



After World War II ended, the Superfortress airplanes known as the B-29 took on many new jobs. No longer needed as bombers, many of these bombers were converted into specialized aircraft, performing the tasks of in-flight refueling stations, weather research and reconnaissance. On 21 July 1948, a specially-converted B-29 bomber took off from Muroc Air Force Base (now known as Edwards Air Force Base) in the US state of California, to cross the scorching Mohave Desert to Lake Mead in Nevada. Its mission was a top-secret project, conducting high-altitude flights while testing a new intercontinental ballistic missile guidance system named "Sun Tracker."

*Diving the*

# B-29

Text by Joel Silverstein  
Wreck photos by Cindy Shaw

Captain Robert Madison and his four crew members flew the Superfortress 270 miles east to Lake Mead. Once there, the pilot repeatedly climbed to altitudes as great as 35,000ft and immediately plunged back down towards the lake's surface before leveling out at a 100-300ft elevation. These were incredibly risky

and challenging maneuvers, but it was the only way to test the missile guidance system developed at the Applied Physics Laboratory at Johns Hopkins University.

On the last descent, the wind had picked up a little, and with the bright sun gleaming off the mirror surface of the lake, the captain lost his depth per-

ception. The B-29 skipped and hopped across the lake's surface at more than 230 miles per hour, ripping off three large engines. This harrowing crash landing had the plane traveling for more than three-quarters of a mile up the lake, before coming to its final stop. While the plane floated on the surface for a few

minutes, the five-man crew escaped into two small life rafts, before B-29 Serial No. 45-21847 sank to the black and cold bottom of Lake Mead.

## Secrecy of the crash

Due to the secrecy of the mission, there were no emergency support services

# Superfortress

*in Lake Mead*





wreck rap

Boeing B-29s of the 468th US Bombardment Group in action over Rangoon, Burma (Yangon, Myanmar), during WWII, 1945



US AIRFORCE / WIKIMEDIA COMMONS / PUBLIC DOMAIN

available in the event of a crash. The entire crew was picked up some six hours later by National Park Service (NPS) employees. Because this was a secret mission, Captain Madison and his team were instructed to keep the mission, the crash, and the general location of the sinking secret.

For more than half a century, the B-29 bomber rested quietly, more than 260ft below the surface in a remote location of the lake. No efforts were made to recover the plane or the technology it was carrying. In 1948, the deep-sea technology did not exist for salvage dives necessary to retrieve the aircraft. As with all vessels that sink in a national park, the B-29 became a cultural asset of the

United States even though they had no idea where its precise location was.

### Quiet discovery

During the next half century, the little town to the west, known as Las Vegas, boomed from under 30,000 people to over 600,000 residents, with more than 39 million annual visitors. Behind the glitter and glamor of Las Vegas, the lost B-29 remained on the minds of the budding technical diving community of the city. Quietly, and without much disclosure to

other than a private team, diver and underwater researcher Gregg Mikolasek located the B-29 bomber using side-scan sonar equipment in 2001.

The details of the first dives on the plane have remained something of a deep secret, as well as the names of the divers who have dived it. Embroiled in litigation, the location and ultimate ownership of the B-29 bomber remained with the NPS, which is the steward of this historic site.

### Government survey

In 2003, the National Park Service Submerged Cultural Resources (SCR) underwater archaeological team conducted an extensive dive operation on the B-29. Their activity mapped, photographed and detailed every aspect of the sunken Superfortress, which now lay in 180ft of water. This formidable task required setting out a four-point mooring system, so the dive platform barge could suspend an underwater "chandelier" to light up the site, and to manage the small ROV that was used to recover video from inside the tiny compartments of the plane.

The agency's work produced an extensive management and educational document to aid in the conservation and preservation of this historic site. During the operations, my wreck diving colleagues,

Richie Kohler and John Chatterton, produced an episode for the Discovery Channel's *Deep Sea Detectives* program. This B-29 is the only B-29 in existence that is underwater.

After the NPS documented the site and developed a management plan, the next step was to develop a method for the general public to visit the site. Unlike some other resources in a park, underwater sites present a host of challenges for both the park and the public. For the B-29, some of the problems included its remote location, which was far from any services; the depth of the water, which was beyond established recreational dive limits; and the fragile state of the plane itself.

To open the site with unrestricted access would inevitably destroy the thin fuselage and risk removal of artifacts. The development of a management process took several years with additional research dives to further evaluate the plane's condition. Finally, in late 2006, the NPS approved a system that would allow for "Technical Guided Dives" on the B-29. But who in the southwestern region could or would take this on?



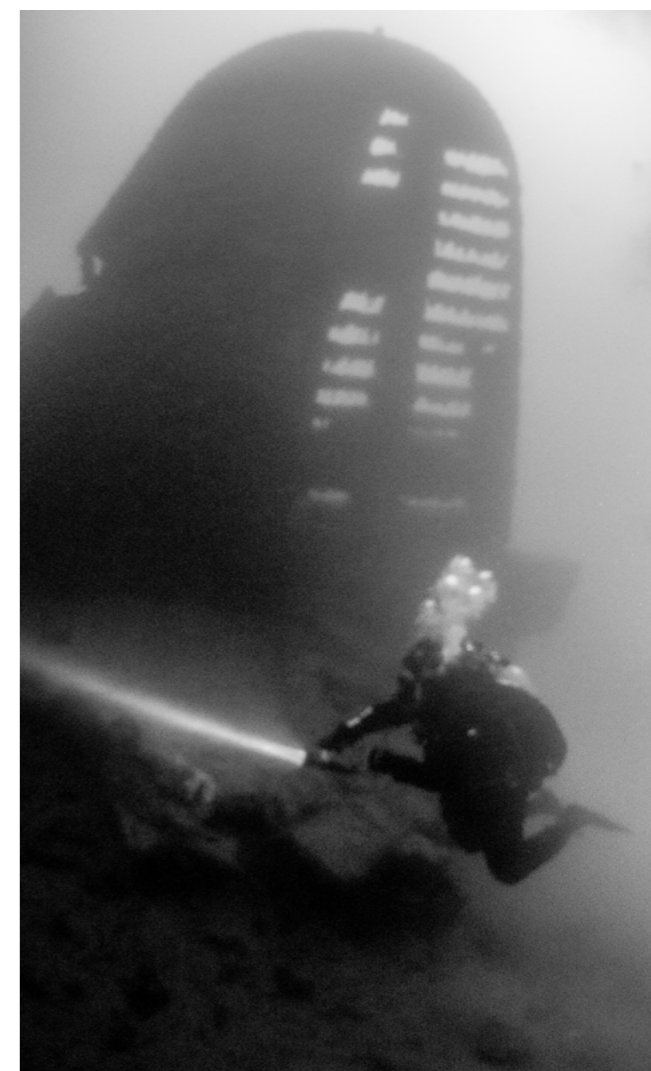
Aerial view of the 247 square miles of Lake Mead National Recreation Area straddling Arizona and Nevada, USA

