Nuke the Pilot

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Redwing aircraft comprised a B-52 (lead), B-66s (flanking), a B-47 (following), F-84s (flanking), and an F-101A (in trail).

During the five months that I spent in Operation Redwing, which tested second-generation thermonuclear bombs over the Pacific proving grounds, I flew a Republic F-84F into seven nuclear explosions to measure the effects of the heat and the shock wave on aircraft. My flight into the Mohawk explosion on July 3 was nearly my last.

Although it was vastly more powerful than the bombs dropped on Japan at the end of World War II, Mohawk, at 360 kilotons, was an airburst atomic bomb considered only a low risk to pilots flying near the site of its detonation. My flight path was programmed so my F-84F would be at a particular point in the sky within 0.1 second of detonation—as close as feasible to subject the airplane to the maximum amount of heat and shock wave. Such precision timing sounds impossible, but that was the requirement placed on me for all test detonations. That sort of careful positioning is what first brought me to Patrick Air Force Base in Florida the previous year. Radiation Inc. of Melbourne had designed a space positioning system that would provide a pilot with that degree of accuracy. As the pilot who was to use the system in the nuclear tests, I was assigned to make test flights for Radiation Inc. with its system, which would allow me to capture the desired data—in theory. In practice, as it turned out, the system had plenty of bugs to work out.

I didn’t use the system on my Mohawk mission; instead, I used a radar positioning system, flying by the guidance of radar technicians. I was a little concerned about a controller at a radar site positioning me within the required accuracy to the nuclear explosion, but I had to

trust his professionalism. Although Mohawk was classified as a mild shot, our objective was to determine how large a nuclear bomb an aircraft could deliver and survive the blast effects. We needed to learn how much heat the airframes, skin, electronics, and engines could survive. How many impact loads above the design limit of 14 Gs could they absorb? What kind of overpressures could the turbine wheels withstand without causing the engines to fail? On this mission, my F-84 would experience heat and the shock wave from the smaller atomic explosion.

My “live shot” day began at 4 a.m. with steak and eggs, a special meal for the pilots and flight crews participating in the tests. I was to fly a late-model F-84F-25, at the time the sturdiest aircraft in Air Force inventory. The other aircraft—a B-66, B-57, and F-101A—were positioned farther from the blast than I was. Chuck Kitchens, in an older F-84F, would measure the side load of the shock wave.

Following my last-minute briefing, I lifted off into the black sky. It was always about as lonely a time as I have ever spent. About 10 minutes later, I closed my protective hood and continued flying on instruments to the test site over northern Enewetak Atoll.

The countdown went perfectly and the radar controller’s commands were easy to follow. As zero approached, I pulled the black goggles down over my eyes and covered the lenses with my gloved left hand.

Detonation. Shards of brilliant light penetrated all the protective devices and severely pained my eyes for a few seconds. As the brilliance faded, I could see the bones in my hands. Suddenly I began to feel as if millions of long, hot needles were shooting through my body.

We did not have fire-resistant garb; I was wearing only a lightweight flightsuit. When I pushed the goggles up, instead of seeing the light fading the way it had in previous blasts, I had the horrible sensation of being on fire.

I wasn’t braced for the shock-wave impact. When it hit, I was affected more by the flaming debris in the cockpit than by the force of the impact. I wasn’t sure what was happening except that it was different—and not good. I could see flames around my feet, causing me to pull them back into the footrests. When I tried to unfasten my protective hood, the heat from the metal zipper and snaps burned through my gloves. When I finally pulled the hood back, a shower of burning fabric covered me. All this time—and it was only seconds, although it felt much longer—I tried to convince myself I had not flown into the fireball, but surely I had been very close to it. In the back of my mind was an earlier H-bomb test when my space positioning system failed at five minutes to detonation. Had I not aborted, I would have flown into the fireball when the bomb was detonated 45 seconds early, directly in my flight path.

As the smoke was swallowed up by the air conditioning system, I could once again see outside. I was not in the fireball. The fire around my feet had gone out, but even through my oxygen mask I could smell the burnt material and metal.

I tried to make a Mayday radio call, but all I could hear in my headset was loud static. Just a bit above me, the overcast was punctured by the fireball’s trail. In its wake, patterns of light

that looked like Japanese umbrellas exploded every thousand feet. I pushed the control stick to the right and looked for the airstrip, when to my pleasant surprise the beacon appeared through the smoke and haze just 25 miles away. By now the static in my headset had subsided somewhat, and the smoke under my feet had begun to dissipate. For the first time in a few long seconds, I thought I might have a chance of surviving.

I had no idea about the overall condition of my airplane, but it responded to my control input so at least I could point it toward home. I tried another Mayday call. I was relieved when my controller acknowledged it and vectored me toward the runway. When I was on my final approach, the smell from whatever had been burning was still making my eyes water. I could only partially see to land.

In reviewing the flight, we found that the heat reflected off the overcast and onto my F-84 had burned away or wrinkled the skin on the flaps, stabilator, and ailerons. The glare shield above the instrument panel, and all of the black tape windings on the instrument lines behind it, were completely burned away. The hydraulic fluid that had leaked out around the rudder pedals had created other fires. The lens on the over-the-shoulder camera inside my protective hood had melted. Of the three layers of asbestos and aluminum cloth that made up the hood itself, two were incinerated.

I continued to have the sensation of needles burning through my body for several weeks. Because of the overall classification of the Redwing tests, I was never allowed to see the data gathered from any of my missions. Nor was I ever given the radiation readings from the film badges I wore during the last five flights. Although we had been briefed that the maximum exposure we could safely receive was 100 milli-roentgens in six months, I had pointed out to the flight surgeon that I had been exposed to 100 on each of my first two flights. Whether the overexposure contributed to the life-threatening melanoma I developed seven months later, I'll never know.

My next two missions were H-bomb tests over Bikini Atoll. On the second, the bomb exceeded its predicted yield by a significant amount, breaking my airplane's right wing spar in two places. On the plus side, this provided the test engineers with the maximum possible data and negated the need for more testing.

An Air Force test pilot for 38 years, Bud Evans served in World War II, Korea, and Vietnam. He logged 15,000 hours in 203 aircraft types.