OCTOBER 2018 | ISSUE 1

SOUND METRICS

ARIS in Action Newsletter

SEE WHAT OTHERS CAN'T!

Stay informed on the most current events. Read about customer success stories, and discover answers to questions about Sound Metrics' sonar technology.

CONTENT

CUSTOMER STORIES:

NEWS:

EVENTS: Coming soon!

SEE WHAT CUSTOMERS ARE SAYING:

NAVIGATING THE DARK WITH ARIS

Dutch National Police, Special Search Team

The Netherlands, while beautiful, is a very flat country preserved by an elaborate drainage system made up of dikes and canals. With only about 50 percent of lands exceeding one meter above sea level, the country is highly susceptible to flooding and many individuals are often lost to the sea.

The responsibility of recovering missing persons, who either end up in one of the many canals by accident or misfortune, lies in the hands of the Dutch National Police's Special Search Team.

In a recent interview with one of the Senior Team Members on the force, Sound Metrics is given insight into how ARIS Explorer 3000 is being used to aid in the search and recovery of drowning victims, helping to bring closure to many families.

The Special Search Team has been using the ARIS Explorer for the last four years now on roughly half of the 70-100 cases faced with each year.

Originally, the Dutch National Police purchased the ARIS Explorer to be mounted on an ROV.

"We use the divers for recovery, not for search," the Senior Team Member specifies. However, ROVs can be problematic. "A lot of situations, you can't use the ROV, because there is too much current." They often get knocked about and can't access the edges of canals, where many objects get lodged.

"So all these places that are difficult to reach," the Senior Team Member continues, "we use the ARIS now."

Before ARIS Explorer, a side-scan would be used to detect a difference in material or texture in these problem areas. If anything was detected, a diver would be required to analyze further.

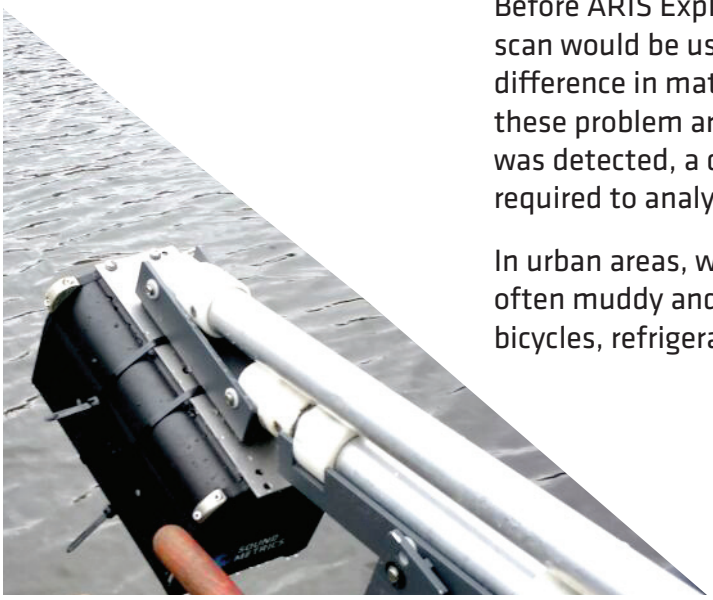
In urban areas, where canals are often muddy and full of discarded bicycles, refrigerators and the like, side-scan detection requires the user to have experience deciphering one object from the next.

The high frequency imagery of the ARIS Explorer was a huge improvement from side-scan, the Senior Team Member mentions. "That really makes the difference, cause then you're sure."

The team soon realized that by mounting the ARIS Explorer to a pole, they could easily scan the corners and edges of a canal instead of using side-scan.

"It helps us get to areas we couldn't before," the Senior Team Member mentions when discussing the pole mount. They apply the same concept when using the ARIS Explorer on a boat.

