

# Underwater Eye

## New Small Submersible Robotic Camera to Aid in Search and Rescues

Village Public Safety Officer First Sgt. John Pleasant stood at the edge of a shallow pool, looking down at the two submerged remote operating vehicles, or ROVs as they're called, as they picked up golf balls and tried dropping them into the open end of a PVC pipe propped up on the bottom. On the other side of the pool, Alaska State Trooper Keenan Mulvaney was at the controls, looking at a video feed from the front of the ROV holding a golf ball clasped in the vehicle's attached claw. After several unsuccessful attempts, he slowly and as delicately as he could for someone just learning to use the unfamiliar remote control, maneuvered the ROV into the right spot and released the golf ball into the hole. At that point Pleasant raised his hands in the familiar football touchdown signal to indicate success.

[Click on photo to view underwater videos of the pool and lake training](#)



While the exercise was a lot of fun, it served as an important training lesson for those learning how to operate a new tool to aid in search and rescues and body recoveries in Alaska.

It was also an exercise in patience.

"They're learning good hand and eye coordination and gentle use of the controls," said ROV training instructor and consultant Dave Phillips, who is also an undersheriff for the St. Louis County Sheriff's Office in northern Minnesota. "These are powerful and expensive items and we don't just want to push forward on the joystick."

The Kodiak Area Native Association, one of the 10 grantees that employ Village Public Safety Officers, recently purchased the equipment. Recognizing the need statewide, through its partnership with the Alaska Department of Public Safety and the VPSO Program, KANA gave the ROV to the VPSO program to be based in Anchorage with the intent to deploy to other parts of the state when the need arises. In order to do this, a handful of VPSOs from different regions in Alaska and Bethel-based Mulvaney, went through the training in Anchorage Sept. 24-25. That way, a VPSO can be tasked to use the ROV in his or her region. The ROVs will

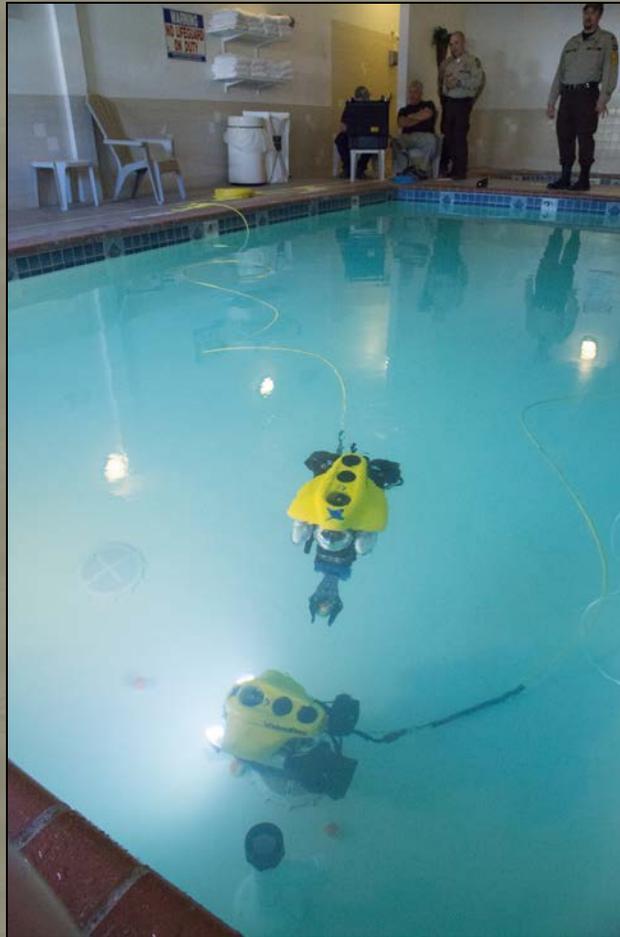
A remote operating vehicle makes its way back to the boat during a search for a missing boater near Napaskiak on Sept. 26. After going through training on the ROV earlier that week, Alaska State Trooper Keenan Mulvaney and instructor Dave Phillips joined the search of the Kuskokwim River.



Kodiak Area Native Association purchased a submersible motorized camera that includes both the sonar attachment (in the middle) and claw manipulator for use in search and rescues statewide.

come in handy especially in remote areas where underwater divers are not available to search murky rivers looking for lost persons, bringing closure for families of the missing loved ones.

