

APRIL 12, 1968, REPLACEMENT OF ONE INDUSTRIAL WORLD BY ANOTHER.

VOUGLANS (39), THE SUNKEN DAM

**A DIVE INTO THE REMAINS OF
THE CHARTREUSE DE
VAUCLUSE DAM.**



Recolorized aerial view of the Chartreuse dam and the Ain gorges before their submersion in 1968. Photo: Combier. Source: Bernard Hostache, ASPHOR.

André PiedPalmé, Thierry Hustin, Jean-Luc Userstam, Olivier Rotsaert, François Bonneville.

Contacts & references: André PiedPalmé, photographer and writer, andre@piedpalme.com • Thierry Hustin, organization and exploration, info@rochefontaine.be • François Bonneville, historical research and archives related to Vouglans, asphor@asphor.org • Jean-Luc Userstam, XCCR/FX-CCR instructor and technician, expedition technical support, Usermaster81@hotmail.com



All the divers together. From left to right, André, Olivier, Thierry and Jean-Luc.

An adventure among friends

Behind this dive lies, above all, a story of friendship. I am André PiedPalmé, an underwater photographer, and I am fortunate to share this adventure with Thierry Hustin, Jean-Luc Userstam, and Olivier Rotsaert, three very dear friends united by their shared passion for exploration and forgotten places. Every year, Thierry, owner of the Rochefontaine Quarry Diving Center, invites us to discover new remains in the depths of Lake Vouglans. The first to film the Chartreuse de Vacluse for the press, he shares his knowledge of the site and his passionate interest in the buildings that sank in 1968. Jean-Luc, an iQSub instructor, is our technical expert. His career, marked in particular by dives to depths of over 270 meters at Font Estramar, provides him with an experience whose value we appreciate with every dive. Olivier, an experienced rebreather diver, naturally complements the team and shares with us this same taste for exploration and diving off the beaten track.



Thierry Hustin at the Rochefontaine Quarry.



Jean-Luc Userstam, iQSub instructor.



Olivier Rotsaert.

Prepare for the exploration

Located between 50 and 80 meters deep, the Chartreuse Dam requires rigorous preparation. To ensure sufficient autonomy and fully enjoy the time spent exploring the ruins, we all dive using iQSub rebreathers. At these depths, helium replaces some of the nitrogen, which causes nitrogen narcosis, while the oxygen level is reduced to minimize its toxicity under pressure. Each gas mixture is precisely prepared, notably with the support of Dive Factory, while the rebreathers and all equipment are meticulously checked and maintained. In addition to this technical preparation, considerable logistics are involved: transporting the divers, tanks, all the equipment, and the support vessel over nearly 1,200 kilometers is already an expedition in itself. This adventure was conceived and organized by Thierry Hustin, who coordinates every detail with remarkable efficiency.



Galle chain plates of the valve lifting mechanism. © André PiedPalmé.

Two “Chartreuse” sites often confused

The name contributes to the confusion. The Chartreuse de Vaucluse was first and foremost a monastery founded in the 12th century, located in Onoz, and also submerged by the current reservoir. The Chartreuse de Vaucluse dam and power plant is a separate site, situated further downstream in the commune of Cernon. Both disappeared beneath the same waters in 1968, but their histories, architecture, and locations are distinct. Publications devoted to the monastery have long overshadowed the history of the hydroelectric development. Underwater, the difference is just as clear. Diving on the dam takes place at a greater depth than on the monastery. The site also preserves more visible and identifiable remains.



On the crest of the dam stand the shelters for the winches used to operate the sluice gates. © André PiedPalmé.

From the Chartreuse to Vouglans

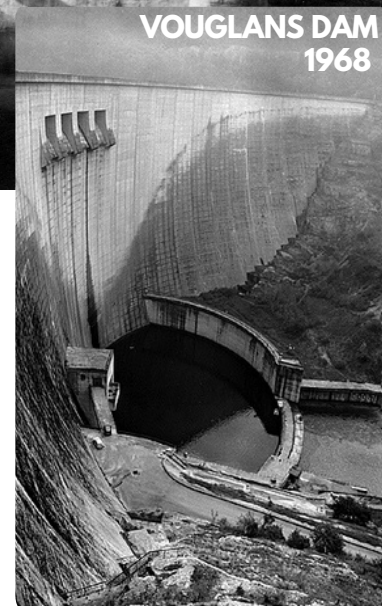


View downstream of the Chartreuse dam and its water intake (grates). Bernard Hostache, ASPHOR Association.

The concession was granted on May 12, 1922 to the Société Industrie et Force. The works were spread over the following years and the hydroelectric power station and its dam came into service in 1928. A technical chronicle¹ published in 1927 describes a plant supplied by a dam 13 meters high and announces a power of 4,850 kilowatts.