Once a victim is identified using the ARIS Explorer, divers are then sent in for recovery. However, since



90 percent of the canals offer zero visibility, divers often swim blind and have to feel their way around the darkness.

Using the ARIScope software on a laptop, the team can monitor the data being transmitted by the ARIS Explorer from the boat then communicate the information to the diver.

"The image is unbelievable," the Senior Team Member mentions. "I can see everything!"

With the clarity of the images, divers can spend less time in the water feeling blindly and more time recovering the missing.

"THAT REALLY MAKES THE DIFFERENCE, CAUSE THEN YOU'RE SURE."

Photos:
ARIS Explorer 3000 mounted to boat

"OH WOW! THIS CAN SEE THROUGH THAT?

THE MAD RIVER BIOLOGIST

Michael D. Sparkman
California Department of Fish & Wildlife

In Northern California lies the Mad River, stretching 113 miles to the Pacific Ocean. The large streams and heavy water flow create the perfect environment for migrating steelhead and salmon but often cause problems for weirs.

Michael D. Sparkman, a Research and Monitoring Biologist for the California Department of Fish and Wildlife (CDFW), says, "We've never known how many fish have run up these rivers." That is until he discovered a new way to monitor and count fish from a friend at the Alaska Department of Fish and Game (ADFG).

In Alaska, Sparkman and his friend worked in the turbid waters of Copper River, and when Sparkman first saw the DIDSON at work he said, "Oh wow! This can see through that? This is like a godsend. I've been waiting for something like this."

"I was really excited about this technology, because weirs just blow out," Sparkman explains further when discussing the DIDSON sonar technology. Now, "we use [the ARIS Explorer and DIDSON] to count returning salmon and steelhead."

Sparkman mentions in his latest study, "Sonar Estimation of Adult Steelhead: Various Methods to Account for Kelts in Determining Total Escapement," that he chose to use Sound Metrics' sonar technology over weirs, because they can operate in larger streams and rivers as well as in higher flows. Sonars are also "more cost effective than weirs over time" and don't back up fish.

Thanks to Federal funding, California Department of Fish and Wildlife was able to purchase multiple DIDSON and ARIS systems due to the low population counts and steelhead being listed as a "threatened" species by the United States Environmental Protection Agency (EPA).

Over the years, Sparkman has used ARIS Explorer and its predecessor DIDSON in a number of research studies – his latest of which he presented at the 2018 Pacific Coast Steelhead Management Meeting.

The study accounts for the downstream migration of kelts and milling fish in the Mad River over the course of each season. According to Sparkman, the stream can get quite murky from the particles that come from the

I'VE BEEN WAITING FOR SOMETHING LIKE THIS."

hillside, but the ARIS Explorer has no trouble seeing through it.

"We actually use a concentrator lens on our sonar," Sparkman mentions. "That gives us a little bit of a better image," especially in the knee-deep water.

A concentrator lens allows beams to go farther with less interference from surface and bottom reverberation. It is ideally used for shallow water tasks like Sparkman's observation of the migrating salmon and steelhead.

