



Davy Crockett M388 Nuclear Recoilless Launcher in a modern-day museum.

## The M29 Davy Crockett & the Era of Battlefield Atomic Weapons

By Timothy J. Kutta

The United States committed itself to defending Western Europe from Soviet attack when, on 4 April 1949, it formed the North Atlantic Treaty Organization (NATO). That consolidated US, European and Canadian commands

in the event of war, but by itself it added no new divisions to the order of battle. It wasn't until the Korean War the US actually expanded its ground force. Prior to that, *Joint War Plan JSPC-496.1*, codenamed "Broiler," which was issued on 8 November 1947,

had determined the only way to stop a Soviet invasion of Western Europe was via the use of nuclear weapons. Even after the Korean War expansion, that policy remained officially in place for much of the Cold War.

### M29 DAVY CROCKETT WEAPON SYSTEM



M64 Recoilless Gun on bracket mount



Loading propellant charge



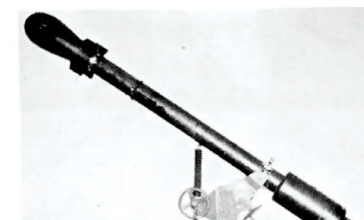
Loading M2 launching piston/spigot cylinder



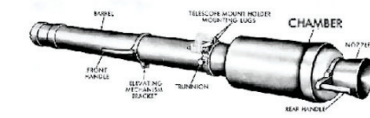
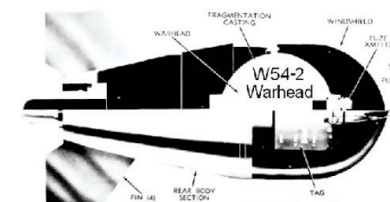
Unloaded M29 Davy Crockett (includes the M64 recoilless gun on a bracket mount, plus (1) the gun barrel seated M2 launching piston/spigot cylinder and (2) either of two fixed propellant charges/cartridges, M76 (or M94) "Zone I" or M77 "Zone II", seated in the M64's chamber).



Loading 279mm projectile



Loaded M29 Davy Crockett. The M388 279mm atomic projectile is attached to the M2 launching piston/spigot cylinder. Within the M388 projectile is the W54-2 nuclear warhead.

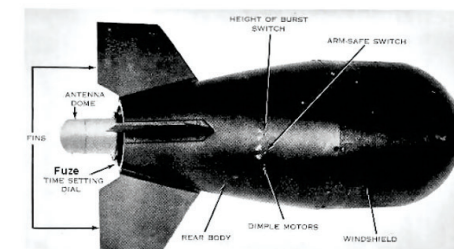


#### M64 Recoilless Gun, Part of the M29 Davy Crockett

A recoilless gun or rifle is a lightweight weapon that fires a heavier projectile that would be impractical to fire from a recoiling weapon of comparable size. Technically, only devices that use a rifled barrel are recoilless rifles. Smoothbore variants are recoilless guns.

#### M29 Davy Crockett

The M29 Davy Crockett is an open-breech, recoilless, smooth bore, single shot, low-angle fire, muzzle-loaded weapon with a 155mm barrel. The M29 Davy Crockett weapon system utilizes projectile, atomic, supercaliber, 279mm, M388. Atomic projectile M388 is a 51 pound, fin-stabilized, low-drag projectile which uses a W54-2 nuclear warhead.



The principal US means of delivering nuclear weapons in the late 1940s and throughout the 1950s was with heavy bombers dropping bombs each large enough to devastate an entire city. The accompanying US nuclear deterrent theory was equally straightforward: if the Soviet Union attacked in Europe, massive retaliation would destroy all the invader's industrial centers and military bases.

In the late 1940s the Soviet armed forces deployed large numbers of divisions with plenty of armor, all supported by a considerable air force. NATO was outnumbered on the ground, and the subsequent Soviet development of its own nuclear weapons canceled American strategic supremacy in that field. In the 1950s, therefore, the US Army decided "tactical" nuclear weapons would have to be used to defeat the Soviets in the field, in detail, if they invaded NATO territory.