B-29

DOC SEARLS / WIKIMEDIA COMMONS / CC BY 2.0



Silverstein examining the tail gunners outlet

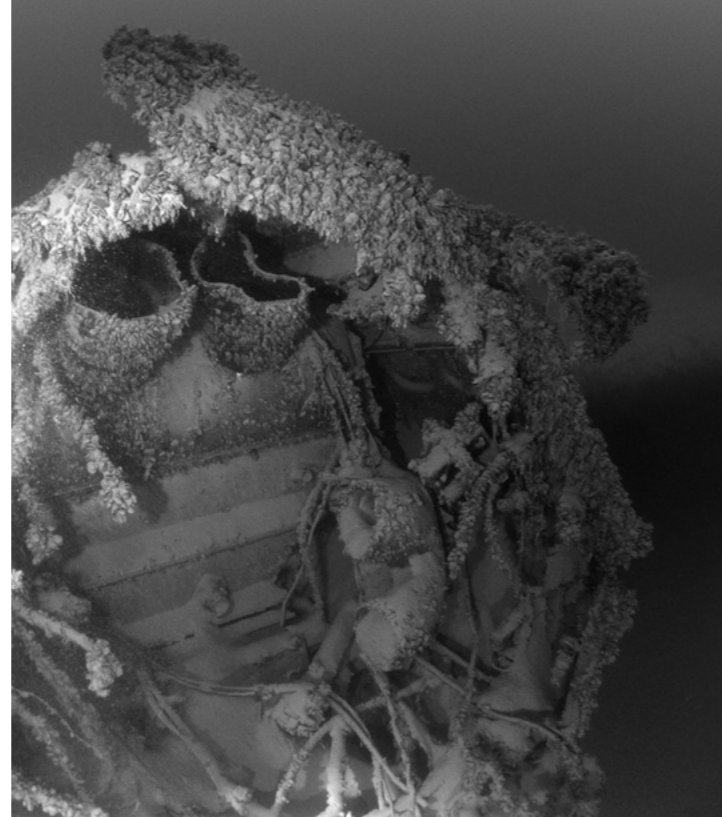


Silverstein exploring the port side of the tail wing





No. 3 engine nacelle (right), with its labyrinth of wires and hoses exposed; Divers Patrick Smith and Joel Silverstein examine the remaining No. 1 engine and propeller (far right); Silverstein illuminates the No. 3 engine on the starboard side of the plane (center).



### Taking on the challenge

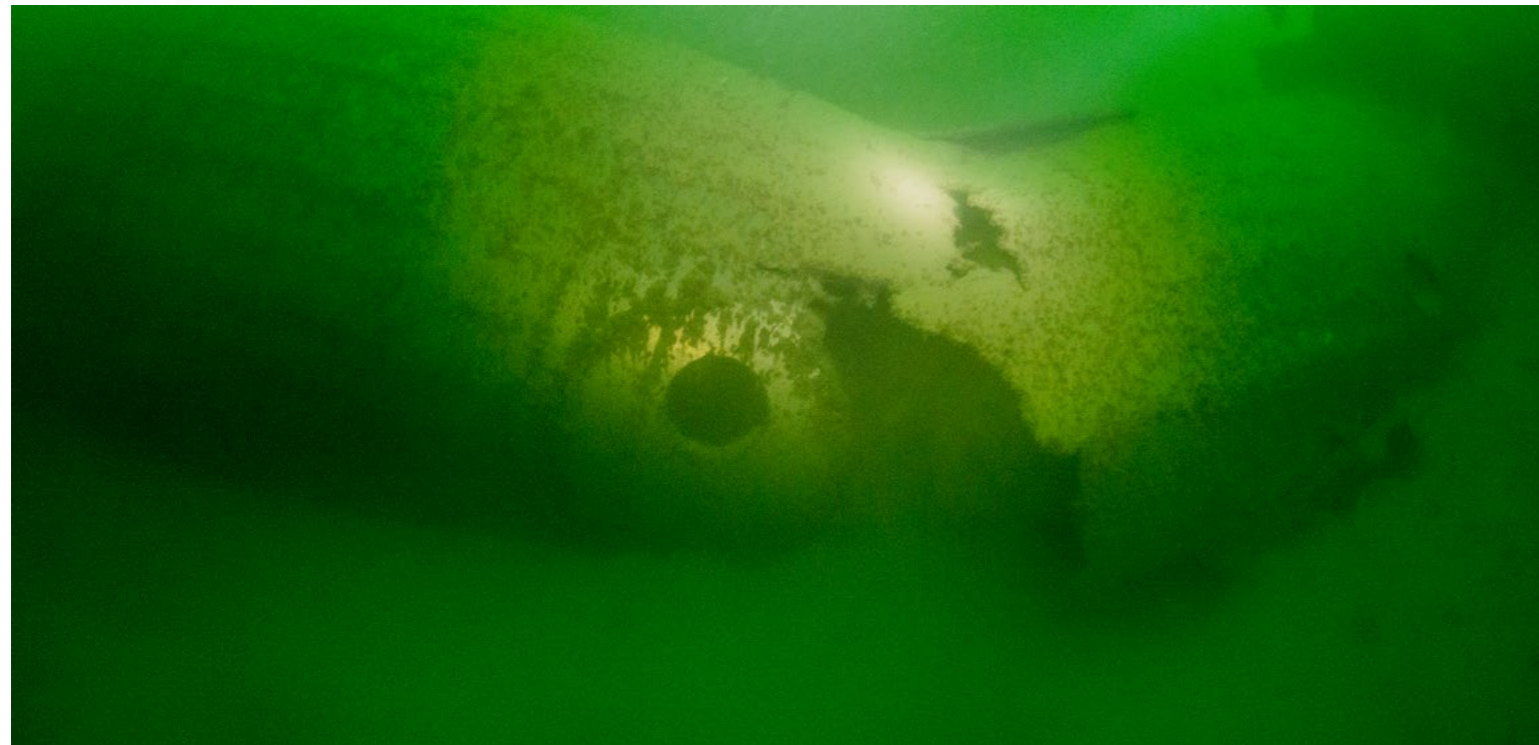
Through our company, Scuba Training and Technology Inc. based in Lake Havasu City, Arizona, Captain Kathy Weydig and I took on the challenge. We have extensive experience with managing shipwreck dives in remote locations as well as working on protected wreck sites. For almost two decades, we have run technical diving expeditions to the wrecks of the *Andrea Doria*, *USS Monitor* and other wrecks that require safety and precision operations. With a nearly 80-page document detailing our experience and activities plan, we were awarded the first Commercial Use Authorization (CUA) to conduct guided technical dives on the bomber.

The first year had operational complexities that were not only stressful, but costly. The initial CUA limited access to no more than four single dives in a week, and 50 dives in total over six months. After the initial trial, the NPS would either extend or suspend operations for the following year.