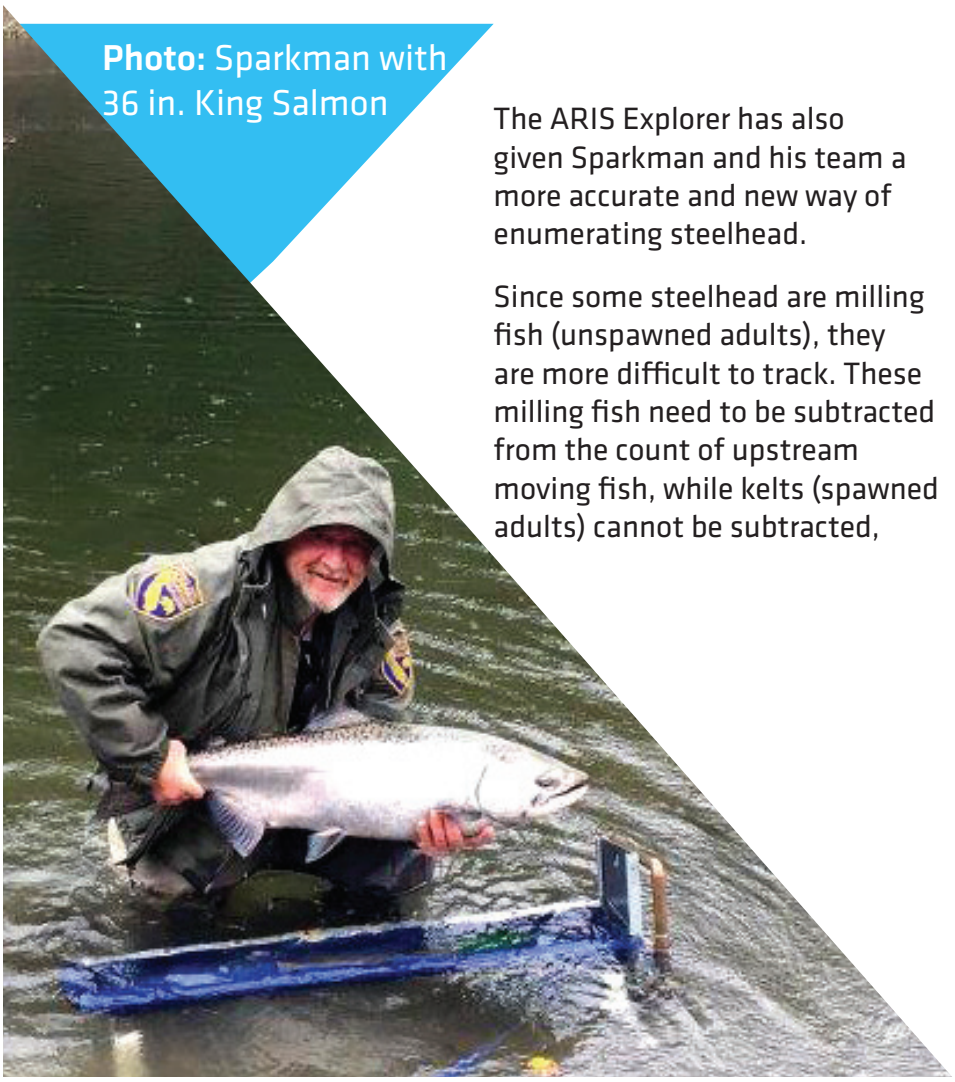


Photo: Sparkman with 36 in. King Salmon

The ARIS Explorer has also given Sparkman and his team a more accurate and new way of enumerating steelhead.

Since some steelhead are milling fish (unspawned adults), they are more difficult to track. These milling fish need to be subtracted from the count of upstream moving fish, while kelts (spawned adults) cannot be subtracted, before the number of migrating steelhead can be calculated.

"We wouldn't know the information we now know without the sonar," Sparkman states. "The greatest discovery is coming up with a method to deal with steelhead."

In the Mad River, Sparkman and his team ran the ARIS Explorer year-round, checking the sonar every day to get the count.

"What we do is manually count fish by playing the video [of ARIS footage] in our office," Sparkman instructs. "We count fish for the first twenty minutes of each hour