“We’re very thankful for the partnership of all of our Associations that administer the VPSO program statewide and for the Kodiak Area Native Association’s leadership for recognizing the need and the benefits that this unique piece of equipment could provide all across Alaska,” said AST Capt. Andrew Merrill, VPSO Program Commander. “The ability to utilize this tool in communities all around the state by having VPSOs and Troopers in those locations trained to respond and deploy it will enhance the ability to provide increased services during



ROV instructor Dave Phillips, VPSO Cameron Huff, VPSO First Sgt. Jason Creasey (far right), watch as Alaska State Troopers Keenan Mulvaney (far left) maneuver one of the submerged ROVs.

search and rescue efforts in locating missing family members.”

The most noticeable part of this VideoRay ROV kit is the bright yellow float block that provides buoyancy and the two rear thrusters that with the smaller thruster on top, are used to move the ROV in the water. A camera sits inside a glass dome on the



Village Public Safety Officer Cameron Huff, a Tanana Chiefs Conference employee working in McGrath, uses the video feed and video game controller to maneuver the submerged ROV in a hotel pool. The bottom screen has the sonar feed to help navigate the pool waters.

front and is flanked by a starboard and port domed light. Also part of the kit is a topside control unit with two computer screens showing both live color video and sonar feeds. A tether connects the ROV and control unit for communication, video and power. With this model, a claw manipulator attachment is used to grip objects for retrieval. It also came with two controllers – the standard VideoRay controller box with joystick and a version that looks more like a video game controller. The ROV unit weighs roughly 20 to 27 pounds with all of the attachments mounted beneath the main motorized component. The system can be hooked up to a small generator, standard power outlet, marine battery with inverter or even car battery as was used during the training sessions on Jewel and Taku lakes in South Anchorage. The system can be easily



From left to right, VPSO First Sgt. Jason Creasey, ROV instructor Dave Phillips, Trooper Keenan Mulvaney, VPSO Matt Sperl, VPSO Roy Larson, VPSO Sgt. Winfred Olanna Jr., and VPSO First Sgt. John Pleasant learn how to take a part and maintain the ROV unit.

set up and deployed within 10 minutes and can operate to a water depth of up to 1,000 feet. Depending on the ROV's capabilities and attachments, the VideoRays cost anywhere from \$90,000 to \$120,000.

After the two days of training, Phillips and Mulvaney took the new [VideoRay Pro 4](#) model ROVs to Southwestern Alaska and joined the search for a missing boater on the Kuskokwim River. They also utilized the ROV that Phillips brings with him to assist in training. The search of the river proved fruitless in finding any sign of the missing boater, but it eliminated search areas. Plus, Mulvaney said the experience was invaluable in furthering his skills using the equipment, especially testing it in murky river waters instead of a pool or a calm, clear lake. Mulvaney had to compensate for the



From left to right, VPSO Matt Sperl, VPSO Cameron Huff, VPSO First Sgt. John Pleasant, Trooper Keenan Mulvaney, First Sgt. Jason Creasey and VPSO Roy Larson watch as Mulvaney tries his hand at operating the ROV at Jewell Lake.

river current and rely solely on the sonar because of the lack of visibility in the water. The forward looking [sonar](#) is an acoustic tool that sends out sound waves that bounce off of objects in the water, using the echo to measure and map objects. The sonar covers a 130 degree area in front of the ROV for a distance of over 300 feet.

Phillips said with the sonar they were able to observe many different things on the bottom of the river during the search such as ripples in the sand, two boat propellers, tree branches, drag marks left by bars used in the search, stumps and other objects. The sonar can also give precise distances between objects. This measurement can then be used when the visibility improves to allow the ROV to visually locate the object using the video camera mounted in a glass dome at the



Brevig Mission VPSO Sgt. Winfred Olanna Jr. pulls the ROV from the water during training at Jewell Lake in Anchorage on Sept. 24.

front of the unit. Once an object or person is located the claw attachment can be used to hook on to and retrieve the object by reeling in the ROV using the tether. This was how another VideoRay consultant used an ROV to retrieve a body from the Kuskokwim River in January.

ROVs are used in a variety of tasks from commercial driving, science and research and the offshore industry. The ROV Phillips brought to train the group on had previously been used to navigate sewers in Hong Kong to search for the body of a sewage worker.

However, Troopers and VPSOs intend to use it primarily as a search and rescue tool, bringing much needed closure to families with missing loved ones. ■