### Diving conditions

In 2007, due to the drought in the southwestern region, the B-29 was resting in approximately 165ft of water. These depths required the use of trimix to eliminate inert gas

narcosis. Divers would be at a 1,100ft elevation; water temperatures on the lake bottom were in the low 50s F; and the lake had a moon-dust bottom that could easily silt up, not dissipating for days. Some other challenges included the fact that the site was 35 miles from the nearest marina and winds could reach up to 20 knots!



Port side of cracked fuselage where the B-29 settled on the lake bottom



B-29



### Diving the wreck

A typical dive consisted of a well-trained guide and two dive clients. Divers descended on the mooring line to the bottom of the lake where they met the 12,000lb mooring block. From here, divers traversed approximately 85ft along a line to the second moor-

ing block at the stern of the B-29.

The tour followed around the port side of the fuselage, then around the port wing, examining the engines, propeller and landing gear. Next came the nose and the pilot's areas. This brought one around to the starboard side of the plane.

The starboard wing was buried in silt, so exploring this area was not necessary. But divers could continue along the starboard fuselage, examining the dome of the "Sun Tracker" on the way to the tail section, which rose over 30ft. After the tail section and tail gunners port were viewed, divers jumped back onto the guide line and back to the mooring cable to make their ascent, resulting in a total run-time of about an hour.

### Economic downturn and waning interest

While the first year on the bomber was successful, the economy in 2008 took a serious downturn, and it was exceedingly difficult to get divers to travel to Las Vegas to dive this special site. Over the next

few years, the B-29 rested on the lake bottom without any activity, other than some inspection dives by the NPS. As the B-29 receded into its secret location, with few seeking to dive it, so did the water level of Lake Mead. As a quagga mussel infestation quietly covered the B-29, the extreme drought pushed the water level of Lake Mead to an all-time low, dropping it another 40ft.

### Re-opening the site

During the eight years since our team dived the B-29, the economy recovered. Divers were now traveling to extreme and remote sites again. But what about the B-29?

It was mid-December 2015 when a text message came from FOX10 news anchor Troy Hayden. His message: "We're doing this, right?" With a puzzled look, I saw an email from the NPS simultaneously appear on my screen. The NPS wanted to reinstate dives on the B-29 again!

Without hesitation, I called our CUA coordinator at the NPS, and they were thrilled that we would





Historical photo of B-29 during take-off



US AIRFORCE / PUBLIC DOMAIN

be crazy enough to conduct dives to the site again. However, we still needed to go through the entire application process again. In another call to Troy, he said he wanted to be the first to do a feature story on the secret B-29 bomber in Lake Mead. But now we needed a permit, so we submitted our paperwork, and we waited. Because the NPS was seeking two operators, the deadline for applications was extended. And so, the wait continued. It was now February 2015, and we continued to wait. Then finally, towards the end of March, we were notified that we were issued

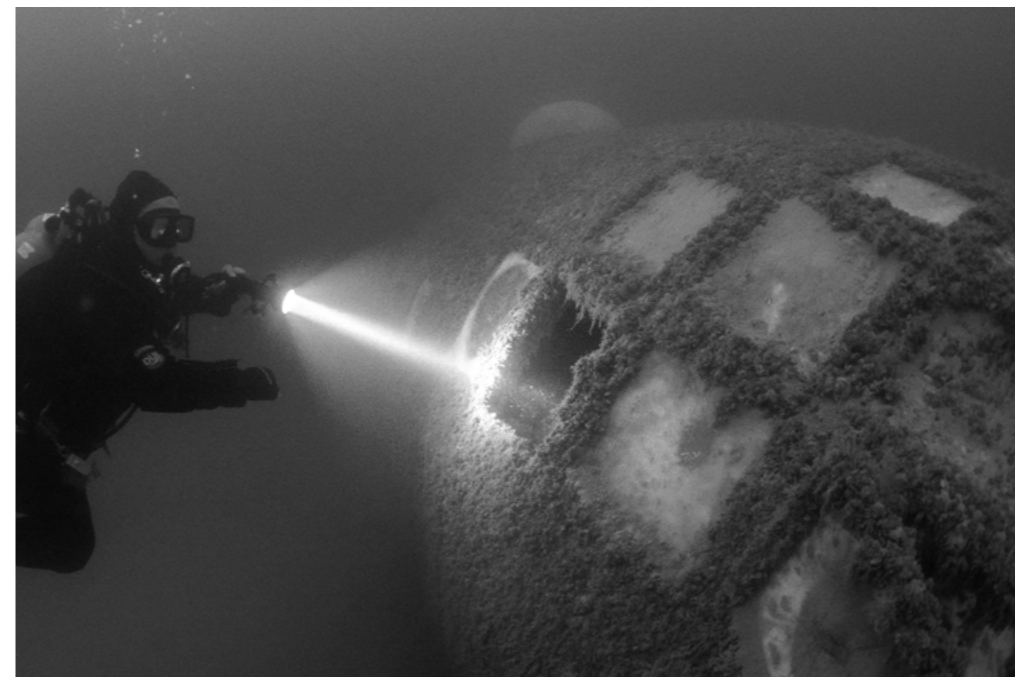
the exclusive permit for conducting dives on the B-29 for 2016. On 14 April, we met with the NPS and SCR team. A permit was handed to us. Meanwhile, our boat was out in the parking lot, and we hightailed it up to our launch area far up in the north end of Lake Mead, some 70 miles from where we are.

### Return to the wreck

We needed to conduct a reconnaissance dive, because Troy and his camera people were due first thing the next morning to shoot the story. However, the weather was not our friend in April; the wind was blowing, and the seas were building. Captain John Fuller and I made our way to the site. I splashed in and spent an hour



Interior of the cockpit (above); Diver illuminates the cockpit, with the Sun Tracker dome in the distance (left).



the next 30 minutes. This time, however, she was at a much shallower depth than ever before, 120ft from the surface. Surely, this would be an easy decompression dive, I thought.

Remembering my tour path, I hovered around the tail cone, lighting up the engraved panels with my dive light and inspecting the latest quagga mussel growth. Much of the wing fabric had torn away from the combination of the weight of the mussels and the hydraulic action of the lake.

Moving down the port side, I could clearly see the twisted metal where the fuselage cracked as the B-29 fell into a gully on the bottom. And as I swung around to the port wing, I could see over the top to the Number 1 engine, with its propeller still intact.

As I made my way around the wing tip, I saw that the aileron on the back side of the wing

getting our sub-surface mooring line re-established. Then, it was time to dive the wreck. I have not been on the B-29 since 2008. What was I going to find on the wreck? What condition was she in? What new piece of history would I uncover?

On my descent down the steel mooring cable to the twin 12,000lbs blocks, the clear black-

ness of the water was a familiar sight. I made my way across the 87ft traverse, when a huge shadow in the distance came into view. I exhaled a smooth "there-she-is" as the huge dark area morphed into the still magnificent tail rudder of the Overton B-29 Superfortress bomber on its final landing pad.