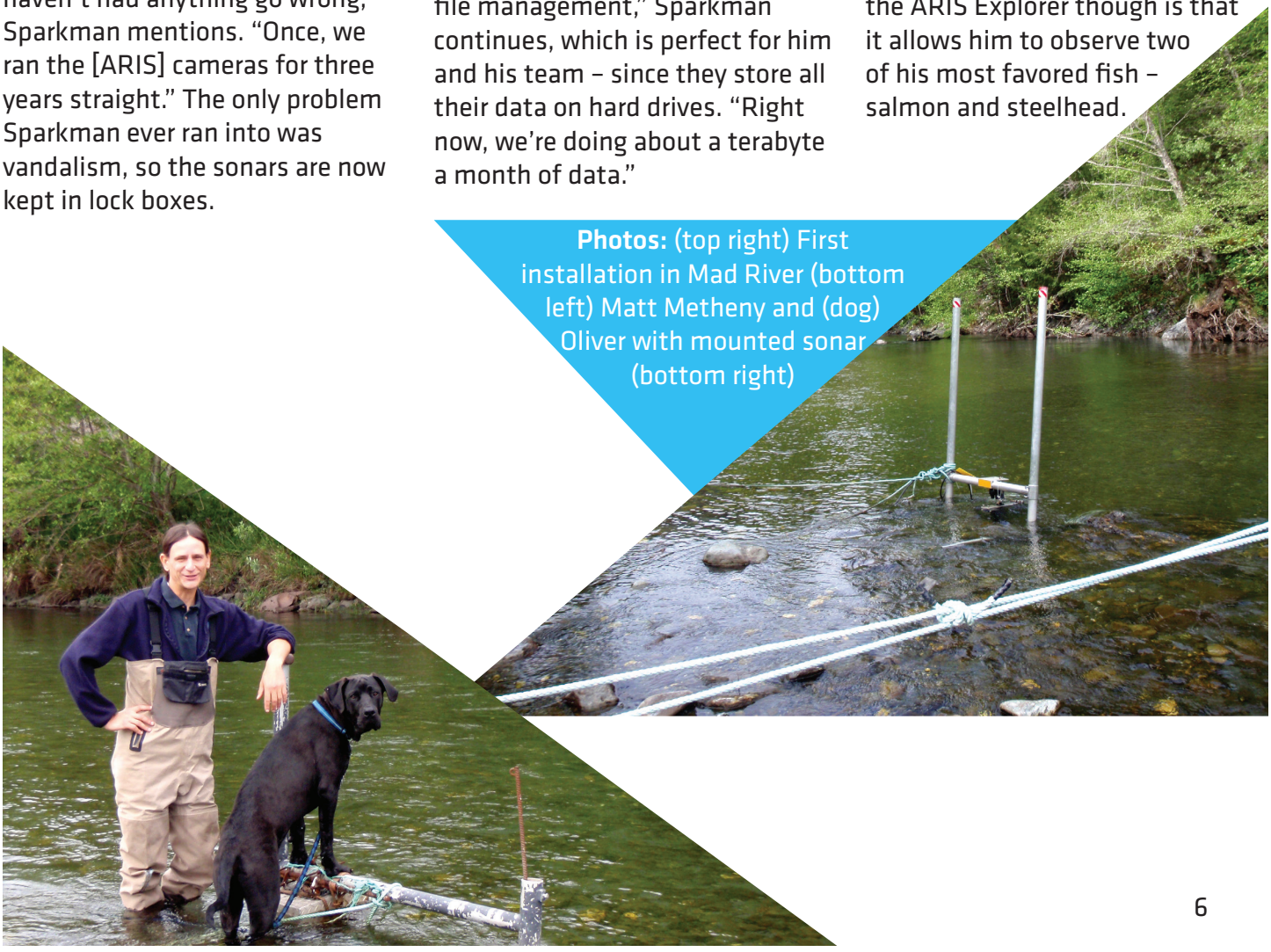
then multiply by three. We also measure each fish we count. We have two size categories, forty-one centimeters to fifty-four centimeters and greater than fifty-four centimeters."

On a slow day, which would be about 100 fish per a day, Sparkman and his team will spend about three to four hours counting fish. On a busier day, they'll get four times as many fish, which will take longer to count. One day, he even had 1700 fish swim by the ARIS while in the river.