Two generations of dams facing off

From the 1950s onward, EDF (Électricité de France) planned to create a large reservoir on the Ain River. Preparatory work began in the early 1960s, and the massive 103-meter-high arch was constructed between 1965 and 1968. The dam was filled from April 12, 1968, to the end of December 1969, creating a reservoir with a capacity of 600 million cubic meters and flooding the entire valley. The contrast was striking: the old power plant was replaced by a facility more than thirty times larger in its complete configuration.



The new dam and its retention basin. ©Bourgogne-Franche-Comté Region, Heritage Inventory.

1923
VS
2026



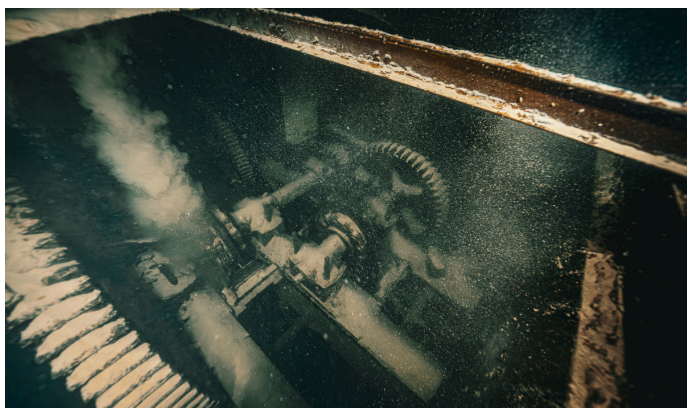
View upstream of the Chartreuse dam, with one of the gates clearly visible on the right. Source: Bernard Hostache, ASPHOR Association.

An unmistakable architectural style

Although highly technical, the dam is surprisingly easy to navigate underwater. Its regular structure quickly provides landmarks that allow you to orient yourself from one dive to the next. One of the first is an imposing cylindrical shaft of riveted steel, pierced with numerous openings and containing a narrow spiral staircase connecting the crest to the base of the structure. It is alongside this structure that we make our first descent. The four large piers that we explore are connected at their base by a passageway equipped with a handrail and, at their summit, by a wide walkway combining metal and wood.

Some of the dam's faces are now covered in concretions so extensive that they sometimes resemble branches. Formed over decades, they give the dam an almost organic appearance. Naturally, we take care not to touch them, as they now contribute so much to the beauty of the place.

At the foot of the structure, three immense metal gates are still in the closed position. On either side, their impressive lifting chains remain in place and run up along the piers to the operating winches, where each one still engages in its toothed wheel.



Detail of one of the operating winches: in the center of the image, the chain remains engaged on the drive wheel of the valve lifting mechanism. © André PiedPalmé.



Interior of the stairwell access, located at the top of the vertical shaft. © André PiedPalmé

Meanwhile, Jean-Luc explores the deepest part, at the foot of the sluice gates. There, he discovers enormous tree trunks wedged against the structure. Their origin remains to be determined, but one hypothesis intrigues us: could they have come from the deforestation of the valley carried out before the Vouglans reservoir was filled? In 1967, the forest and the condemned buildings were removed before the reservoir was filled, but nothing allows us to directly link these trunks to the works.

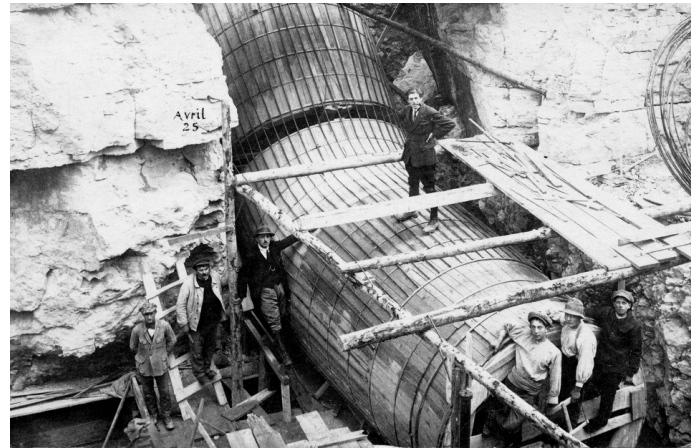
The masonry section is equally spectacular. The piers are largely constructed of dressed stone, and at their base, vaulted openings provide access to narrow passageways that correspond to service galleries. Like the spiral staircase, these spaces are now too cramped to traverse without risking damage to the concretions that have developed within them. Thierry and I positioned ourselves on either side of the openings to shine our lights in. Facing each other through the pier, we discovered with wonder these volumes that had remained shrouded in darkness for decades. Thierry documented the entire structure using virtual reality while I attempted to capture its atmosphere through photography. Under these viewing conditions, each photograph revealed only a fragment of the dam. It was only once we returned to the surface that these details could be analyzed and compared with historical documents.