I had the B-29 all to myself for



The quagga mussel-covered nose of the B29 with the pilot's wheel in the exact position it was in when the pilot escaped.





had new indentations where the quaggas pressed through the dope-covered fabric. As I swam around the propeller, it looked as though it was encased in a fuzzy sweater. The slick metal I had last seen on the propeller was now covered in quagga mussels.

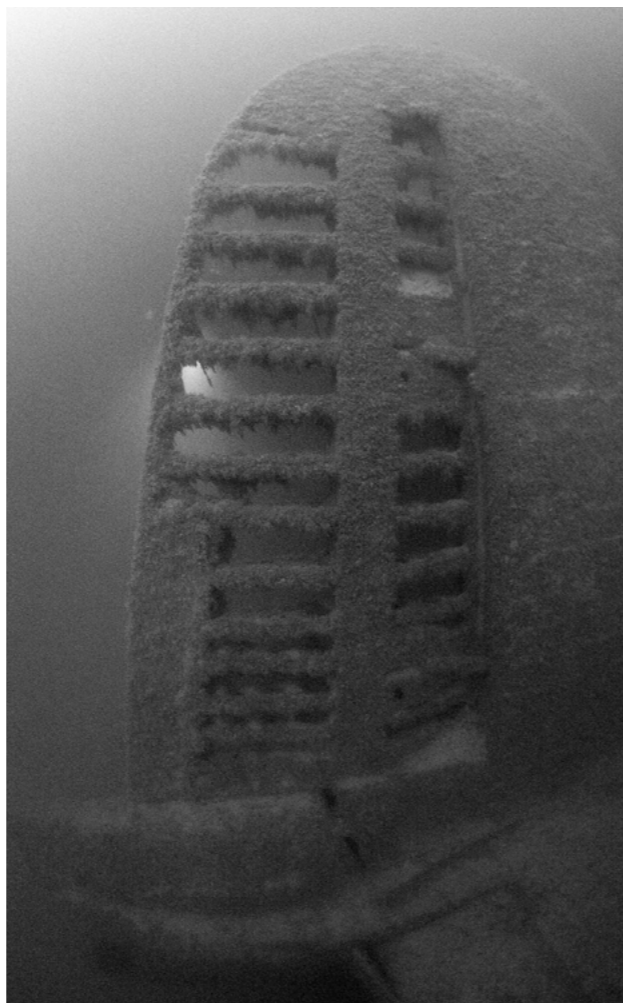
With time running out, I headed to the cockpit to ensure that all was how I had left it years ago. Atop the fuselage was the "Sun Tracker" dome, intact, as was the starboard wing. My mind raced ahead to the next day when I was to take Troy on his dive for the news story. Blocking out shots in my head, I wondered how we could get it all done in two dives. Twenty minutes later, on the surface, the seas had turned, and three-foot rollers were splashing over our boat deck. It was time to get back to the launch ramp.

The next day, the seas had calmed a little, but were still too rough to get out to the site in the morning. We caught a break about three hours later, and made a run for the site. On board was Troy, Captain Weydig,

Captain Fuller, Joe Coccozza and myself. We got Troy rigged in full-face mask gear, with underwater communications, and we hit the water. Joe, Troy and I got all the underwater images and sound recordings to make a great story.

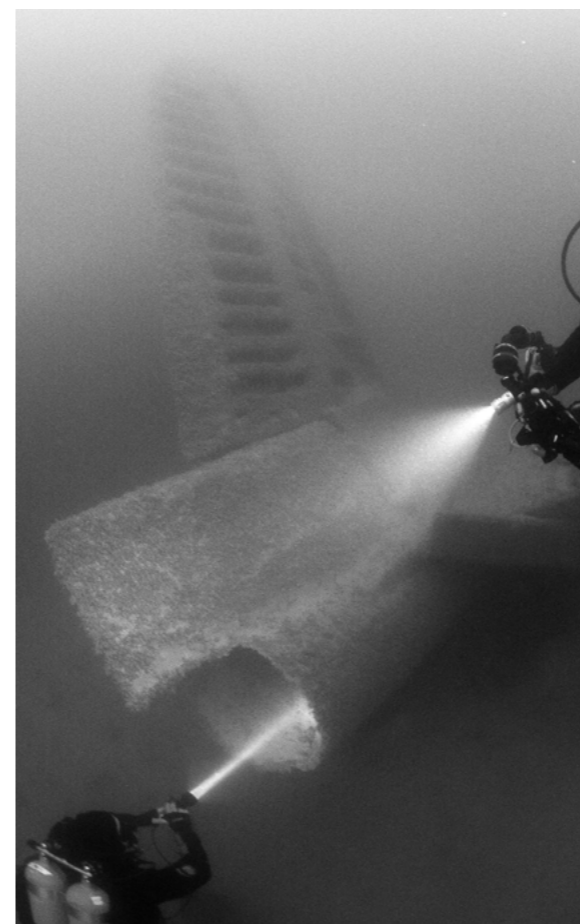
### Increased interest

The next few months were filled with divers and news media wanting to dive the famed B-29 bomber. The B-29 and our team became the press darlings of the NPS. We did television, radio and print stories with CBS, NBC, PBS and NPR. In addition to that impressive list was coverage by *The New York Times* and the *Los Angeles Times*, as well as all the syndicated news wires. All told, we garnered close to eight million views nationwide. Despite all the press and



Starboard side of tail wing (above)—the openings appeared after the cloth covering deteriorated over time.

No. 2 engine nacelle (far left); View of the massive tail wing and tail gunners port (left); View of the co-pilot's station through the starboard window (below)



all the people wanting to dive the site, we maintained our small inventory of dives, due to the fragility of the site.

While our dive requirements were stringent, the NPS did have us relax them a little to accommodate single tank recreational divers and give access to the site to more of the general public.

