

**North Vietnam's Thanh Hoa Bridge was a critical but seemingly invincible target. It took years of bravery, innovation, and technological advances to finally take it out.**

# Breaking the Dragon's Jaw

By Walter J. Boyne

**S**ome World War II targets—the refineries of Ploesti in Romania, the V-2 infrastructure at Peenemunde in Germany, the Japanese naval base at Truk—were so obviously important they immediately commanded the attention of both attackers and defenders.

Such was the case with the Thanh Hoa Bridge in North Vietnam, during the Vietnam War.

Supplies flowed in a torrent through this rugged span, from North Vietnamese ports and factories to the Ho Chi Minh Trail and on to South Vietnam. The Americans tried to use the irresistible force of their weaponry to destroy this vital conduit and bottleneck.

The North Vietnamese strove to make the bridge an immovable object with an incredibly powerful integrated defense system. The defenders succeeded in keeping the bridge in service for seven long, casualty filled years.

Officially called the Thanh Hoa Railroad and Highway Bridge, it was nicknamed the Ham Rong (Dragon's Jaw) because of its layout.

Two concrete abutments were each sited on slight elevations in the generally flat plain. The bridge was supported in the center with a massive concrete pier. To the North Vietnamese, the layout of the bridge looked like a gaping dragon's mouth.

Located just three miles northeast of Thanh Hoa, the capital of Annam province, the bridge had a special place in the minds of the North Vietnamese. In 1945, during their war against the French, the rebel Viet Minh forces destroyed the original

*USAF F-105s, directed by an F-100, on a mission to bomb military targets in North Vietnam.*



structure by exploding two ammunition-filled railroad trains on it.

Reconstruction began in 1957, and Ho Chi Minh attended the opening ceremony in 1964. A conventional steel through-truss structure, the new bridge was 540 feet long, 56 feet wide, and ran due west about 50 feet above the surface of the river Song Ma.

A single one-meter gauge railroad track passed down the center of the bridge, while roadways permitting foot and truck traffic were cantilevered on either side of the structure. The North Vietnamese knew it was vitally important and ultimately placed five air defense regiments nearby to defend it. A few elderly MiG fighters were stationed in proximity as well, and they proved surprisingly capable.

In 1965, the United States began a two-day assault on the bridge. US planners underestimated the Dragon's Jaw's strength and defenses and overestimated the capability of their own ordnance.

Lt. Col. Robinson Risner, an eight-victory ace in the Korean War, was commander of the "Fighting Cocks," the 67th Tactical Fighter Squadron, flying out of Korat RTAB, Thailand. On April 3, his strike package consisted of 46 Republic F-105 Thunderchiefs, well supported by 21 North American F-100s, two McDonnell RF-101s, and 10 tankers. The entire North Vietnamese fighter strength at this time was 56 aircraft.

The F-105, designed as a supersonic long-range tactical nuclear bomber, on this mission carried two types of ordnance. Sixteen carried two AGM-12

Bullpup missiles each, while 30 carried 750-pound bombs.

Mounted externally, the bombs degraded the Thud's speed and agility. The rocket-powered Bullpup, an early precision guided missile, had a 250-pound warhead. The pilot tracked a flare in the back of the missile, using radio signals to steer it. The Bullpups were fired one at a time, requiring two passes at the target.

The precisely coordinated attack began at 2 p.m. on April 3, with Risner in the first airplane. The 32 Bullpups, released at about 12,000 feet, proved difficult to guide, and those that did hit the target did not do significant damage. The effect of the 120 conventional bombs that struck the bridge was also negligible.

An F-100 and an RF-101 were lost, and Risner's airplane was severely damaged, forcing him to land at Da Nang. A second assault was ordered for the following day.

This time 48 F-105s, accompanied by 21 F-100s, dropped their 750-pound bombs. Three hundred bombs struck the bridge, damaging it severely, but not knocking it down.

A surprise came from the success of the North Vietnamese MiG-17s, which scored their first kills of the war. In a well-planned counterattack, they shot down two F-105s. Air Force Chief of Staff, Gen. Joseph P. McConnell was furious that two of the elderly MiG-17s could shoot down the F-105s, and launched an inquiry.

The debacle led to a change in fighter tactics, training, and procurement, but another 334 "Thuds" would be lost in combat before the war's end.