They were said to be "tactical" in that they would be used against advancing enemy forces as opposed to his homeland cities. The army therefore also began to reorganize its divisions to fight under nuclear



A Davy Crockett fully deployed.

battlefield conditions. That new organizational scheme was known as "Pentomic," due to the fact each of the reorganized infantry and airborne divisions contained five "maneuver battlegroups." They replaced the former three-regiment structure.

Each battlegroup (BG) had about 1,500 personnel, and the theory was each division's BG would disperse away from each other in the event of enemy nuclear attack but re-concentrate when it was time to counterattack. Each BG could be reinforced with artillery, reconnaissance, armor and





A view of the jeep-mounted version

other attachments, drawn from the division or higher echelons as needed on a mission-by-mission basis. That larger number of maneuver units per division (five BG as opposed to three regiments) was supposed to provide for quicker reaction countering enemy thrusts and exploiting fleeting opportunities. In the event of a nuclear strike, not all the dispersed BG would be destroyed and the surviving units would continue operations.

The army next decided to integrate artillery units capable of firing nuclear shells into the new divisions. A new 280mm cannon was designed and designated the M-65. It could fire a Mark 9 nuclear shell to a maximum range of 19 miles; however, the “Atomic Cannon,” as it was known, was also a vulnerable target. Further, there were only 20 of the big guns in the entire US arsenal, and they could only move (slowly) with the aid of specially built tractors. The Soviets considered the Mark 9s prime targets, and planned to take them out in the first strike of any war. Even a well concealed gun might only get off a shot or two before it was located and

destroyed. To give units more depth, therefore, the army had to come up with a tactical nuclear weapon that was small, light and highly mobile.

The first challenge was producing a small nuclear shell. After much work and many designs, an explosive nuclear core was developed that was only 10.75 inches in diameter and 15.7 inches in length, weighing 23 lbs. That warhead would yield a 10 to 20 ton nuclear explosion, and the shell casing developed for it was 31 inches long and 11 inches (280mm) in diameter. It was said to look like a “watermelon with fins.”

The army originally intended to use a bazooka to deliver the warhead; however, that weapon was too small to properly fit the round, and it couldn't provide sufficient range even if it did. The next larger weapon was the recoilless rifle. The standard 75mm only

had a bore diameter of just over three inches and, again, that was too small.

The weapons experts then turned to the trench mortar designs of World War I. The resultant new weapon's basic design called for it to fire a large rod onto which was fitted an 82mm mortar round. One end of the rod was dropped into the mortar barrel. The other end, which extended past the barrel, had the round attached. Because only the rod had to fit inside the mortar, the round could be of a larger size.

Using that as a foundation, the army designed a 120mm recoilless smoothbore gun that could be loaded with either one of two powder charges. A long 120mm rod was loaded into the barrel with the end extended slightly past the muzzle. An 11 inch diameter M388 nuclear projectile was then attached to the end of the

rod. When the charge was ignited, it fired the projectile out to a range of 1.5 miles. Tests on the gun were successful, and the army accepted it as the “M28 Davy Crockett Weapons System.” It was named after the legendary American frontiersmen who was then a cultural icon because of a popular movie and television series.

The M28 system consisted of a gun, tripod and projectile with a total weight of about 170 lbs. It was designed to be transported by jeep or other small vehicle, though it was also man-portable for short distances.