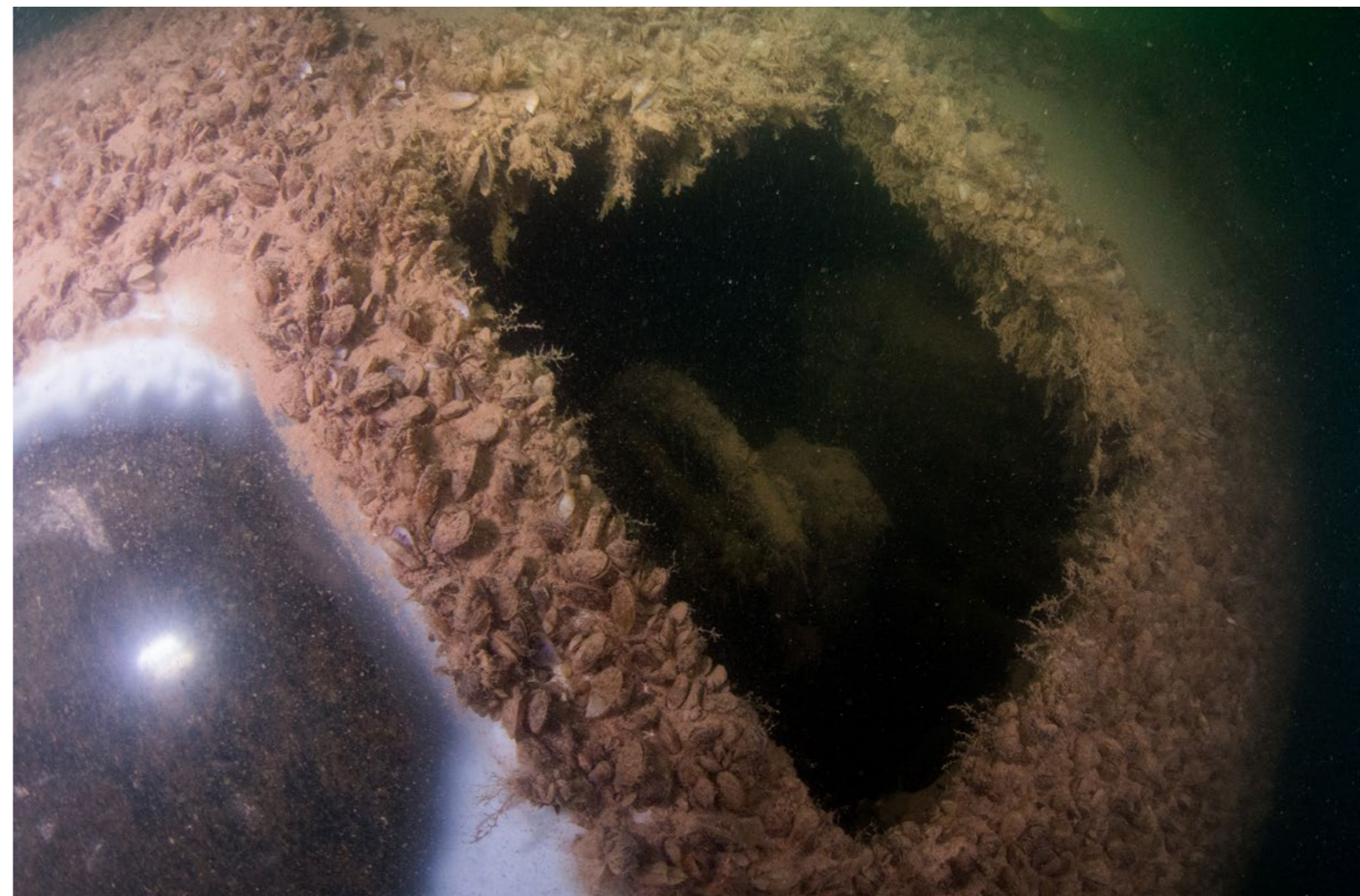
We learned a lot during the first year back on the site. Mostly, we learned that divers who were not highly experienced had no business diving the B-29. The site was too fragile and too deep for the average diver, despite our having highly

experienced guides and crew. The 2015 season came to an end, and we were already booking for 2016.

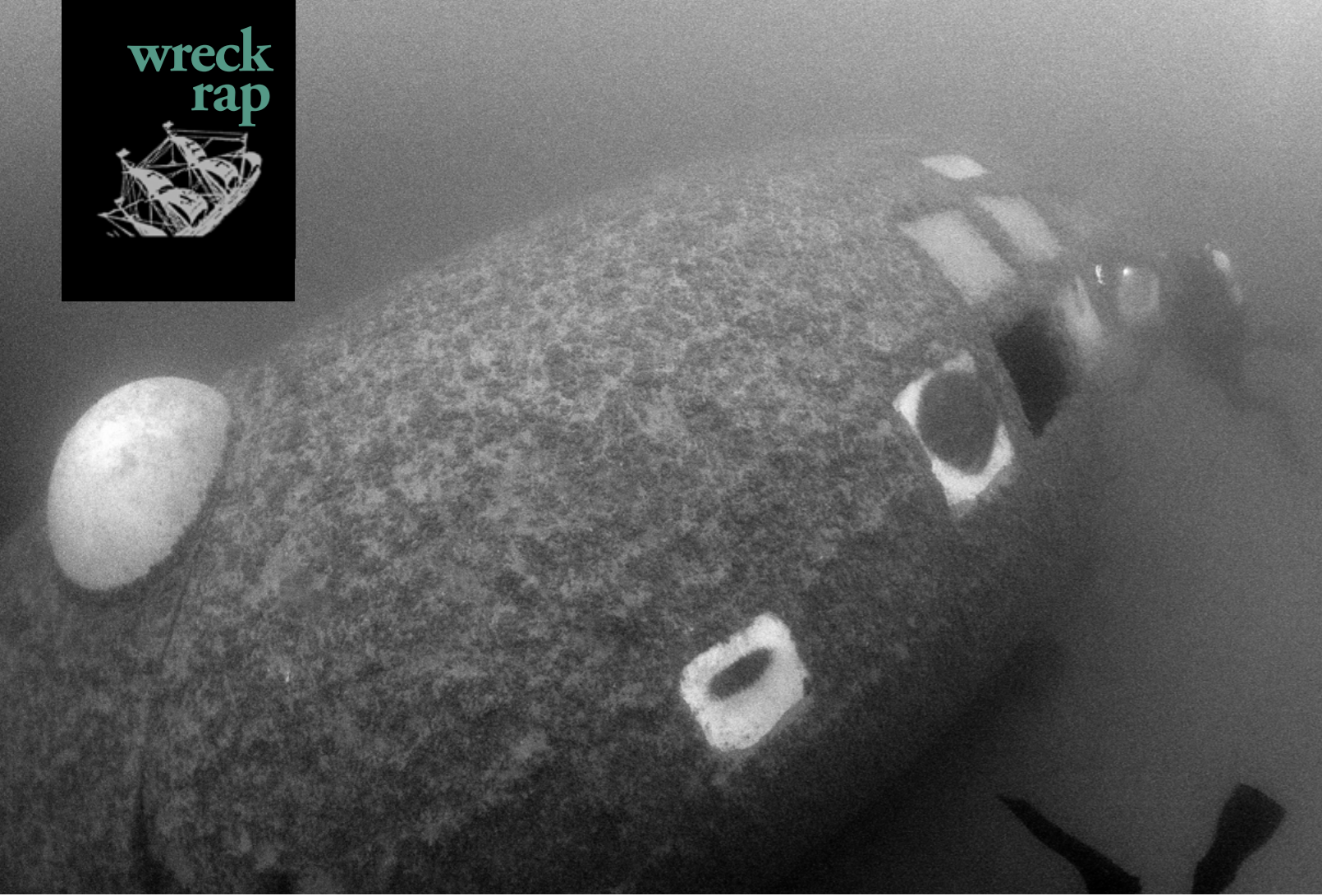
### Troubling times

Although 2016 proved promising, it was a year wrought with problems. About a month after starting the season, the NPS temporarily suspended our CUA permit, claiming that an agency's inspection revealed damage to the port wing aileron. This suspension caused us to cancel almost three months of diver activity with a significant financial impact.

