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SUBMERSIBLES & THE DEEP SEA

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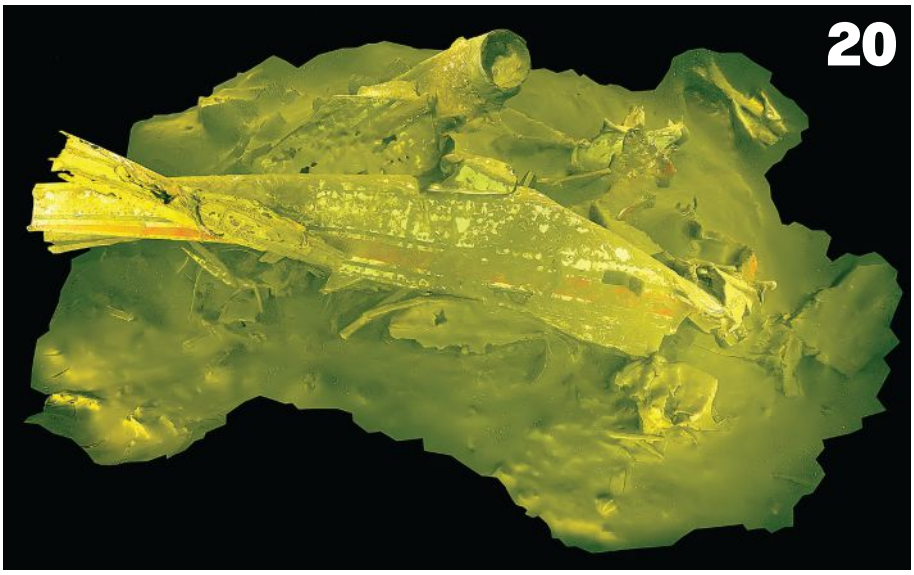
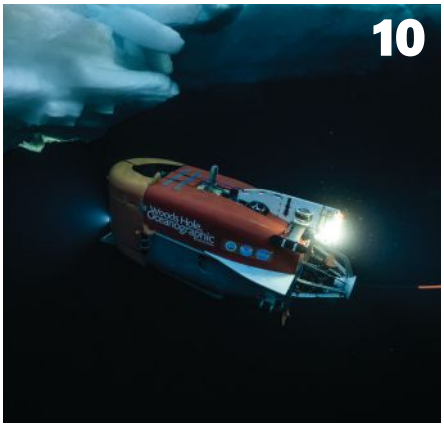


MONTHLY EXCLUSIVES



FRONTLINE

TAKE 5

ENERGY MARKETWATCH

CHECK THE TECH

EDITOR UPFRONT

We know more of distant celestial surfaces than the depths of our own planet's oceans, or so the adage goes. As captivating as this notion might seem, there is one broad category of vehicle steadily dispelling such fallacy: the fabled submersible.

Whether crewed or uncrewed, submersibles engineered to dive ever deeper—including to the deepest, darkest reaches of full ocean depth (11,000 m)—continue to accelerate our fundamental understanding of the Deep Sea.

In this edition of ON&T, *Submersibles & The Deep Sea*, we celebrate some of the ocean tech developers leading the charge. Our thanks this month go to Forum Energy Technologies, DeepSea Power & Light, Woods Hole Oceanographic Institution, EdgeTech, SEAmagine, Triton Submarines, Okeanus Science & Technology, Blueprint Subsea, and the World Submarine Organization.

Ed Keenan

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FRONTIERS

CONTINUUM

ON THE COVER

HOV Alvin and AUV Orpheus on R/V Atlantis during a June 2024 NSF and NOAA funded expedition investigating seeps along the Aleutian Margin. (Credit: WHOI)

MYSTERY SOLVED

Side scan sonar data helps discover lost aircraft N400CP

Garry Kozak
GK Consulting
EdgeTech
The Leader in Underwater Technology

> THE RESULTING IMAGES CLEARLY SHOWED A LARGE DEBRIS FIELD REPRESENTATIVE OF A JET AIRCRAFT CRASH, BUT AN ROV DIVE WAS NEEDED TO GET PHOTOGRAPHIC CONFIRMATION THAT THIS WAS INDEED N400CP.

On January 27, 1971, a team from Atlanta, Georgia, real estate firm—Cousins Properties—had a team working on an urban renewal project in Burlington, Vermont. On completion of their business, the team scheduled a departure from Burlington International Airport on their corporate Rockwell Jet 1121 Commander registration N400CP.