Risner himself was shot down twice in F-105s over North Vietnam. The first time, in April 1965, he was rescued. The second time, in September 1965, he was shot down in an area near the Than Hoa Bridge, where he was captured and imprisoned by the North Vietnamese until 1973.

The American attacks against a variety of North Vietnamese bridges continued, and 25 of them were destroyed by the end of May 1965.

But the Thanh Hoa Bridge remained standing despite return attacks. The 750-pound bombs were simply inadequate to down the structure, and the North Vietnamese became expert in making emergency repairs.

The bridge was removed from the USAF target list when the "Route Package" system was initiated in November 1965. In the new system, the US Navy took over the attacks, with virtually the same lack of results, for the next three years.

The reason for the ineffectiveness was simple: The bridge was overbuilt and the

bombs were understrength. Only 11 miles from the South China Sea, the bridge was often protected by bad weather, giving the enemy time to rebuild and strengthen it, adding eight concrete piers. At the same time, massive quantities of air defense supplies flowed in and vigilantly protected the area.

The exact strength of the five air defense regiments varied over time and from place to place, but each one usually had about 1,000 personnel operating about 36 medium or heavy anti-aircraft artillery guns. When surface-to-air missile batteries were provided, for a considerable period they added extra AAA batteries. Five air defense regiments at the time could have included anything from 150 to 200 AAA batteries of varying caliber, able to put up a dense defense.

### **Indestructible?**

The combination of rugged structure and a powerful integrated air defense made it obvious a new and far more powerful weapon was needed.

"The apparent invincibility of the bridge; its cost in men, aircraft, and ordnance; its potential strategic importance; its symbolic value to the North Vietnamese—all served as an incentive for US aviators to find different techniques to destroy it," according to USAF's monograph, "The Tale of Two Bridges and the Battle for the Skies Over North Vietnam."

The personnel of the Air Force Armament Laboratory at Eglin AFB, Fla., worked hard to develop a solution.

A new "mass-focus" weapon weighing about 5,000 pounds was produced. Shaped like a huge pancake, eight feet in diameter and about 30 inches thick, it was designed to focus the force of its explosion along its axis—in both directions. Much too large to be dropped by a fighter, and with unpredictable ballistic qualities, it was intended to be dropped by parachute into the Song Ma. Planning called for it to float down the river to the Dragon's Jaw. There the metal structure of the bridge would set off magnetic detonators and explode the bomb.

A task force was set up at Eglin's Tactical Air Warfare Center. Established in 1963, the TAWC was designed to develop instruments and tactics of armament, night operations, combat support, and command and control.

The task force opted to use the versatile Lockheed C-130 Hercules transport and two crews from the 61st Troop Carrier Squadron at Sewart AFB, Tenn.

There were two crews: one led by Maj. Richard T. Remers and the second by Maj.

Thomas F. Case. An array of specialists and technicians were deployed to examine how to drop the weapon, what parachutes to use, and how to ensure the weapon would navigate the river, subject as it was to its depth and current.

After intense training, the C-130s and their crews arrived at Da Nang Air Base in South Vietnam on May 15, 1966. Ten of the large mass-focus weapons were available, enough for two missions in what would become known as Operation Carolina Moon.

The operation depended on careful planning, skilful flying, and brave crews. Remers' crew was slated to make the first drop, entering North Vietnam at night and maintaining an altitude of no more than 500 feet.

A flight of two McDonnell F-4 Phantoms was scheduled for a diversionary attack on a highway 10 miles north of the bridge, just before the C-130 would drop its weapons. A Douglas EB-66 Destroyer provided electronic countermeasures protection.

Both aircraft commanders were confident the Hercules was strong enough to make the mission, but each had different ideas on crew safety. Intelligence revealed the North Vietnamese had greatly increased their anti-aircraft artillery capability at the bridge with the addition of five new AAA sites.

Weighing this, Remers felt that if the C-130 were too badly damaged, he should climb to altitude and bail the crew out. He decided that his crew would wear parachutes rather than flak jackets.

Case felt differently, believing that at low altitudes, the crew would be better off wearing flak jackets.

In the end, these decisions mattered little.

