



## ISAC EXCELLENCE IN ACTION AWARD

A competitive awards program that seeks to identify and recognize innovative county government employees, programs, and ISAC affiliates.

The ISAC Excellence in Action Award committee will rate each nomination based on the following seven attributes: innovation and creativity, leadership, replication, cost savings, increased efficiency, cooperation with others, and perseverance. Awards will be presented at the 2023 ISAC Annual Conference General Session on August 23 in Des Moines. Winners will also be recognized on the ISAC website and in a news release.

- ✓ **INNOVATION AND CREATIVITY**
- ✓ **LEADERSHIP**
- ✓ **REPLICATION**
- ✓ **COST SAVINGS**
- ✓ **EFFICIENCY**
- ✓ **COOPERATION**
- ✓ **PERSERVERANCE**

### NOMINATION FORM

- Attach a narrative of the program or individual (three page limit) Criteria and guidelines included on the next page.
- Return all nominations by June 1, 2023 (postmarked date) to:  
**Iowa State Association of Counties**  
**Attn: Jacy Ripperger**  
**5500 Westown Parkway, Suite 190**  
**West Des Moines, IA 50266**
- OR email your application form (containing all the information on the form below) to **jripperger@iowacounties.org**.

Please fill out each field completely:

Please indicate nomination type: Program  Individual

Name of program/individual: Story County Sheriff's Office Dive Team: Advanced Imaging and Robotics Initiative County or affiliate: Story county

Name of nominator: Lt. Gary Backous Title: Support Services Commander

Nominator's phone: 515-382-7457 (c) Nominator's email: gbackous@storycounty.iowa.gov  
515-460-2437 (c)



## STORY COUNTY SHERIFF'S OFFICE

Paul H. Fitzgerald, Sheriff



### Story County Sheriff's Office Dive Team: Advanced Imaging and Robotics Initiative

#### 1) Overview

Most Central Iowans remember the tragedy that occurred in Hamilton County in the spring of 2021, when a boat from the Iowa State University rowing team capsized on Little Wall Lake and two student-athletes drowned. As the primary dive team responding to that incident, the Story County Sheriff's Office Dive Team spent two days assisting and ultimately learned some very important lessons. The most important one was that more advanced tools were needed to safely and efficiently conduct similar operations in the future. That incident was the catalyst for the Story County Sheriff's Office Dive Team: Advanced Imaging and Robotics Initiative.

Public safety diving is a very dangerous operation, especially in the zero-visibility environment of most Iowa waterways. Imagine being blindfolded, tied to the end of a rope, and told to systematically search an area the size of a city block; knowing that if things went wrong you could drown. In order to keep public safety divers safe, the National Fire Protection Association (NFPA) developed safety standards (NFPA 1760) which limit the amount of time a diver can be underwater, the number of dives each of them are allowed to perform in a day, the depth they can operate at, the speed of moving water they can operate in, and mandates the type of equipment needed to safely operate in unsafe environments. Working under those restrictions, while safe, is very limiting to the locations divers can operate and the area that can be searched each day. As a result of this, dive search operations frequently last several days and leave some areas unable to be searched effectively.

#### 2) Upgraded Working Conditions

The Story County Sheriff's Office Dive Team: Advanced Imaging and Robotics Initiative consisted of acquiring and integrating into operations two state-of-the-art Livescope sonars, two GPS mapping monitors, and the only remote operated underwater robot in Iowa. This initiative was fully operational as of June, 2022. With this new equipment, the team is now able to safely and efficiently search very large areas for underwater targets from boats using the Livescope sonars and GPS mapping monitors. If a target is located from the boat, the team is able to send the remote operated vehicle (ROV) with its fully integrated sonar and 4K visual camera underwater to verify whether or not the target is something a diver should be sent underwater for. After a target is confirmed, then the team can send in divers to safely recover the victim and/or evidence. Using this operational model, the team is able to search more thoroughly and safely, only putting divers in harm's way after ensuring the scene is safe and the target is confirmed.

#### 3) Innovation

In June of 2022, the Story County Sheriff's Office purchased the only fully functioning underwater robotic vehicle in Iowa. The unit is [Deep Trekker Pivot Expert](#) with a [Blue Oculas M1200D multiband sonar](#), a 4K camera, flood lights, and a grabbing arm for assisting with recovery operations valued at nearly \$57,000. The benefits to this technology include improved officer safety, a faster response to water emergencies, the ability to search for longer periods of time and in areas that are not safe for divers. The ROV can also save the county money in the long run by reducing the length of time and amount of personnel needed at dive callouts.

- a. Officer Safety- by sending a robot underwater prior to diving, staff have more certainty about the environment and possible entanglement hazards they could encounter. Divers have support staff who are able to provide real-time over watch of the operations to ensure their safety. Divers can spend less time in the water or under the ice by knowing where they are going and what they are looking for, and in the worst-case-scenario, the built-in robotic arm on the ROV is able to assist with rescuing a trapped or unconscious diver.



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- b. Respond Faster- dive team personnel can immediately respond to a scene with minimal staff and begin search operations with the robot instead of waiting for active divers and equipment. NFPA 1760 requires a minimum of three active divers, all who have been medically screened, and who have all their safety equipment prior to diving. With this equipment, dive support staff are able to start searching with the ROV while divers are en route or still putting on equipment. In some instances, victims who have been submerged under ice have been known to survive up to an hour and could be rescued with a rapid response by first responders using an ROV.
- c. Better Searches and Cost Efficiency- the ROV has a 500' tether, a 1,000' depth rating, and two sets of batteries with several hours of operational life for each which allow for nearly continuous use. Unlike people, the ROV does not have safety protocols limiting how long it can be underwater, how many dives it can perform in a day, or the speed of the water it can operate in. Being able to search continuously will give families resolution sooner, as well as reduce the number of times the team will be at a callout for multiple days, saving the taxpayers money in the long run as a large-scale dive response can cost thousands of dollars a day in overtime alone.

#### 4) Intergovernmental Cooperation

In July 2022, one week after the Story County Sheriff's Office Dive Team acquired the ROV, the team was called to assist the Dallas County Sheriff's Office with a drowning near Van Meter. The dive team was able to utilize both the ROV and the imaging sonars to safely search in very dangerous water conditions. They were also called by the Marshall County Sheriff's Office to assist with locating a stolen vehicle in the water. The ROV was able to locate the vehicle, confirm the license plate, and ensure there was no one inside without putting a diver in the water. This equipment has also been used to help keep participants safe at community events such as the Ames Triathlon and Great Ames Adventure Race.







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In September of 2022, members of the dive team traveled to the [Reveille Proving Grounds](#) in Burnett, TX to assist the [National Institute of Standards and Technology](#) (NIST) develop and validate standard test methods for aquatic robotic systems. The team was able to test their equipment against established baseline operational standards, as well as help develop underwater test methods to improve the technology and ultimately help first responders from around the world do their job safer and more efficiently by pushing the limits of this type of equipment.



### 5) Conclusion

The Story County Sheriff's Office: Advanced Imaging and Robotics Initiative is a new service that not only benefits the residents of Story County, but has promoted intergovernmental cooperation for agencies throughout Central Iowa as well as the federal government. It has upgraded the working conditions for staff by making one of the most dangerous public safety jobs much safer and more efficient. By being an early-adopter of this technology, the Story County Sheriff's Office has set the standard for innovation and what other counties can do for the betterment of first responders as well as the citizens they protect. The Advanced Imaging and Robotics Initiative is an example of excellence in action.