during nuclear training flights was the jet's heavy gross weight takeoffs. The external configuration consisted of the three wing pylon fuel tanks, plus a "Blue Boy" practice nuclear weapon, referred to as a "shape." It was identical in size and weight to the actual Mk 7 nuclear bomb.

Great care was required for training flights without the shape, since the aircraft retained the three asymmetrically wing-mounted pylon fuel tanks. Known as the 1-E3 configuration, the extra fuel in the pylon tanks provided increased flight training time for the pilots, while the empty weapons station remained available for immediate loading in case of a sudden nuclear alert.

In Europe, a typical nuclear training mission involved flying a practice low-level mission that mimicked the route to a real target. Each fighter squadron maintained a series of mission training folders with such mock routes. These missions were flown at 415 mph (360 knots) and at 500 feet above ground level or lower—considered legalized "buzzing" by the pilots.

With the typical poor European flying weather, however, these low-level training missions led to many accidents and near-accidents. In 1957, the 53rd Tactical Fighter Squadron based at Ramstein AB, West Germany, lost two pilots in a single year. In 1959, the 36th TFW based at Bitburg AB, West Germany, lost a dozen of its F-100Cs in the last six months of the year.

Accidents or close calls included narrowly avoiding a church steeple suddenly emerging from the mist, or flying into hilltop trees. Pilots who managed to eject were often killed anyway. In one incident, a pilot hit trees on a hill near Luxembourg and severely damaged the aircraft. He managed to land the jet, but it was so extensively damaged it had to be scrapped.

Another problem occurred during intense maneuvering with the 1-E3 configuration. During an attempted hard left break, the unevenly arranged pylon tanks induced yaw that could cause a sudden snap out of control to the right. Consequently, mock dogfights with the three-tank configuration were prohibited. Still, the young pilots often did it anyway—with predictable results.

An airman with a working dog guards a Matador nuclear missile launching site in West Germany on May 8, 1959.

There were maintenance problems, too. When training flights included the Blue Boy—which like the Mk 7, weighed 1,680 pounds—the shape's weight, coupled with that of the jet fuel in the left wing pylon tank, placed heavy stress on the left landing gear tire. As a result, tires often failed on takeoff, causing numerous major accidents. Although foreign object tire damage from nuts, bolts, and screws on the ramp or runway was sometimes involved, often the primary culprit was the crew chief's failure—during predawn, preflight inspections—to increase tire inflation for a heavy configuration.

GREEN LIGHT MEANS ARMED

On their alert duty day, four pilots from each of the various fighter squadrons began Victor Alert at midnight. At Ramstein Air Base, the pilots of the 53rd TFS often arrived at their assigned aircraft directly from a late evening happy hour at the Officer's Club, since none of them actually thought they'd ever be launched. Pilots and crew chiefs alike drove their personal cars to the revetments where their nuclear-armed aircraft were parked. While there was an armed guard nearby, he was likely a teenaged airman, kept alert investigating the noises of deer and wild boar in the forest behind the squadron revetments.

The alert pilots would start the engine and put the core of the nuclear weapon into position, verified in the cockpit by a green "armed" indicator light. The procedure was then reversed, the indicator showing a red "disarmed" light. After this procedure, the aircraft's engine would be shut down, and after securing the aircraft, pilots would drive their automobiles to the alert crew trailer, don their G-suits and sidearms, and lie down on cots or a sofa and go to sleep.

Gary Barnhill, then a pilot and a lieutenant, related that these relaxed nuclear alert procedures were changed sometime in 1959, after he overheard a visiting general ask an alert pilot if he thought he could start the aircraft without a crew chief, taxi out, and take off on his own. After thinking about it, the pilot replied that he could, indeed—and conceivably start World War III on his own.

Shortly thereafter, a very detailed "two-person concept" was mandated. This procedure required the presence of armed guards equipped with dogs at the alert aircraft. They were to have eight-by-10 headshot photos of the alert duty pilot and the crew chief.

When approaching or working around a nuclear weapon, only the pilot on duty was allowed access to the aircraft's cockpit. He had to know the daily password and be accompanied by the ship's crew chief or armament technician. The procedure of the pilot arming and then disarming the Mk 7 bomb also was discontinued.

Supreme Headquarters Allied Power, Europe, Commander Gen. Lauris Norstad personally visited Ramstein to verify implementation of these more stringent security procedures.

The service of the F-100Cs in Europe was relatively brief, replaced at first by the improved F-100D. Newer nuclear weapons also were acquired, such as the more streamlined Mk 28 and Mk 43 thermonuclear (hydrogen) bombs. Then, in May 1961 the electronically sophisticated F-105D Thunderchief, designed specifically for the tactical nuclear mission, began replacing the Super Sabres. The Thunderchief provided its pilots an all-weather capability, but for some targets, a still-iffy round-trip mission capability. The weapons typically carried were the Mk 28 or Mk 43, mounted in the F-105's internal bomb bay.

The Air Force's fighter-delivered nuclear mission has never fully gone away in Europe, rising and falling in emphasis with the ebb and flow of the Soviet, and later Russian, threat. Today, "dual capable" USAF F-16 and F-15E fighters are able to deliver tactical nuclear weapons if called on. An updated version of the B61 nuclear bomb is under development, and when ready, it will be certified for carriage on the F-35A Lightning II.

Testing of the F-35 with a nuclear shape has been underway since 2016, and Air Force plans call for the F-35 to be capable of fulfilling the nuclear mission in Europe soon after the type beds down at RAF Lakenheath, UK, probably in the early 2020s. ✪

John Lowery is a veteran Air Force fighter pilot and freelance writer. He is author of five books on aircraft performance and aviation safety. His most recent article for *Air Force Magazine*, "Survival and Tragedy in Alaska," appeared in October 2014.

Staff illustration: Mike Tsukamoto and Betsy Moore. Photo: USAF