

# ZOLL®

CASE STUDY

## AED Pro vs. Lake Grapevine

Routine Boating Exercise Proves  
Anything but Routine



### The Setting

The Flower Mound Police Department and Fire and Emergency Services Department were conducting training exercises on Lake Grapevine near the Dallas/Ft. Worth area. The training involved a 22-foot boat that both departments use to help maintain order on one of the busiest recreational lakes in the area.

### The Accident

One training maneuver involves reversing the boat at high speed. As a Flower Mound police sergeant undertook this maneuver, the boat began to take on water at the stern. Load distribution of the other passengers was inappropriate, resulting in the boat listing to the right side. As the water continued to spill over the stern, the list increased. Before it could be corrected, the boat capsized, sending all aboard into Lake Grapevine.

### The Loss

Officers on a nearby boat called for assistance. "I was meeting with the city manager when the call came in," said Scott Mitchell, Flower Mound's assistant fire chief. "We responded to the scene in about 15 minutes. All parties were wearing flotation devices and escaped unscathed—unfortunately, I can't say the same for the equipment." Grapevine Fire/Rescue towed the capsized boat to a marina. Five long hours later, a salvage crew finally righted the boat using air bags. Chief Mitchell noted, "The good news was that some of the equipment was fastened down and in watertight cases. The bad

news was that even though our new ZOLL® AED Pro® was fastened down, it wasn't in a watertight case and it was submerged for over five hours." As a salvage crew member handed him the AED Pro's canvas bag, Lake Grapevine came pouring out of it. Chief Mitchell opened the case to find a waterlogged set of electrodes and emergency kit.



### The Surprise

Fortunately, nothing indicated that water had gotten into the defibrillator itself. The AED Pro has been tested for particle and water ingress, and has a rating of IP55. "I fired it right up and it went into its self-check," said Chief Mitchell. "It presented itself as good to go. I was really quite impressed." Just to be safe, Chief Mitchell had the AED Pro sent back to ZOLL to have it evaluated by the technical service department. The AED Pro unit passed all tests. (Although the AED Pro was still operational after being submerged for several hours, ZOLL does not maintain that its AEDs will remain functional under these or similar circumstances.)

*"I fired it right up and it went into its self-check."*

*Flower Mound Assistant Fire Chief  
Scott Mitchell*

First Digit	Protection Against Foreign Objects	Second Digit	Protection Against Moisture
0	Not Protected	0	Not Protected
1	>50 mm	1	Dripping Water
2	>12.5 mm	2	Dripping Water When Tilted Up to 15°N
3	>2.5 mm	3	Spraying Water
4	>1.0 mm	4	Splashing Water
5	Dust Protected	5	Water Jets
6	Dust Tight	6	Heavy Seas
		7	Immersion
		8	Submersion

### Ingress Protection

Ingress protection is a worldwide standard that has been established by the International Electrotechnical Commission (IEC) for rating the ability of electronic devices to withstand exposure to dust particles and water. These IP values are specified in the IEC 60529 standard.

A full rating consists of two digits. The first number indicates the protection level against particulates, while the second number signifies the protection level against water. Ratings for solids range from 0—no protection—to 6, dust tight. Ratings for water range from 0 to 8, with 0 signifying not at all water tight and 8 indicating that the device is protected against submersion in water more than one meter deep.

For more information on the ZOLL AED Plus, please call 800-804-4356 or go to [www.zoll.com/aedplus](http://www.zoll.com/aedplus).

All comparisons are based on published specifications, descriptions, and literature.

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The higher the number, the better the protection. The lowest combined rating would be IP11; the highest would be IP68. Where a device has not been rated for either dust or water, an "X" is substituted for the digit. Thus a device, like the LIFEPAK CR® Plus, with a rating of IPX4, has not been tested and rated for its ability to resist dust, while its rating for water ingress is 4. So what do these different values mean? The table at left was developed by Underwriter's Laboratory (UL) to explain the ingress protection code values, as specified in the IEC 60529 standard.



Opening the device for the first time after it was submerged.



No water damage as the device is opened.