Yet, when our permit was reinstated, it was because there was, in fact, no damage to any part of the B-29. It had been an error



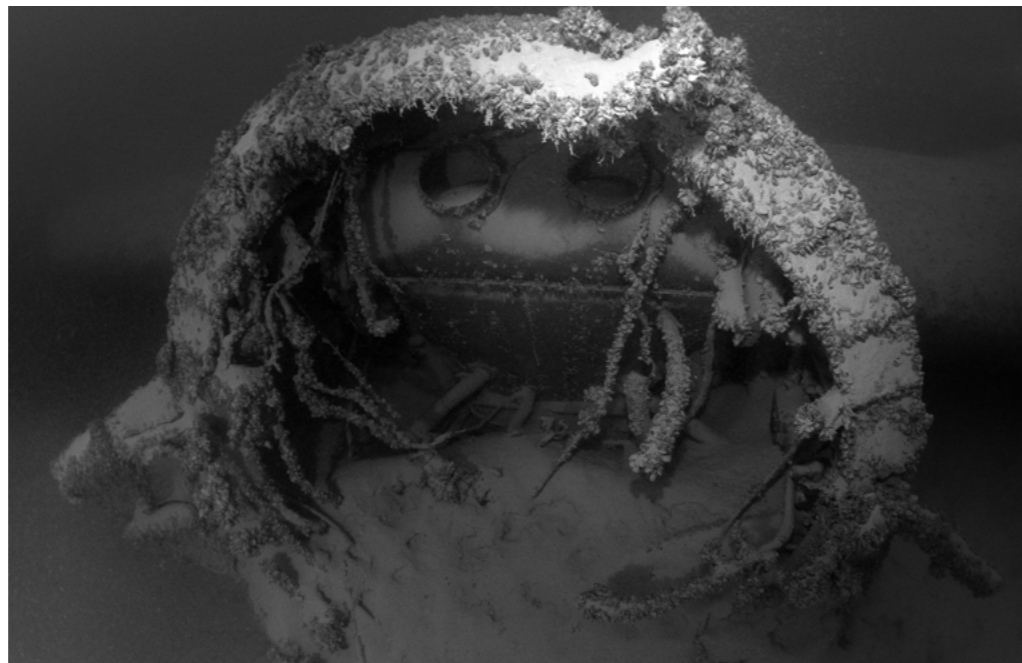




in the evaluation of the site by the Park Service. Now midway through the season, we were faced not only with a shorter season, but lowering lake levels, putting the B-29 at just under 105ft deep. The shallower water meant poorer visibility, and at times, more trying topside conditions. Having lost a few months of operation, we moved clients to dive tour slots later in the year, and operations resumed as normal... until, one day, our world turned upside down.

### Emergency incident

We did not dive the site in July and early August, due to air and water temperatures. It was too uncomfortable for most people when the air temperature was above 110°F. So, we pushed our trips to the end of August, with a four-day run of four divers each day.



Friday was a perfect day, the visibility was a reasonable 25ft, and the lake was relatively calm. Saturday was proving to be just as good. We had a group of divers in from Florida: a course director,

No. 2 engine nacelle (above); Overview of the quagga mussel encrusted fuselage (top left); The only remaining engine (No. 1) and propeller that are still intact (right)



an instructor and two divers with many years of experience. These guys had been diving together for a while, both in the States and abroad.

Due to a minor equipment issue, one diver did not do the first dive with his guide and partner. He opted to go in a little later with

one of our guides, one-on-one.

After the first dives, all the divers were just thrilled with their visits to the B-29 and the detailed tours of the wreck site. After a surface interval, tank change and some snacks, the teams started to roll in again. Time separation between teams was about 45 minutes. As I

was the last diver in the second team to submerge, I saw the third team pass me on the way down. Back on deck, I noted the time and had the divers begin putting away gear, so that when the third team came up, we could be on our way without much delay.

While the divers were recollecting their dives and putting away gear, I noticed bubbles coming across the traverse line from underwater and knew the divers were making their way back to the mooring line for their ascent. A few minutes later, one of our dive guides shouted, "Diver up!" and dived into the water, followed by one

of the clients.

Not more than 15ft off the bow, the divers saw it was their friend. They rolled him over and got him back on the deck. Two other divers assisted getting the victim on board, while I notified NPS that we had an emergency, needed a rescue boat and emergency medical services activated. As CPR and first aid were being rendered, I set up a triage area on the vessel and got everything in order.

Fortunately, a Ranger boat with a paramedic on board had picked up our radio call a few minutes earlier. We helped transfer the diver to the Ranger boat and off they went. Just as they left, the last dive guide surfaced. We got him on board, released the mooring and sped back to the launch ramp.

### Tragic outcome

As an extreme diving expedition leader for almost three decades, I have managed more than my share of incidents. Everything from a broken foot from a dropped tank, to oxygen toxicity underwater, decompression illness, arterial gas embolisms, and more than a few airlifts. However, for this one, I did not have a good feeling about its outcome.

About 25 minutes later, we







One of the engines on the B-29 wreck (right); Silverstein's son, Jona (age 15), dives the wreck with his dad (far right)

approached the dock, and it was filled with emergency personnel. Amazingly, even in this remote location, there were enough services nearby in the park that a full paramedical team was on site when the Ranger boat arrived. For the next 25 minutes, we watched as the paramedics did everything they could to revive the diver. Unfortunately, they were not successful.