The jet took off at 7:52 pm, heading northwest before making a left turn towards Providence, Rhode Island. The weather was bitterly cold, with a ceiling of 1,500 feet scattered with visibility of 5 miles, and a temperature of -4 degrees F. The takeoff appeared normal. The control tower followed the jet's progress as it made the left turn over Lake Champlain. The last radar point showed the jet on a heading of 170 degrees magnetic; then, all contact was lost. No mayday or communication was ever received. The plane's last radar position was approximately seven to eight miles from the airport on a heading of 270 degrees magnetic from the airport radar.

THE SEARCH BEGINS

Search and rescue operations began immediately, first by air and then attempting to use a small submarine. With temperatures plummeting, the lake soon froze over, and the search was suspended until the following spring. During the ice melt, debris from the plane was found on Shelburne Point, suggesting the wreck may be west of that area. Undersea search specialists Ocean Systems Inc. of Reston, Virginia, was contracted to investigate an area to the south of Juniper Island and west of Queneska Island. After two weeks, they still had not found that plane. At least 17 similar search operations would be carried out over the following years, the latest in 2014.

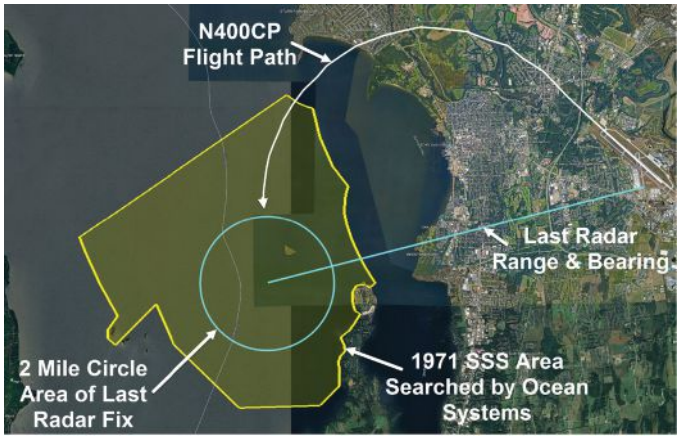
THE SEARCH CONTINUES

In 2014, a new search team arrived at Lake Champlain, and using the latest marine technology, an autonomous underwater vehicle (AUV) fitted with side scan sonar to perform the search, but again, there was no success. I had followed the story of the missing aircraft over the years and was convinced that critical details were being overlooked. Aware of side scan sonar data collected in 1997 to map archeological points of interest by Tom Manley of Middlebury College and Chris Sabick of the Lake Champlain Maritime Museum, I was able to scrutinize the survey results for any anomaly that could possibly unlock the mystery. Four suspicious anomalies were flagged.

FALSE ALARM

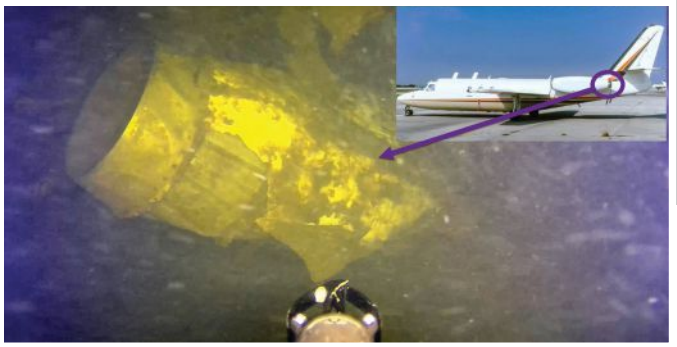
The project was put on hold until 2022, when I joined forces with Hans Hug of Sonar Search and Recovery in Exeter, NH, and his associate Bruce Stebbins from Billerica, MA. We conducted a remotely operated vehicle (ROV) dive to examine the first of the anomalies. It was not the plane.

N400CP at Burlington International Airport just before the disappearance. (Credit: Barbara Nikitas)



N400CP Flight Path and Area of Past Searches. (Credit: G. Kozak)

N400CP custom black and red color livery. (Credit: G. Kozak/T. McDonald)



CJ 610 engine wreckage. (Credit: G. Kozak/T. McDonald)

Then, in June 2023, Hug and I returned to the lake armed with a side scan sonar to relocate the other three anomalies. A subsequent ROV dive on July 6, 2023, showed shredded aluminum sheets with classic rivet holes, wing sections, and other plane parts. However, closer inspection showed stenciling on some of the aircraft parts, which suggested it was a military plane. The wreckage was later confirmed as a USAF Boeing model from the 1950s.

