

TORNADO ALLEY

TORNADO INTERCEPT VEHICLE (TIV)

To capture the extraordinary, first-of-a-kind footage in *Tornado Alley*, IMAX director Sean Casey not only had to learn how to enter a tornado, he had to design a vehicle that could take him there.

It was a tricky proposition, considering tornadoes have the power to pick up locomotives and send cars hurling at distances of up to a mile.

In 2002, Casey sketched out a design (which, he said, looked “remarkably similar to the spaceships I drew when I was twelve”), taught himself how to weld, and, that summer, work on the original tornado intercept vehicle began.

The TIV, as it is known, or TIV 1, was built for one express purpose: to house and shuttle Casey’s camera (he and his crew call it “an armored tripod on wheels”). He created a military-style filming turret, inside of which he maneuvers much like a tank gunner, only he’s shooting film instead of ammunition and his range is 360 degrees. (While TIV 1 doesn’t appear in *Tornado Alley*, much of the movie’s severe weather footage was filmed from inside it.)

The TIV started its life as a 1997 Ford F-450 pickup truck, but was stripped down so thoroughly that only its engine, transmission, and driveline remained. Its body was replaced with an armored steel shell. Four hydraulic claws were added to the vehicles sides that drop and clamp to the ground during an intercept. Other additions included:

- bullet-resistant windows
- a 7.3-liter turbo-diesel engine
- a 60-gallon fuel tank

Weighing in at 15,000 pounds, the TIV has a top speed of 80 mph—not bad, but still a little sluggish if you’re being chased by an EF5 tornado.



In 2008, Casey introduced TIV 2, in part so it could serve as the star vehicle in *Tornado Alley*, but also to improve upon a few of TIV 1’s weaker aspects, including the top speed. After a few alterations to reduce its initial nearly nine-ton weight, TIV 2 emerged as the intrepid tornado tracker featured in the movie.

Gone were TIV 1's hydraulic claws, replaced by two stabilizing spears that can pierce the ground at a depth of 42 inches. A third axle was added to TIV 2's Dodge Ram 3500 platform, giving it six-wheel-drive capability. The IMAX turret was redesigned for greater sight range. Other modifications included:

- four hydraulic drop-down skirts that block wind and debris during an intercept
- a self-leveling suspension system
- a modified 6.7-liter turbo-diesel engine
- a 92-gallon fuel tank



TIV 2 weighs 14,000 pounds and has a top speed of over 100 mph.

While it may be built for speed, don't expect it's built for comfort, though. There is no radio, no air-conditioning—not even a cup holder—inside TIV 2. As Casey explains, “Every year, in the off-season, I get suggestions from the crew members. How about an Xbox 360 in there? Or at least some cup holders? But you kind of want your crew members to be in a bad state of mind out there, so they're much more willing to drive into a tornado and get it all done, rather than stay all nice and comfy. If you're mad, because you don't have AC or music, you take risks, it turns out.”