Overall, Sparkman likes the small design of the ARIS, and its durability. "With the ARIS, we haven't had anything go wrong," Sparkman mentions. "Once, we ran the [ARIS] cameras for three years straight." The only problem Sparkman ever ran into was vandalism, so the sonars are now kept in lock boxes.

"The ARIS is also better for file management," Sparkman continues, which is perfect for him and his team – since they store all their data on hard drives. "Right now, we're doing about a terabyte a month of data."

What Sparkman truly loves about the ARIS Explorer though is that it allows him to observe two of his most favored fish – salmon and steelhead.



Photos: (top right) First installation in Mad River (bottom left) Matt Metheny and (dog) Oliver with mounted sonar (bottom right)

A SAFE SOLUTION TO UNDERWATER INSPECTIONS

Mark Klein (mklein@sthe.com)
S.T. Hudson Engineers Inc.

For over thirty years, Mark Klein has worked as Project Manager at S.T. Hudson Engineers Inc. in New Jersey, developing scope, writing proposals and conducting inspections.

As a consultant, he and his team work with a wide range of clientele, from Industrial and Municipal owners of docks and water supply systems to supporting contractors in underwater and marine related construction and dredging projects.

The Hudson Engineers' team often conducts work in low visibility waters. In a recent interview with Sound Metrics, Klein mentions that they are faced with "challenging situations that require unique or cost-effective solutions to improve data collection and provide safety."

"[We help] supporting owners and contractors to better understand situations that are not easily reached by traditional methods," Klein continues. "The ARIS [Explorer] 3000 provides reliable and robust solutions to help communicate real time conditions."

However, sonar technology and other tools are not the traditional choice during an inspection.

"Ninety percent of the time, these tools, the ARIS especially, are not specified or people aren't asking to use it," Klein states. "They want to do something else. When we see it's an easy or a good solution, it takes a lot of effort to convince people to allow us to use it. That's quite an uphill battle for me."

Klein likes the ARIS Explorer 3000, because it's easy to use and offers real time images. He goes on to state, "It's one of my favorite tools to communicate underwater conditions."

As a certified Hydrographer, Civil Engineer and Commercial Hard Hat Diver, Klein has a well-rounded understanding of the traditional methods used in an inspection, and he and his team are always searching for ways to make the process safer and more cost effective.

"We've established over the years a tiered approach," Klein says. "Sonar doesn't replace divers in traditional methods, but truly enhances it."

Their first-tier solution is to scan using the ARIS Explorer 3000. "Paired with other tools, it typically makes sonar data easily understandable for most clients," Klein specifies. "The second tier would be to put divers in for

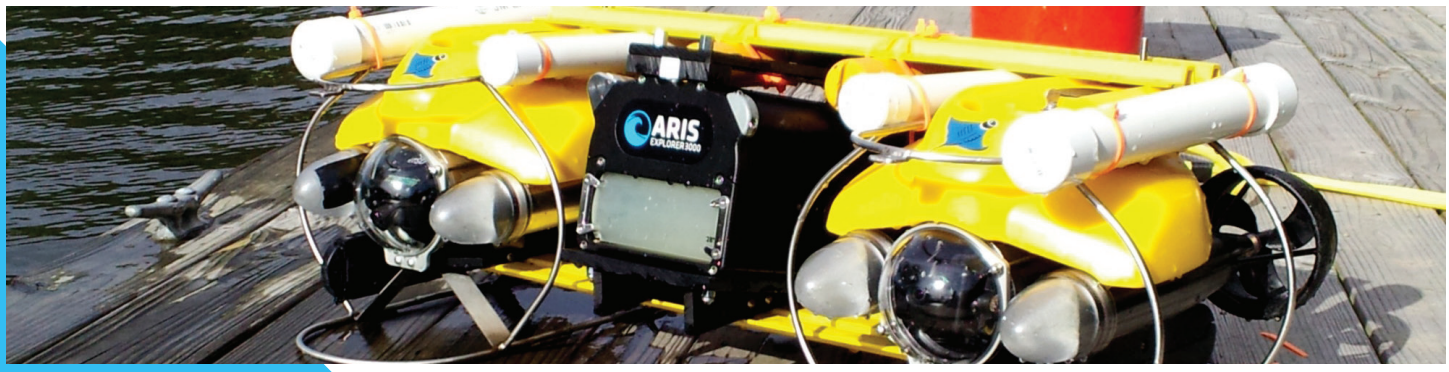


Photo: ARIS Explorer 3000 mounted to two ROVs

verification as needed."