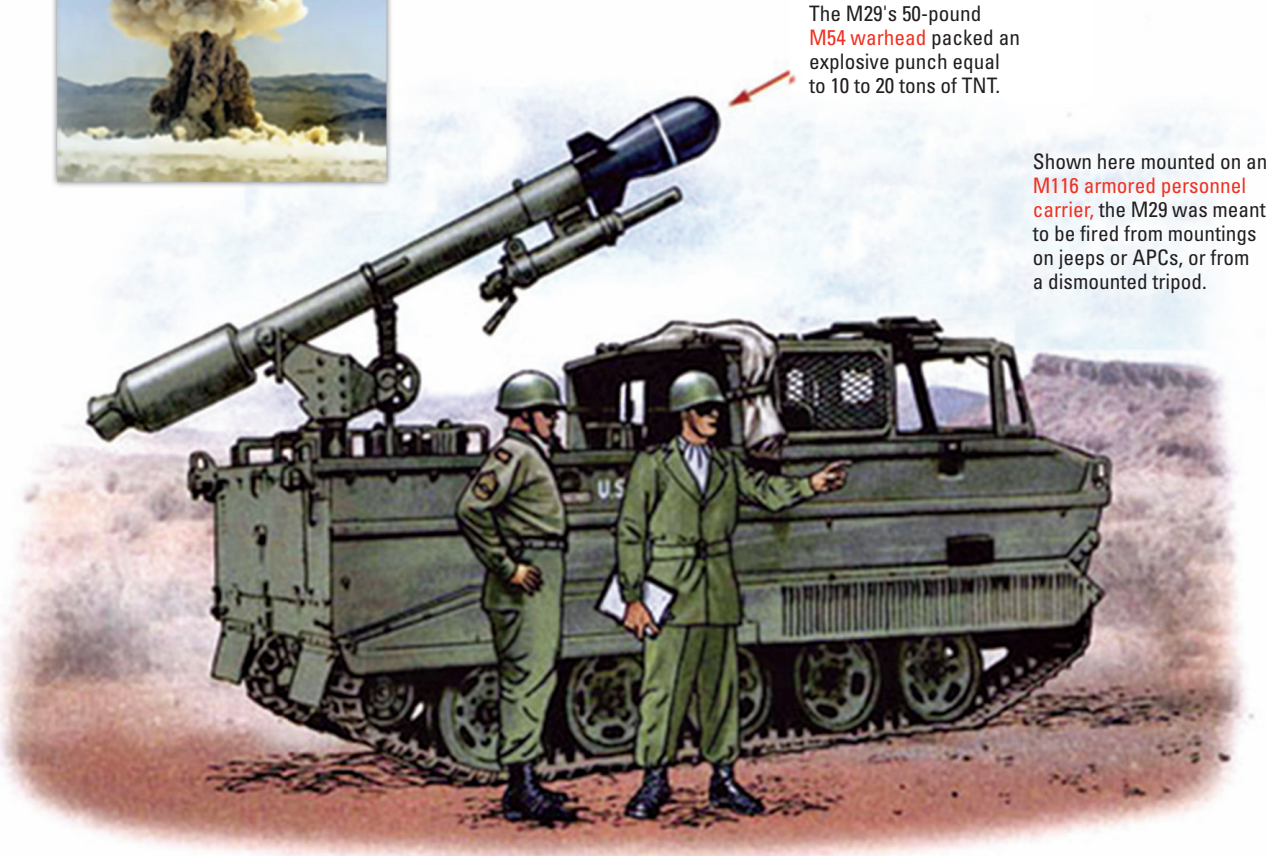
The M388 round was designed to detonate 20 feet above the ground. The resultant explosion would instantly kill anyone within 150 yards of the detonation point and seriously wound those out to about 700 yards. That would give any small US ground unit considerable firepower, but it also meant the firing team would be dangerously close to its own blast zone.

US weapons experts therefore decided to increase the range by developing a 155mm recoilless version. That increase allowed for



17 July 1962. **Little Feller I** test of the M29 at the Nevada Test Site was the last atmospheric nuclear detonation by the United States.

The M29's 50-pound **M54 warhead** packed an explosive punch equal to 10 to 20 tons of TNT.



Shown here mounted on an **M116 armored personnel carrier**, the M29 was meant to be fired from mountings on jeeps or APCs, or from a dismounted tripod.



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Three views of soldiers training to operate the weapon.

a larger charge and hence more range. The M29 version of the Davy Crockett—which also consisted of a gun, tripod and M388 projectile—had a maximum range of three miles and weighed about 500 lbs. Transport was by truck or armored personnel carrier.