Amidst the tragedy, our entire crew and passengers were

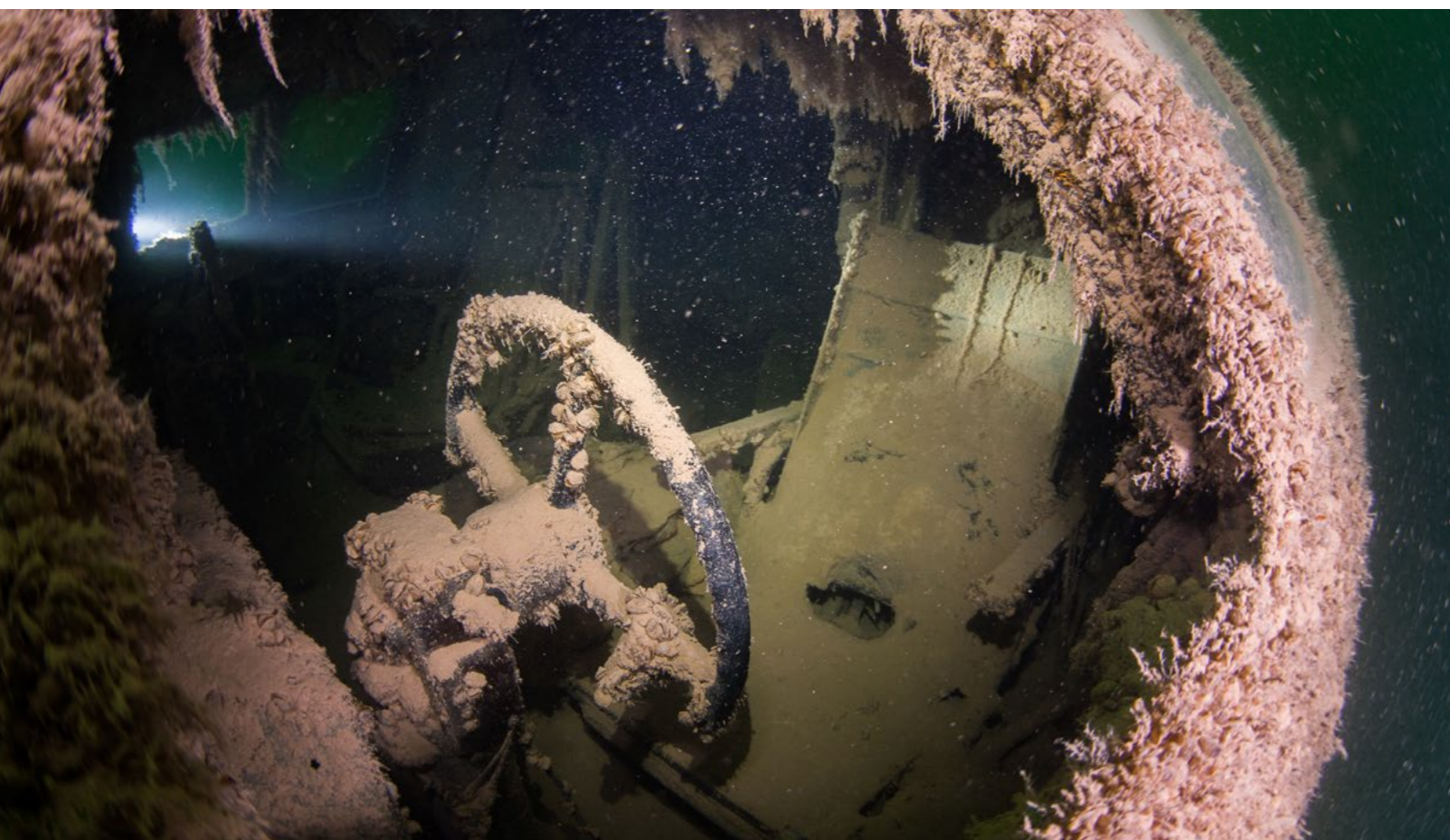


required to be interviewed about the incident and equipment collected for the medical examiner. Within a few hours, it was clear that we would not be diving the B-29 anytime soon. As per park procedure, whenever there is a

fatality, the CUA permit is temporarily suspended, pending an investigation.

### Consequences

Following the suspension, divers who had traveled from distant



Interior view of the cockpit of the wreck of the B-29 Superfortress

places to dive the B-29 the next few days had to be called and informed. While it was disappointing, a moment of pause was in order. We hoped we would be back on the plane within a few weeks. Once we saw the investigation continuing for three weeks, we were forced to cancel the rest of our season.

The medical examiners finished their report at the end of December. They stated that the diver perished due to rapid ascent from a scuba dive with significant prior contributing medical history. We were cleared of the incident, and NPS granted us an extension on our CUA into 2017. But would it be worth going back?

### Green light

Once given the green light, we re-booked divers whose tours had been canceled in 2016, and made our way back to the B-29.

It was a bittersweet season, back on the bomber. But my first dive to the wreck was like it had been every time I visit her. She was a huge plane resting on the bottom of the dark lake, exposing her gleaming skin to those divers who wanted to see the rare relics that survived the sea. While I made my first dive, I paused and said a little prayer for Fred Arnold, the diver from Florida who perished, and his family—as the last thing he saw underwater was the B-29.

While Fred's death affected us all, there have been some happier moments on the B-29 since his passing. Remember that story we did with Troy Hayden at Fox News on the first day of our new permit in 2015? That story garnered us an Emmy Award for best feature story. Another special moment took place on 25 June. My son, Jona (age 15), did his first dive on the B-29 with me. It was a special

father-and-son moment, which few get to experience.

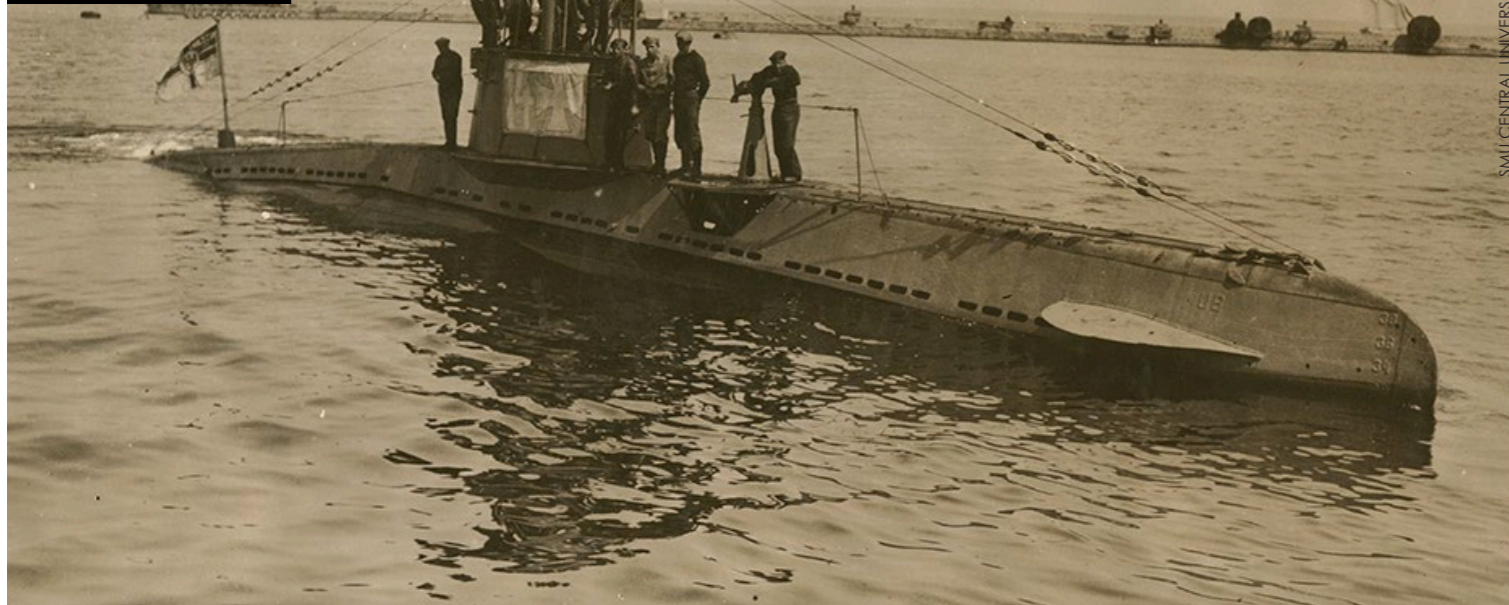
But now, as our season on the B-29 comes to a close, we hope we will be back on the B-29 in 2018. A new permit process begins soon, and we look forward to taking divers to the B-29 again next year. ■

Information about diving the B-29 can be found at: [DivetheB29.com/b29](http://DivetheB29.com/b29).