In Klein's most recent assignment, he and his team completed a detailed structural inspection at a nuclear power plant using the ARIS Explorer (covering areas not previously inspected with pumps in service) and came across some impressive results.

"There's a requirement for a five-year structural inspection at every nuclear power plant or power plant, I believe, in the country," Klein says. "Everybody completes them by different methods."

Klein and his team were involved with the previous inspection five years ago, and with the new inspection were instructed to look at concrete and steel.

Some parts of the inspection are challenging because diver safety is always a main concern, and pumps are required to be shut down (which is very expensive), so Klein and his team decided to take a different approach.

With the pumps still running, Klein states, "We actually put the ARIS in, and we could look at the walls [and] the concrete."

They located several areas with anomalies, such as exposed rebar and cold joints, in parts were divers were unable to reach due to either currents or logistics.

"We were able to add reproducibility and reliability into inspections," Klein mentions. "Results were very impressive. We saved time [and] money, while improving safety and quality."

Due to the great results, Klein alludes that "guidelines are now being reviewed for national review by the Electrical Power Industry."

"IT'S ONE OF MY FAVORITE TOOLS TO COMMUNICATE UNDERWATER CONDITIONS."

NEWS

SOUND METRICS LAUNCHES LATEST ADDITION TO THE ARIS PRODUCT LINE

BELLEVUE, WA - Sound Metrics, a leading manufacturer for high-resolution, multi-beam imaging sonars, launched the company's latest model to the ARIS (Adaptive Resolution Imaging Sonar) product line at Oceanology International in London earlier this year. The new product addition, known as the ARIS Voyager 3000, is depth rated to 4000 meters.

Joe Burch, President of Sound Metrics, reports, "We actually sold two systems prior to the official product launch at OI in London last month, without any marketing or promotional efforts. That is something that has never happened to us before. We're very excited about the possibilities for ARIS Voyager," and so are the customers.

Following the favored trend in the ARIS product line up, the new ARIS Voyager 3000 is currently available with 3.0 MHz and 1.8 MHz operating frequencies.

The ARIS Voyager 3000 offers a sleek titanium design and delivers on what many of our customers have been asking for – the same high-resolution sonar imagery they have come to expect while using an ARIS but in a deep rated system.

The release of the new ARIS model opens up exciting new possibilities for deep sea exploration and underwater discovery.

Read all SMC Press Releases here: www.soundmetrics.com/News/Press

ROTATOR POSITION INDICATOR GIVES VISUAL FEEDBACK WITH V2.6.3 ARISCOPE SOFTWARE RELEASE

When connected to an ARIS mounted to an AR2 or AR3 rotator, the rotator position indicator (imaged below) will appear at the top of the status panel.