A vaulted opening at the base of a pier, set into the dressed stone masonry and passing through the structure. Against the light, one of the lifting chains can also be seen. © André PiedPalmé.

Just three dives, with twenty to thirty minutes spent underwater on each dive, have already allowed us to identify a large part of the structure: the four piers, the three always-closed gates, their chains and lifting mechanisms, the cage containing the spiral staircase, the passageways built into the piers, the lower railing, and two imposing water intake grates. These latter mark the start of the structure that carried water to the hydroelectric power station. But some areas remain completely unknown. An opening visible in period photographs particularly catches our attention. It seems to provide access to an interior section of the structure, leading towards the gallery that once carried water to the hydroelectric plant.

This will be one of the objectives of our upcoming dives: to take a further step in understanding the site and try to retrace the path the water took a century ago, from the intake to the structures that supplied the hydroelectric plant. The archives already provide us with many answers, but they also have an unexpected effect: each detail identified on the surface raises new questions underwater. As the dam's architecture becomes clearer, new areas of uncertainty emerge. The more we understand how the structure works, the more we realize how much remains to be explored, photographed, and documented.



Construction of the penstock for the Chartreuse dam, April 1925. Source: Bernard Hostache, ASPHOR Association.

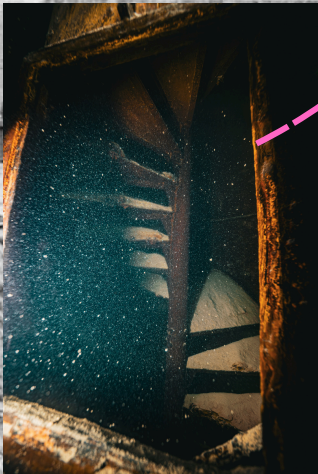
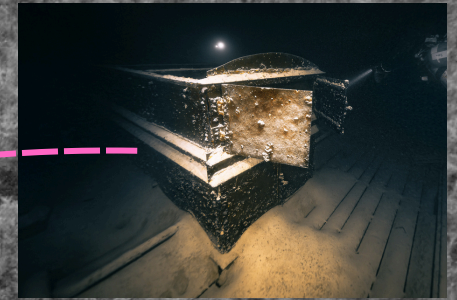
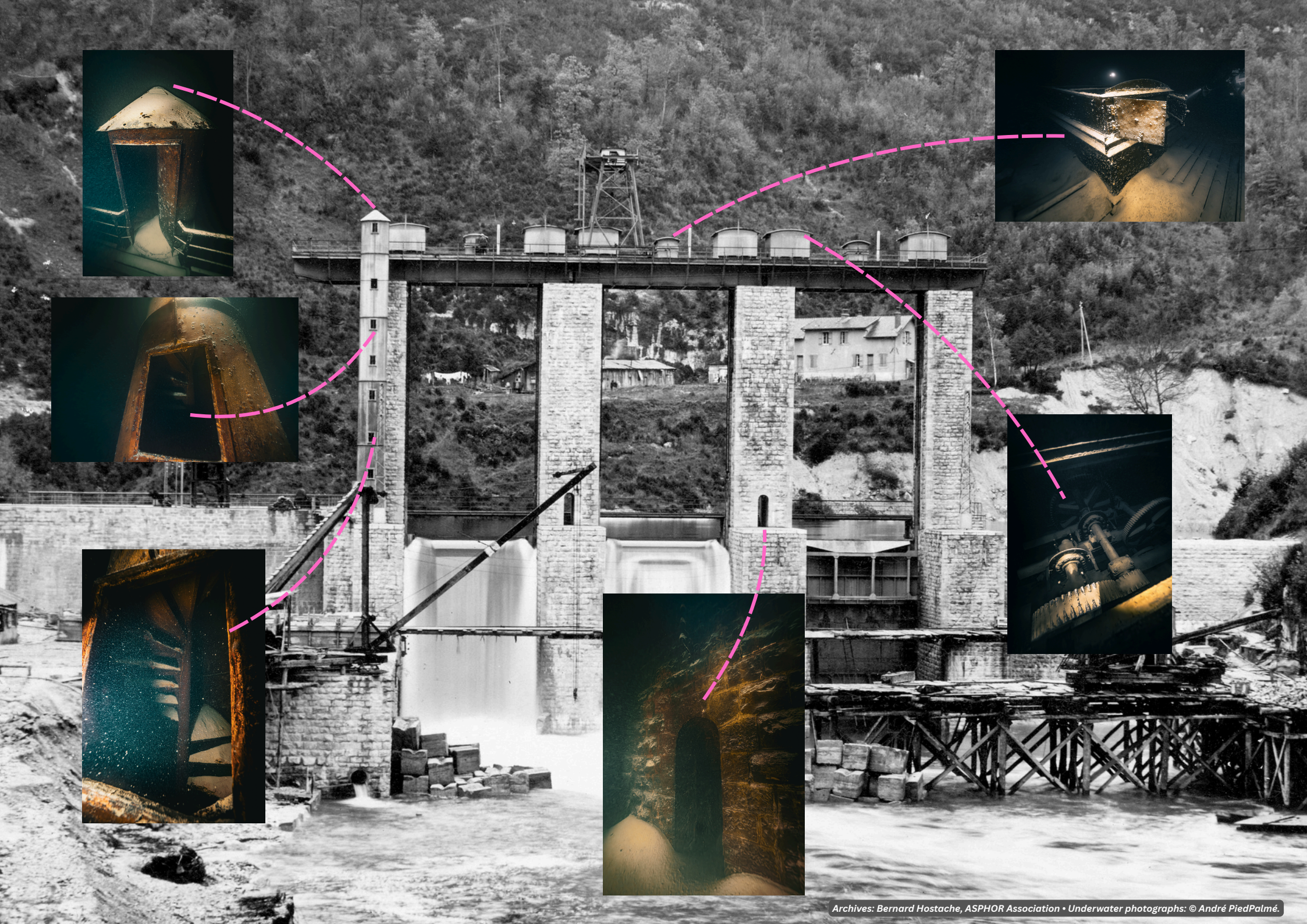