Just after midnight on May 30, Remers took off from Da Nang, flying just 100 feet over the water of the South China Sea until hitting his entry point on the coast of North Vietnam. In less than an hour he was "feet dry," heading up the Song Ma, under the guidance of two navigators, Capt. Norman G. Clanton and 1st Lt. William R. Edmondson. Two release points had been preselected, one two miles from the bridge, and one a single mile away.

Remers climbed to 400 feet, flying at 150 mph. The approach was without incident and he elected to use the second drop point. Just before the drop, the enemy opened up with heavy automatic weapons and anti-aircraft guns. Five of the mass-focus weapons were dropped, and Remers picked up speed as he dove back



**A C-130 such as this one, taking off from a dirt strip in South Vietnam, was lost with all crew members in an attempt to deliver “mass-focus” bombs against the formidable bridge.**

toward a 100-foot altitude and reversed his route to exit for an uneventful flight back to Da Nang.

Reconnaissance flights the following morning showed that the bridge still stood, and there was no evidence of the bombs.

The second mission was laid on for 1 a.m. on May 31. Case asked that Edmondson join his crew for the mission, feeling that his experience from the first mission might be invaluable. The same precautionary measures—diversion attacks and electronic countermeasures support—were supplied.

### Finally, Success

Case’s C-130 departed Da Nang at 1 a.m. May 31 as planned, but nothing more was ever heard from it. One of the diversionary F-4 crews saw AAA fire and a big explosion near the bridge at about the scheduled drop time. The other F-4 was shot down, presumably killing 1st Lt. Ned R. Herrold and Lt. Col. Dayton W. Ragland, who had spent two years as a prisoner of war in Korea. It was Ragland’s 98th mission in Vietnam, nearly time for him to return home.

The next morning’s reconnaissance mission revealed no damage to the bridge or any evidence of survivors. An extensive search was conducted, but nothing that could be positively identified as belonging to either Case’s C-130 or Ragland’s F-4 was found. Much later, the interrogation of a captured North Vietnamese sailor revealed that while four of the five mines from Remers’ mission had exploded, they had not damaged the bridge.

With this tragic finale, Operation Carolina Moon concluded and its remaining personnel returned to the United States. Their experiment had not been

bombing strikes against North Vietnam. A wide range of aircraft launched different types of weapons—including the AGM-62 Walleye precision guided missile—with no significant effect.

But when Operation Linebacker commenced in 1972, both the Navy and Air Force were better equipped. Great progress had been made in the field of precision guided munitions, and these revolutionary weapons would ultimately bring down the Dragon’s Jaw.

Air Force F-4 Phantoms from the 8th TFW used Paveway laser guided and TV guided bombs to attack the bridge on April 27, 1972. A section of the western



**The Thanh Hoa Bridge’s western end was knocked into the Song Ma in April 1972. In May, 2,000-pound and 3,000-pound laser guided bombs blasted it off an abutment.**

successful, and many years passed before the remains of several of the missing Carolina Moon crew members were recovered.

In 1986, the remains of Case, 1st Lt. Armon D. Shingledecker, 1st Lt. Harold J. Zook, and A1C Elroy E. Harworth were returned to the United States for burial with honors. In 1998, the remains of A1C Phillip J. Stickney were returned.

The other Carolina Moon C-130 crew members, Edmondson, Capt. Emmett R. McDonald, and SSgt. Bobby J. Alberton are still listed as missing in action, with a presumptive finding of death.

The two F-4 crew members shot down while flying the diversionary strike, Herrold and Ragland, are also listed as MIA, presumed dead.

Naval aircraft resumed the attacks and continued to go after the bridge until 1968, when the United States halted

end of the bridge was displaced and knocked into the Song Ma.

A follow-up attack on May 13 saw 14 Phantoms dropping 2,000-pound and 3,000-pound LGBs. They knocked the Dragon’s Jaw off an abutment and took the bridge out of action, although follow-on strikes were needed, as the North Vietnamese immediately went to work on repairing the bridge.

Final success occurred on Oct. 6, when four Vought A-7s from the carrier *America* attacked. Two were carrying the improved version of the Walleye, while two brought standard Mk 84 general-purpose bombs. They struck the center piling and broke the structure in half.

At long last, after seven years, 871 sorties, tremendous expenditure in lives, 11 lost aircraft, and a bewildering array of expended munitions, the Dragon’s Jaw was finally broken. ■

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