N400CP DISCOVERED

During the winter of 2023, I revisited the 1997 sonar and noticed another slight anomaly in approximately 200 feet of water West of Juniper Island, so it was flagged as a possible target of interest. On May 19, 2024, Hug and I returned to Lake Champlain to re-locate the target. Hug's high-resolution EdgeTech 4125i side scan sonar system was used because of its almost photographic capability. The resulting images clearly showed a large debris field representative of a jet aircraft crash, but an ROV dive was needed to get photographic confirmation that this was indeed N400CP.

ROV VIDEO CONFIRMATION

Tim McDonald of Marine Solutions, a marine contractor in Meredith, NH, joined the team to contribute his ROV and expertise. On May 25, 2024, the ROV was dropped to the lake floor, and the real-time video transmitted to the surface showed a broken plane fuselage, painted white with a red and black accent striping, the same custom paint scheme as N400CP.

Nearby were the remains of two turbine jet engines along with a broken wing. A section of the instrument panel was located along with wire bundles from the cockpit area. The video and pictures left no doubt that N400CP had finally been located and a 53-year-old mystery solved. Only video and pictures were recorded, and the wreck site was not disturbed in any way out of respect for the five people on board who lost their lives.

CLOSURE

The mystery of where the remains of the N400CP is finally known. The families of those lost were notified and were shocked to hear that the plane had been located and were very appreciative to know where their family members lay. Out of respect, the location will be kept confidential because it is a grave site.

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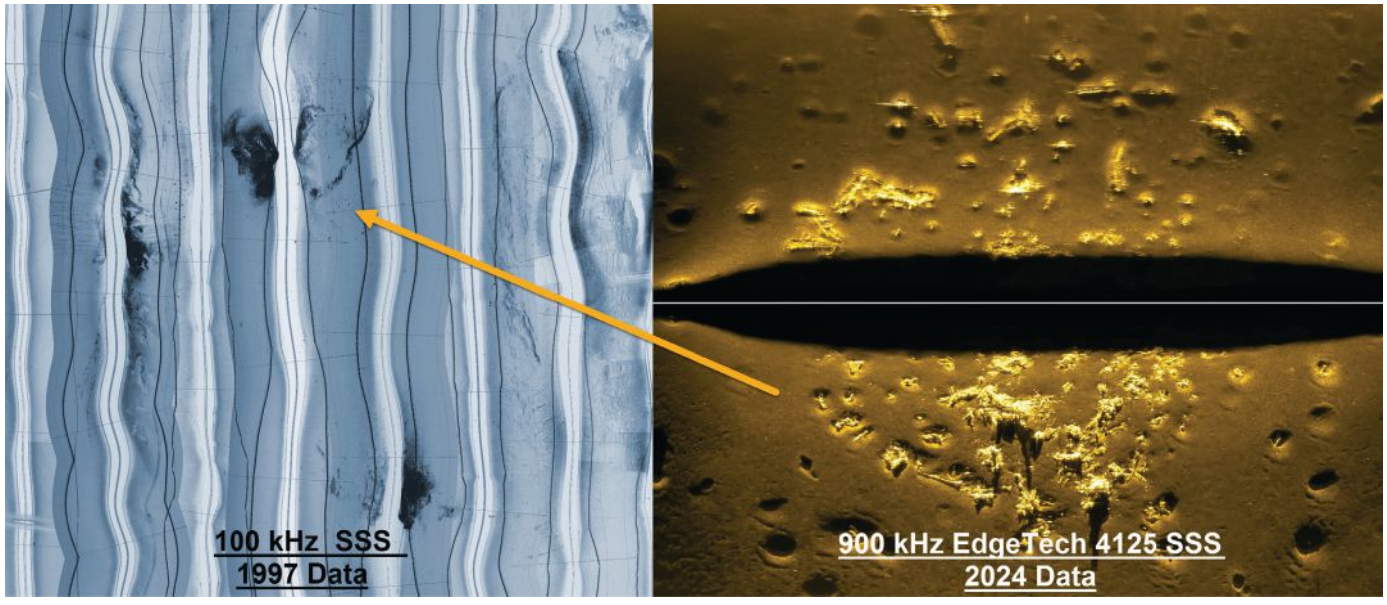

The original anomaly in 1997 data that lead to the crash site of N400CP. Wreckage confirmed with an EdgeTech 900 kHz SSS. (Credit: G. Kozak/H. Hug)