The lifting chains are still attached to the upper part of the valve, which they allowed to be lifted during maneuvers. © André PiedPalmé.



More than a century separates these two images. In the past, the penstock's starting point towered 13 meters above the Ain River. Today, the same grates lie 67 meters below the surface. Their role was essential: they retained tree trunks, branches, and other debris that could be swept into the penstock and damage the downstream installations. Their identification was only possible by cross-referencing our observations with archival photographs. Returning to the site knowing what we were looking for transformed the dive: seeing these structures, studied in the old photographs, allowed us to immediately understand what we were observing.









Thierry, Jean-Luc and Olivier aboard the White Shark, the expedition's support vessel. © André PiedPalmé.

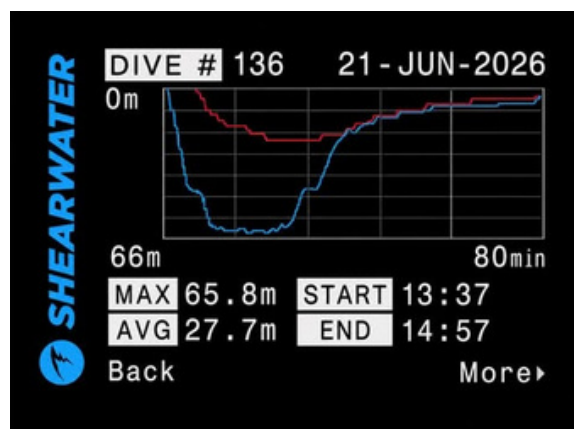
What you can't see underwater

An expedition like this isn't just about the few dozen minutes spent underwater. A large part of the effort takes place even before entering the water. This year, the heatwave has been almost a daily occurrence, with surface temperatures reaching 37°C, while at the dam's depth, the water doesn't exceed 6°C. To withstand this cold, we have to don dry suits and thick thermal protection. Fully equipped under the sun, the wait quickly becomes grueling, and the urge to get in the water is almost irresistible. In these conditions, hydration, already crucial for diving, requires particular attention. Three to four liters of water per person per day is not excessive.

Especially since the days are physically demanding: before each dive, you have to move and prepare the rebreathers, the backup cylinders, the trimix and oxygen tanks, the camera equipment, and everything else that goes with this type of dive. Between carrying everything, preparing the gases, entering the water, the dives, and the long decompression stops, rest time becomes particularly precious. Fortunately, this demanding organization takes on a whole new dimension when it's experienced with friends.



Time to carry: Thierry Hustin handles one of the blocks needed for the exploration. © André PiedPalmé.



Typical profile: nearly 30 minutes around 65m, then about 40 minutes of decompression, with the first stops at 21m. © André PiedPalmé.

And then there's everything that happens between dives. The Jura region has an atmosphere that's hard to describe without experiencing it: the mountains surrounding the lake, the distant cowbells, the roads winding through the hills, shared meals, the cheese of course, and some truly excellent restaurants like Le Pré aux Vaux. These moments are almost as important as what we discover underwater. After hours of preparation, challenging dives, and long ascents to the surface, gathering around a table, reliving the dive, and already imagining the next one are the kinds of memories you cherish for a long time.

That's probably why the desire to return is already there. Beyond exploring the dam and the images we bring back, these few days are above all genuine moments of life, shared with friends around a common passion. The exploration is drawing to a close for this year, but the story remains wide open. Several areas are still unexplored, and many questions still await answers. We will return next year to continue uncovering the secrets.