Now that the army had a tactical nuclear weapon system, the question became how to deploy it most effectively. A plan was devised to assign the system to the Pentomic divisions' BG while the tactics were kept simple: in the event of a Soviet offensive, locate their main attack route and lob a wall of tactical nuclear shells into the advancing units.

The first Davy Crocketts were deployed in 1961. The army had originally wanted to deploy 150,000 of the systems, but the final number was greatly reduced. At their height of their deployment, 2,100 Davy Crocketts were ready for action.

The standard crew was three men, each with one weapon mounted on a jeep that carried two rounds. Once a crew was in range of a target, they would dismount the Davy Crockett and carry it to a concealed firing position. They would then calculate the angle and deflection needed to put the round on target, assisted by a spotting gun mounted on the launcher.



This three-man crew seems skeptical of the whole idea.

The warhead followed the same trajectory as the spotting gun round.

Once the range was determined, the crew loaded a round and set the yield, which could be 10 or 20 tons of explosive power. That was small for a nuclear weapon, but powerful when viewed from the small-unit level. While tests demonstrated the Davy Crockett wasn't especially accurate, its designers didn't consider that to be a flaw given each warhead's area of destruction.

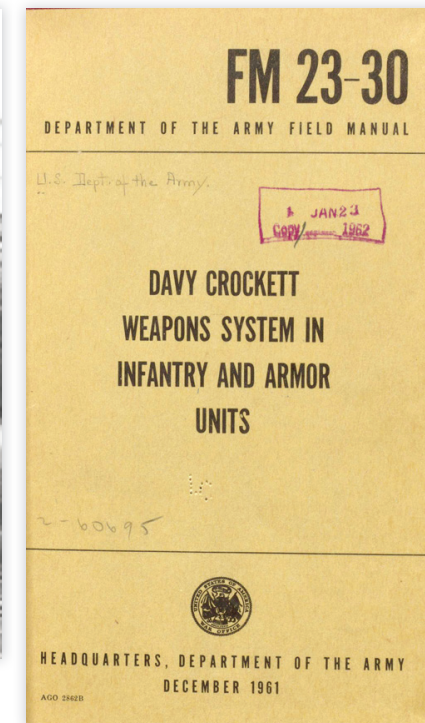
Assuming they survived any enemy return fire or counterattack, the crew could break down their gun and tripod, return to their jeep, and drive off to seek out another target. Of course, the survival issue was something on which use of the weapon hinged. The men of a Davy Crockett crew would probably survive the blast, assuming they were under cover; however, their proximity to the radiation it produced would likely lead to their death or debilitation a short time after.

Prior to firing, Davy Crockett units would've been difficult for the enemy to locate and destroy. Moving quickly across the battlefield, they could hit and run. The potential 2,000 or so tactical nukes shattering Soviet spearheads would certainly have disrupted any such attack. It also brought up the issue of giving small units unprecedented destructive power. In the event of a command control breakdown, the proverbial second lieutenant would've had considerable power in his hands.

Of course, the Davy Crockett ended up never being employed in combat.

By the early 1970s the balance of power was again shifting. NATO introduced a new generation of improved tanks, such as the US M-60, the German Leopard and the British Chieftain, which could hold their own against large Soviet armored formations. Other non-nuclear weapons, such as helicopter gunships and wire-guided anti-tank missiles, provided more precise means to destroy enemy armored vehicles. Those weapons also reduced the collateral damage and blowback issues connected to the use of nuclear weapons.

In the meantime, the army had dropped the Pentomic concept and had gone over to a more conventional



A cover shot of the FM23-30 Davy Crockett operator's manual.

division-brigade-battalion organization. With that reorganization the Davy Crockett was withdrawn from Europe and then from the entire US Army. By 1971 they had all been retired.

The effectiveness of the system, as well as the practicability of the decision to place nuclear weapons in the hands of three-man teams, was never tested. For a few years, though, Davy Crockett might easily have been king of a tactical nuclear frontier.

#### SOURCES

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