Joel Silverstein is the vice president and chief operating officer of Scuba Training and Technology Inc. / Tech Diving Limited, and has been exploring shipwrecks and training technical divers since 1988. He is known for asking the hard questions as well as collaborating to develop viable solutions to complex problems.







Historical photo of German U-boat, circa 1918

SMU CENTRAL UNIVERSITY / WIKIMEDIA COMMONS / PUBLIC DOMAIN

# German U-boat from WWI found in good condition off Belgian coast

**Belgian authorities announced on Tuesday that they had discovered the remarkably well-preserved wreck of a World War I German submarine off the coast of West Flanders.**

The UB II-type submarine was found 25-30m (82-98ft) below the surface on the floor of the North Sea. About 18 such vessels were stationed with the Flanders Flotilla in Bruges between 1915 and 1918 in order to disrupt British trade

routes in the English Channel and the North Sea.

### Almost intact

Footage of the wreck shows the submarine almost perfectly intact. However, the vessel did sustain some damage at the front end where researchers believe it struck a mine. The conning tower is described as intact, and the periscopes are still visible. Two torpedo tubes were found lying apart from the wreck.

"The submarine is in such good condition that we reckon all the bodies are still on board," said

West Flanders Governor Carl Decaluwé who contacted the German ambassador to make arrangements for bodies of the deceased left aboard the boat. Eleven German submarines from the World War One period have been found in Belgian waters, but this vessel is reported to be the best preserved of all.

Mr Decaluwé told reporters on Tuesday that the location of the wreck was being kept under wraps to prevent people going near it and to stop the submarine from being looted or damaged.

■ SOURCES: LIVESCIENCE, BBC

# Remains of Tulsamerican's crew found?

In 2010, the wreckage of the plane was discovered under 130ft of water. The plane had broken into two, and the front section was upside down, with its landing gear locked into place for a landing.

Human bones were near the wreckage, in addition to a life vest, boot and military equipment. If DNA analysis identifies the bones as belonging to the crew members who had perished, they will be recovered and given a proper burial.

In addition, pieces of the Tulsamerican will be recovered and given a permanent home at the Tulsa Air and Space Museum.

### History

The B-24 Liberator bomber is a four-engine heavy bomber, one of the main aircraft types used during World War II. The Tulsamerican was the last B-24 Liberator bomber built at the assembly line of the Douglas aircraft plant in Tulsa, Oklahoma in summer 1944.

In all, about 962 B-24s were built at the plant (some people say that the number is actually 952.) Because this was the last one, the workers at the plant took pride in this plane, to the extent of buying war bonds to pay for its construction. They dubbed it *Tulsamerican*, painted its nose art and signed their names on it.

On 17 December 1944, following a bombing run over Poland (then occupied by Germany), the *Tulsamerican* crashed into the Adriatic Sea after it was hit by



B-24 aircraft in flight, circa 1943

enemy fire. It attempted to make an emergency landing but eventually crashed into the sea off the

coast of Croatia. Of the ten crew members on board, only seven survived. ■ SOURCE: NYPOST.COM

**PONZA DIVING CENTER**  
SINCE 1991

FERRACINA - PONZA  
NLG in 60

PONZA DIVING CENTER

**REBREATHER FRIENDLY**  
INFO@PONZADIVING.COM  
+39 337 808485

**JCCR**  
VERSATILE REBREATHERS SERVICE CENTER  
WWW.PONZADIVING.COM





Wooden steamer *J.M. Allmendinger* ran aground near Mequon in 1895.

## Lake Michigan sanctuary to preserve shipwrecks

Local divers know Lake Michigan as a haven for wreck diving, with its seafloor literally littered with wrecks along the shoreline of the US state of Wisconsin. Now, there are plans to establish the first national marine sanctuary in Lake Michigan.

"These shipwrecks really tell us the history of how shipping was the engine of the American economy," said NOAA regional coordinator Russ Green. "There's a huge legacy of risk, sometimes

tragedy, personal stories of innovation, entrepreneurship—all locked into this proposed area."

The proposed site, covering 1,075 square miles, is the final resting place of 37 known shipwrecks that sank from the 1830s to the early 1900s. Researchers believe that there are as many as 80 other wrecks yet to be discovered.

Many of the wrecks in Lake Michigan are intact, thanks to the water within it. "Cold, fresh water. The fact that it's salt-free helps preserve iron and wood, and the cold water is like a big freezer that acts against deterioration," said Green. ■  
SOURCE: CHICAGO TRIBUNE

## Artificial reef trends around the world

In a bid to generate new dive attractions, encourage coral growth and restore marine life in barren areas of the sea floor, artificial reefs are a growing trend, creating new or rejuvenating existing dive locations around the world. Below are just a few of the recent developments.

### Alabama, USA

The Alabama Marine Resources Division is sinking a 250ft surveying vessel, *New Venture*, just 20mi south of Orange Beach, at a depth of 120ft, along the Gulf of Mexico coastline, in the latter part of this year. At 60ft, divers will be

able to see the top of the superstructure. Technical divers will find opportunities for safe, limited penetration of the wreck via holes cut into the vessel.

### Florida, USA

In Florida, the South Walton Artificial Reef Association has completed 12 new dive locations with 30 artificial reef structures at each location, plus 12 superreefs designed for snorkelers, off Mirimar Beach in the Florida Panhandle, along the Gulf of Mexico coast. The structures include grouper boxes and snapper pyramids to attract fish.

### Thailand

On the east coast of Thailand, 1,000 concrete frames were sunk to the seabed along the shores of Sathing Phra district in the southern province of Songkhla, to create an artificial reef, which will attract fish and marine life, thus combatting the detrimental ef-

fects of overfishing. Another 1,500 concrete frames will be sunk this year in the districts of Sathing and Ranot in Songkhla, and Pattani and Panare.

### Australia

Researchers will suspend a modular artificial reef alongside the Sydney Opera House. A partnership between the opera house, the New South Wales Government and two local universities, the three-year project aims to increase native species and bolster marine biodiversity. ■  
SOURCES: 30A, BANGKOK POST, COURIER JOURNAL, ENVIRONMENT.NSW.GOV.AU, SCIENCE ALERT

**D**  
DIVE DAMAI  
Indonesia's Signature Service

info@dive-damai.com  
www.dive-damai.com

**12 guests - 18 crew: INDONESIA'S SIGNATURE SERVICE LIVEBOARDS!!**



The 250ft surveying ship, *New Venture*, will become an artificial reef