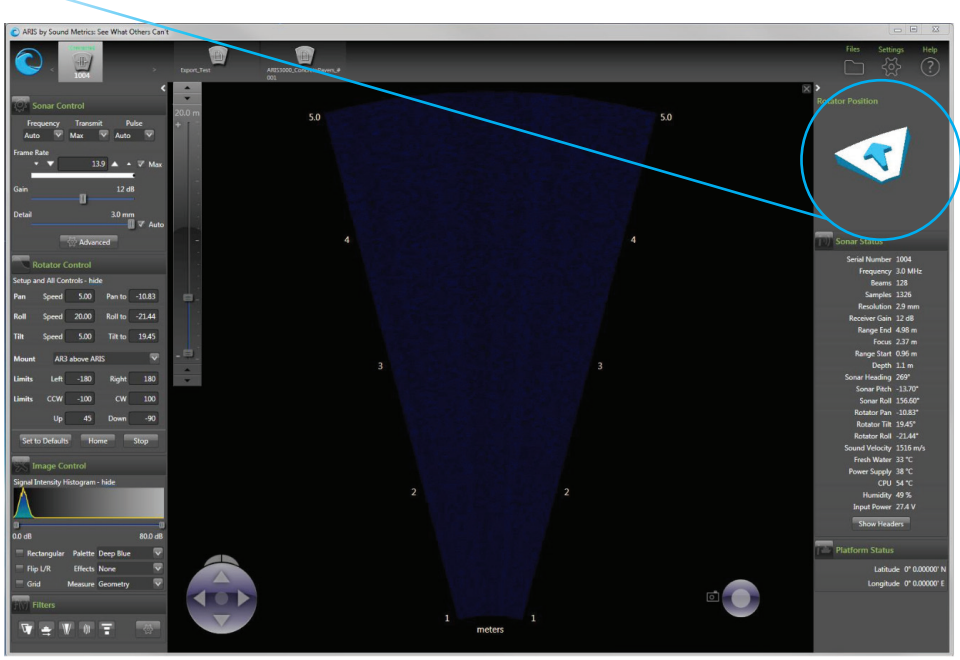
The indicator provides live visual feedback that enables more intuitive aiming of the sonar and an easier interpretation of the sonar image.

This indicator is also shown during file playback for image files recorded with a roator in the system.

Straight Position

Pan Left, Tilt Up, Roll CCW

Pan Right, Tilt Down



To Download:

- Step 1: Log in or create an account at soundmetrics.com
- Step 2: Once logged in, click download then select Customer
- Step 3: Under folders, choose Software then click ARIS

"The ARIS 3000 is truly a remarkable piece of equipment."

- M. Steiger Harris Corporation

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STORIES

SEE HOW OTHERS PUT THEIR ARIS TO ACTION!

Captured: ARIS on pole mount; Photo Credit: www.regio15.nl

Navigating the Dark with ARIS

Dutch National Police, Special Search Team

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Captured: ARIS Explorer 3000 mounted to two ROVs

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drowning victims in the Netherlands, helping to bring closure to many families.

Read More

Captured: Michael Sparkman with a 36 inch King Salmon in the Mad River

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Discover More

The Mad River Biologist

Michael D. Sparkman (California Department of Fish & Wildlife)

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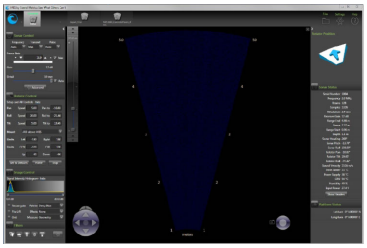
Read how ARIS has improved Michael Sparkman's research in calculating total escapement of kelt in the Mad River.

Learn More

NEWS

Check out what is new at Sound Metrics! Dive 4000 meters deep with Voyager. Monitor the position of your AR2 or AR3 with the latest ARIScope download, and get a close-up look at how ARIS is used for Dam Inspection in the below customer featured video!

ARIS Voyager Launch



v2.6.3 ARIScope Release

ARIS on YouTube

EVENTS

SMC WILL KEEP YOU POSTED ON EVENTS AS THEY COME UP THROUGHOUT THE YEAR!

SEE WHAT OUR CUSTOMERS ARE SAYING

"The ARIS 3000 is truly a remarkable piece of equipment."
-M. Steiger (Harris Corporation)

Share With Us

Have an interesting story to share or data you're excited about? Contact us by logging onto our **website** or send an email to **marketing@soundmetrics.com**!

For support, reach out to **support@soundmetrics.com**.

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